NEW GENERATION INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT CENTRE (NewGen IEDC)

Progress Report (2019-20)

Submitted to:

National Science & Technology Entrepreneurship Development Board (NSTEDB), DST, GoI

Submitted by:

Entrepreneurship Development Institute of India Ahmedabad

C O N T E N T

1. About the Project: New Generation Innovation and Entrepreneurship Development Centre (NewGen IEDC)

India is witnessing an upsurge of technology-driven and knowledge-based enterprises. Whether it is the field of conventional business or in IT and ITES a sudden spurt in the number of new ventures or start-ups has taken the country by surprise. Technology and Innovation are playing a major role in this process. It is as if all of sudden people, especially the young ones are no longer afraid to dream an idea and work actively to convert their ideas to commercially viable business. While a few years back, the conversion of idea to product might have sounded a distant dream, with both technology and market being uncertain, things certainly have changed now. More and more technocrats, students with practically no experience or industry experienced professionals are giving shape to their business ideas. It is as if the Silicon Valley story is reincarnating itself in India.

Encouraged by the motivating ecosystem students are no longer giving preference to campus placements and are going for deferred placement to give a chance to their dream projects. It has however been seen that initial support to the start-ups has been one of the deterrent in the process of the launch. Students (their parents) have already incurred a heavy expenditure for the payment of tuition fees and subsistence and are cash strapped. Anticipating this movement and to empower the younger generation to acclimatize themselves to innovation and entrepreneurship culture, the National Science & Technology Entrepreneurship Development (NSTEDB), Department of Science & Technology (DST), has taken an initiative of introducing this scheme for setting up “New Generation Innovation & Entrepreneurship Development Centers (NewGen IEDCs)” being implemented by Entrepreneurship Development Institute of India (EDII), Ahmedabad. In the year, 2017-18 and 2018-19 i.e. first year and second year of this project, the program received an overwhelming response and through robust screening and selection process, 14 NewGen IEDCs (2017-18) and 12 NewGen IEDCs (2018-19) have established in various parts of the country. **NewGen IEDC** has a mission to ***“promote knowledge based and technology-driven start-ups by harnessing young minds and their innovation potential in an academic environment”***

2. The Programme:

NewGen IEDC aims to inculcate the spirit of innovation and entrepreneurship amongst the young S&T students, encourage and support start-up creation through guidance, mentorship & support. Selected academic institutions host NewGen IEDCs where students are encouraged to take up innovative projects with possibility of commercialization. NewGen IEDCs also spread the message of entrepreneurship and create a culture of entrepreneurship in the Host Institution (HI). With faculty already trained in the nuances of entrepreneurship, the presence of NewGen IEDCs in HI creates a vibrant entrepreneurial culture amongst the students. Few amongst the “**Job-Seekers**” are converted to “**Job-Generators**” through the entrepreneurial route.

3. Objectives of NewGen IEDC:

- To channelize the knowledge and energy of youth towards becoming active Partners in the economic development process
- To catalyze and promote development of knowledge-based and innovation-driven enterprises and promote employment opportunities amongst youth specially students
- To inculcate a culture of innovation driven entrepreneurship
- To act as an institutional mechanism for providing various services including information on all aspects of enterprise building to budding S&T entrepreneurs.

4. Salient features of NewGen IEDC:

- ✓ It is a five-year programme to be implemented in an educational institution
- ✓ A maximum of twenty new projects per Institution would be supported in a year
- ✓ The projects should be students' projects with a high degree of innovation and commercial viability to lead to possible startup by students
- ✓ As far as possible, the projects should be multi-disciplinary in nature and to be executed by teams consisting of students drawn from various levels

5. Functions of NewGen IEDC:

- ❖ To motivate, support and mentor students for identification, development and Commercialization of their innovative ideas
- ❖ To initiate targeted number of innovative student projects each year for new product development
- ❖ To organize Business Plan Competitions/Innovation Camps/ Hackathons with active involvement of industry and alumni
- ❖ To guide and assist prospective entrepreneurs on various aspects such as preparing project reports, obtaining project approvals, loans and facilities from agencies of support system, technologies information, etc.
- ❖ To arrange interaction with entrepreneurs, bankers, professionals, potential customers and create a mentorship scheme for student innovators
- ❖ To facilitate creation of entrepreneur's club / E-Cells in the college to foster culture of entrepreneurship amongst students

6. Project Coordinating & Managing Agency:

Under the aegis of the NSTEDB, DST, NewGen IEDC programme is being coordinated and managed by EDII, Ahmedabad. The role of EDII is to;

- ✓ Invite and receive proposals for setting up NewGen IEDCs
- ✓ Initial scrutiny of proposals
- ✓ Convening of experts advisory committee (constituted by DST) meeting to consider the proposals for funding support
- ✓ Release of funds to selected institutions
- ✓ Convening progress review meetings
- ✓ Monitoring, evaluation, documentation
- ✓ Mentoring and handholding of NewGen IEDC
- ✓ Maintaining database and compilation of progress reports to be submitted to DST from time to time

7. Criteria for selection of an Institution to set up NewGen IEDC:

- The institution should be a University/Deemed University or a premier Institute/College offering Engineering, Technology, Science courses at degree level or above for at least 5 years. In case of a college/institute, it should be duly recognized, affiliated, and while in case of the private institutions, it should be promoted by a Trust or a Society registered under relevant Acts besides being recognized/affiliated to AICTE/Universities.
- Qualified and dedicated faculty in various disciplines with a good Research & Development base and background in industry related activities should be available.
- Availability of at least two faculty members trained in Entrepreneurship through DST sponsored Faculty Development Programme.
- Minimum dedicated space of about 5000 square feet for housing the NewGen IEDC with basic amenities like electricity, water, telephone and internet connectivity.
- Availability of workshops, laboratories and computational facilities
- Library with good collection of books and journals
- Experience in Entrepreneurship Development, Promotion and Industry related Activities such as Consultancy, Product Development, Testing, Calibration etc

8. Functioning/Status of the NewGen IEDC:

- ❖ NewGen IEDC should maintain separate books of account and saving bank account for the NewGen IEDC. It should function as a prominent Central Facility of the Host Institution and not as a facility for a particular Department of the parent institution.
- ❖ NewGen IEDC should enjoy flexible administrative and financial status for ensuring effective and speedy implementation of programmes and activities.
- ❖ It should have effective linkages with different Departments, Centers and other facilities of the institution to spread entrepreneurial culture for optimal utilization of expertise, resources and know-how available. It should network with other agencies involved in entrepreneurship development.

9. Budget & Funding:

Funding mechanism & Financial guidelines:

For setting up of NewGen IEDC, eligible Institutions shall submit online proposals to EDII, Ahmedabad as per the prescribed proforma. Financial assistance to the selected institutions for establishment of NewGen IEDC, towards its non-recurring (as one time establishment cost) and recurring expenditure (Project Development Cost, Travel, Training and Contingencies, etc.) up to five full operational years would be provided. However, the financial assistance would be available in the project mode on a year-to-year basis, based on successful implementation of the NewGen IEDC project and review by the National Experts Advisory Committee.

- **Non-Recurring Grant:**

  NSTEDB will provide limited onetime non-recurring financial assistance, up to a maximum of Rs.25.00 lakh. The non-recurring grant would be provided towards the establishment cost, furnishing of cubicles for start-ups, purchase of PC with printers, UPS, library books, journals, laptop, multimedia projector, office communication equipment and other equipment like 3D printers, prototyping equipment/software and shared equipment etc. The grant should NOT be used for purchase of land and building.

  The host institution should provide the support of two members of the faculty, trained in entrepreneurship development through DST sponsored Faculty Development Programme (FDP) in entrepreneurship development, 5000 sq. ft of dedicated space, a counseling/meeting room, office furniture, facility of conference hall/ auditorium, telephone and internet connection etc.

- **Recurring Grants:**

  The recurring budget will be provided for each year of operation for a maximum of five years. The maximum number of student project supported each year would be as follows;

Year →	**First**	**Second**	**Third**	**Fourth**	**Fifth**	**TOTAL**
No. of Student Projects	10	15	20	20	20	85

Sl. No.	**Budget Head**	**Amount in Rs. Lakh Per Year (Max Projects)**				
		Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1	No. of Student Projects	**(10)**	**(15)**	**(20)**	**(20)**	**(20)**
2	Prototype Development Grant (@ Rs 2.50 lakh per project)	25	37.5	50	50	50
3	Recurring Expenditure	10	10	10	10	10
	TOTAL	**35**	**47.5**	**60**	**60**	**60**

The recurring cost would include the honorarium to mentors, honorarium to NewGen IEDC coordinator, travel, expense for advisory board and review meeting, contingencies and misc. expenditures. Prototype Development Grant of Rs. 2,50,000/- per project would cover the following expenditure;

a) A maximum amount of Rs. 25,000/- to the mentor for providing guidance to the project team
b) A maximum amount Rs. 25,000/- per student group as stipend
c) Rs. 2,00,000/- for cost of raw material, prototype development cost, external vendor/consultant cost.

In case the expenditure on item no (c) is more than the stipulated amount of Rs 2,00,000/- the additional expenditure will be borne by the student team/college/host institute.

The above funding is just indicative and may vary from case to case.

10. Review & Monitoring:

Periodic review of NewGen IEDCs would be carried out by EDII and/or NSTEDB, DST. The Host Institutions would provide access to the personnel, facilities and records for smooth conduct of the review. The National Experts Advisory Committee (NEAC) of Entrepreneurship in Education, constituted by DST, would review the activities of NewGen IEDC annually. NewGen IEDCs would submit their documents annually, duly approved by their Local Advisory Committees, to EDII, Ahmedabad.

11. Financial Discipline:

The Host Institution shall open a Savings Bank Account in which the grants-in-aid will be transferred. The bank account shall be jointly operated by the coordinator of NewGen IEDC and Head of the Institution or a person nominated by the Head of the Institution. The grants-in-aid will be credited to this account and utilized solely for the activities of NewGen IEDC. The interest earned thereon shall be accounted for in the Utilization Certificate and shall be refunded to NSTEDB, DST on yearly basis. All financial receipts/funds received by NewGen IEDC shall be credited to this account. Surplus funds generated through NewGen IEDC activities (and not the grants-in-aid) and revenue earned should be credited to the same bank account to continue the activities of NewGen IEDC beyond the project life (maximum 5 years). However, DST grants-in-aid or interest earned thereon should not be used to create the corpus. The accounts should be audited either by the Chartered Accountant in case of private Institution or by the Financial head in case of the Government Institution or as per the norms of the parent institution.

12. **Organizational Requirements:**

The NewGen IEDCs will function under the guidance and control of the Head of the Host Institution. The Head of Institution will be solely responsible for the implementation and successful operation of NewGen IEDC. He will appoint the NewGen IEDC Coordinator for day to day functioning of the NewGen IEDC. An Advisory Board will monitor its activities.

13. Advisory Board:

For effective implementation of the programmes, Host Institution would constitute an Advisory Board immediately after the sanction of the NewGen IEDCs by NSTEDB, DST. The Advisory Board will lay down policy guidelines, fix up physical and financial targets, suggest measures for raising funds, effective utilization of facilities and expertise available in the parent Institute and sourcing of expertise and facilities from other institutions in the region. The Advisory Board should approve student projects.

The Advisory Board may have the following composition:

i.	Head of the Host Institution	Chairman
ii.	Member Secretary, NewGen IEDC Project, NSTEDB, DST	Member
iii.	Project Director & Co-Member Secretary-NewGen IEDC, EDII, Ahmedabad	Member
iv.	Two senior faculty members from Host Institution Preferably with Relevant entrepreneurial / Industry experience	Member
v.	Representative of a nearby Technology Business Incubator	Member
vi.	Representatives of SIDBI / NABARD / Lead Bank or Local bank	Member
vii.	Representative from Local Industry Association	Member
viii.	Two Alumni Entrepreneurs from the Host Institution	Member
ix	NewGen IEDC Coordinator	Member Secretary

14. Manpower for the NewGen IEDC:

Appointment of all the staff of NewGen IEDC would be on contractual basis. Their appointments are co-terminus with the project. There will be no liability of any sort whether direct or indirect on the coordinating and managing agency i.e. EDII, Ahmedabad and /or Department of Science and Technology, Government of India.

15. Evaluation, Performance guidelines and Reporting:

NewGen IEDCs would prepare an Action Plan for each year and fix physical and financial targets to be achieved during the year for submission to EDII, Ahmedabad. The Advisory Board of the NewGen IEDCs would meet, discuss and approve these plans and targets. The HI will also submit a report on the progress made by NewGen IEDC to EDII, Ahmedabad as per the schedule. Participation of the NewGen IEDC coordinators in the Annual Review Meeting is mandatory, when invited. Adequate travel grants have been provided for this in the annual budget.

16. Project Progress and Outcome:

The project, which started in the year 2017-18 has been doing extremely well as many institutions have reported excellent progress. Following are the highlights of the consolidated progress made under the project so far;

Sr. No.	Outcome	Total
1	Total number of Student Projects supported	**555**
2	No. of Patents filed by students	**135**
3	No. of Patents Granted	**5**
4	No. of companies Set up by Students	**73**

Highlights of the progress made by host institutions are given as under:

NewGen IEDCs Sanctioned during 2017-18

Sr. No.	NewGen IEDC	Progress Made	
1	Kuppam Engineering College, Kuppam, Andhra Pradesh	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	28 6 3
2	Ramachandra College of Engineering, Eluru Andhra Pradesh	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	25 10 3
3	Sasi Institute of Technology & Engineering, Tadepalligudem, Andhra Pradesh	* Total number of Student Projects supported * No. of companies Set up by Students	25 2
4	L J Institute of Engineering & Technology, Ahmedabad, Gujarat	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	52 2 2
5	Manav Rachna International University, Faridabad, Haryana	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	29 1 15
6	B. N. M. Institute of Technology, Bengaluru, Karnataka	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	34 8 5
7	University of Science and Technology, Ri-Bhoi, Meghalaya	* Total number of Student Projects supported * No. of companies Set up by Students	25 2
8	College of Technology and Engineering, Udaipur, Rajasthan	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	23 1 1
9	Dr. MGR Educational and Research Institute, Chennai, Tamil Nadu	* Total number of Student Projects supported * No. of Patents filed by students * No. of Patent Granted * No. of companies Set up by Students	25 3 2 6
10	National Engineering College, Kovilpatti, Tamil Nadu	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	22 22 2
11	Velammal Engineering College, Chennai, Tamil Nadu	* Total number of Student Projects supported * No. of Patents filed by students	40 12
12	Sphoorthy Engineering College Hyderabad, Telangana	* Total number of Student Projects supported * No. of Patents filed by students	27 8
13	GLA University, Mathura, Uttar Pradesh	* Total number of Student Projects supported * No. of Patents filed by students * No. of Patent Granted * No. of companies Set up by Students	43 20 2 4
14	University of Kashmir, Srinagar, Jammu and Kashmir	No Progress Reported So far	

Progress Summary

Sr. No.	Outcome	Total
1	Total number of Student Projects supported	**401**
2	No. of Patents filed by students	**93**
3	No. of Patent Granted	**4**
4	No. of companies Set up by Students	**45**

NewGen IEDCs Sanctioned during 2018-19

Sr. No.	NewGen IEDC	Progress Made	
1	Indian Institute of Technology (IIT), Guwahati, Assam	* Total number of Student Projects supported * No. of Patents filed by students * No. of Patents Granted	10 1 1
2	Marwadi University, Rajkot, Gujarat	* Total number of Student Projects supported	10
3	Jawaharlal Nehru National College of Engineering, Shimoga, Karnataka	* Total number of Student Projects supported	10
4	Datta Meghe Institute of Medical Sciences, (Deemed to University), Wardha, Maharashtra	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	10 6 3
5	Chitkara University, Rajpura, Punjab	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	15 8 3
6	Mar Ephraem College of Engineering & Technology, Elavuvilai, Tamil Nadu	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	10 4 2
7	Nehru Institute of Engineering and Technology, Coimbatore, Tamil Nadu	* Total number of Student Projects supported * No. of companies Set up by Students	10 7
8	S. R. M. Institute of Science and Technology, Kattankulathur, Tamil Nadu	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	19 7 4
9	C. V. R. College of Engineering District: Ranga Reddy, Telangana	* Total number of Student Projects supported * No. of Patents filed by students	17 2
10	Sumathi Reddy Institute of Technology for Women, Warangal Urban, Telangana	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	10 8 3
11	I. T. S. Engineering College Greater Noida, Uttar Pradesh	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	12 2 1
12	Indian Institute of Information Technology Allahabad, Uttar Pradesh	* Total number of Student Projects supported * No. of Patents filed by students * No. of companies Set up by Students	21 4 5

Progress Summary

Sr. No.	Outcome	Total
1	Total number of Student Projects supported	**154**
2	No. of Patents filed by students	**42**
3	No. of Patents Granted	**1**
4	No. of companies Set up by Students	**28**

17. **Institution wise progress report:**

NewGen IEDC
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION PROGRESS REPORT 2018-19

Name of the College/Institution hosting NewGen IEDC	Kuppam Engineering College
Name of NewGen IEDC Coordinator	Dr.G.N Kodanda Ramaiah
Contact Details of NewGen IEDC Coordinator • **Mobile Number** • **e-Mail ID**	Phone No: 9502686286 E-mail: gnk.ramaiah@gmail.com
Period under Review	2018-19

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	**"Entrepreneurship Awareness Camp [EAC]"** conducted by ECE, EEE, CSE, ME & CIVIL departments sponsored by NSTEDB,DST-NIMAT-2018-19. EAC Conduction dates of all 5 departments are; CSE Dept.: 21-02-2019 to 23-02-2019. EEE Dept.: 06-10-2018 to 08-10-2018 ECE Dept.: 21-03-2019 to 23-03-2019 CIVIL Dept.: 22-10-2018 to 24-10-2018 Mechanical Dept.: 28-03-2019 to 30-03-2019 Invited eminent personalities from EDII, Bengaluru, Industrial experts, officials from MSME, R&D directors & Successful entrepreneurs.	• Students have come to know the importance & benefits of choosing entrepreneurial route for socio-economic well-being. • Understood the need of "Thinking out of the Box" for creating Innovative idea's & also applying creative innovation to bring value for a product or service in the market. • Insight knowledge on Business plan preparation of an innovative idea. • Learnt about start-up opportunities and ease of doing businesses. • Exposure to the real work culture in the industries.
2	**"Innovation & Entrepreneurship Awareness Program"** conducted on 20th September, 2019. Resource person: Mr. Senthil Kumar, Founder of Gnana Business Services & Mr.Joy Joseph, Co-Founder of Gnana Business Services, Chennai. No. of Students Participated: 150	• Enabled the student's community to inculcate the spirit creativity & innovation in becoming future Techno-entrepreneurs. • Students have realized the significance of "Innovation & Entrepreneurship" to curb the future employment crisis. • Motivated many students to participate in various Innovation & Start-up contests. • The Program sparked the students mind to "Think out the Box"

Sr. No.	Activities	Outcome/Achievements
3	**Industry Visit to National Atmospheric Research Laboratory (NARL)"** an autonomous Research Institute funded by the Department of Space of the Government of India on 18th October 2019. NARL is engaged in fundamental and applied research in the field of Atmospheric Sciences.	• Industry visit enhanced the knowledge on innovative research activities. • Students are exposed to industrial equipment's and devices used in measuring, monitoring and controlling the tasks. • Few student teams developed their academic projects under NARL.
4	Two weeks National Level **"Faculty Development Programme on Enterpreneurship development"** Sponsred by Department of Science & Technology (DST), NSTEDB, under DST-NIMAT Scheme, conducted during 10-12-2018 to 22-12-2018 Invited eminent personalities from EDII, Bengaluru, Industrial experts, officials from MSME, R&D directors & Successful entrepreneurs.	• 20 faculties from various institutions with different technical background was trained. • Faculties gained knowledge on idea generation, innovation and product development stages, Business plan development of an idea, Protecting ideas through Intellectual property rights(IPR) like Patents, Copyrights, Trademarks etc. • Faculties trained under Two weeks FDP conducted Entrepreneurship activities in their respective colleges and few acted as Invitee speakers for Entrepreneurship Awareness camps held at other institutions.
5	Three day's workshop on "**Cyber Security Technologies based Innovations"** conducted on 25th to 27th February, 2019. Resource Persons: Technical Team, Edgate Technologies, Bengaluru.	• Students understood importance of Cyber security in adopting future technologies. • Learnt about various innovations on Cyber security. • Few students completed mini-projects on cyber security.

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	**"Idea Pitching Competition"**, As part of campaign to select the teams for the Smart Indian Hackathon, an internal hackathon was conducted on 29/11/2019. Mr. Syed Babu Ayzaz Hussain, CEO, SAPA Extrusion Pvt Ltd and Mr.Chandrasekhar, Founder Chairman of CEDEEC were invited as Event Judges.	• 121 students participated in the event. • 25 teams Presented, out of 25, 9 teams have been selected, 6 from software and 3 from hardware section • These 9 teams attended the Smart India Hackathon.
2	**"Design Thinking" Workshop** Held on 25/01/2020, by Dr. SHIVA KIRAN, Manager, Atal Incubation Centre-SK University, Anantapur.	• Students understood ways to Define the problem and then conduct rapid prototyping to gain stronger insights and uncover unexpected solutions • Learnt to effectively design to solve real business needs. • Learnt how to transform data and ideas into actionable ideas.
3	**"Minimum Viable Product Development"** Seminar by by Dr.S Varadharajan, A.P Higher education secretary and Mr. BV Srikanth, Deputy Project Manager, ISRO SHAR, During the Product Launching of early warning system for lightning strike pilot project on 13-08-2019.	• Students learnt elements of Minimum Viable Product (MVP). • Understood the importance of Frugal innovation for developing MVP. • Requirements of MVP.
4	**"Prototype Development final Stage Ideathon"** under Smart-Auto Bike Solutions Pilot Project by Mr. Yusuke Sawaki, General Manager, Asahi Denso (Manufacturer from Japan), & T. Yamato, C.E.O of World 1 Group. Conducted on 01.10.2019.	• Different teams presented various prototypes developed on Smart-Auto Bike Solutions Theme. • One teams selected for a cash award of Rs.90,000/-

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1	One day workshop on "**Intellectual Property Rights**" conducted on 10th January 2019 by Prem Charles I, Managing Director, Allinov R&D India(P) Ltd.	• Get to know what are the ways to protect our intangible/intellectual assets (like patents, Copyrights, trademarks, Geographical indicators & Trade secretes etc). • 4 Patents are filed by our student teams as a an outcome of the workshop.
2	**"IoT in Agriculture"** Two day's internship awareness workshop conducted on 24/09/2019 to 25/09/2019. Collaboration with Hewlett Packard Enterprises Bangalore and Agastya International Foundation. Resource Persons: Ashwin pandyala & R&D Team of HP Enterprises, Bengaluru.	• Total 20 students selected for internship on "IoT in Agriculture" CSR projected by HP Enterpises. • Students have gained more practical knowledge on using IoT as a service. • Started developing mini projects on IoT platforms. • Few students could able to development mobile applications on IoT for remote monitoring & control operations.
3	**"Idea-to-Market"** workshop by Mr.Chakravarthy, Senior consultant, Fusteps Technology,Bengaluru, on 14th March 2019.	• Students were enriched with various sources of Idea generation and idea screening. • Learnt different stages Product development. • Learnt about marketing strategies and commercialization channels.
4	**"Awareness on International Internships for students to enhance the Industry-Academia Collaborations"** by T. Yamato, C.E.O & Manish VG from World 1 solutions, Japan On 03/04/2019	• Students learnt the importance internship to enhance industrial ready skill sets to develop innovative ideas. • Industrial exposure on product development and execution.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

There are only few minor deviations or changes in the execution of activities and student projects according to the action plan submitted to EDII, they are;

i. Under initiatives/Activities undertaken section, all the activities/events conducted in three sub-sections are having different dates from the actual proposed date and also there is a slight change in the meaning & titles of few of the activities.

ii. Student Project Section:

Many student projects are executed according to the proposed action plan but, in few cases, execution has been successfully completed with few changes in the plan of action.

The important reasons for short deviation/changes in the execution of few projects are;

- As per suggestions by the National Expert committee members **Dr. Naveen Vasishta**, Scientist E, DST and **Mr. S. B.Sareen**, Project Director, DST- NewGen IEDC, EDII, we changed three projects 1. Automatic Car engine fire protection and failure lamp replacement system for four wheelers, 2. Isolation of Solar Panels during Heavy Lightning in Solar Power Plants, 3. Automobile smoke control using Electro Static Precipitator (ESP).
- **Reasons for Change of Projects:** 1. Automatic car engine protection & failure lamp replacement project idea was complex, less practical feasibility, failure rates are few 100's in a decade, low growth potential etc.

  2. Isolation of solar panels project idea has the same conceptual execution as that of Lightning strike & early warning systems.

  3. Electro Static Precipitator (ESP) idea was already executed in IIT Bombay.
- Two New Innovative Projects were added 1. Livewire Detector (Developed Demo product, patent filed, a startup company was registered, got product orders from WWF Jabalpur forest.

  2. Smart Bike – Theft and Accidental Notification (Demo Product developed for Asahi Denso, Japanee's company under smart auto bike solutions pilot project, Technology transfer has been done between Kuppam Engineering college and Asahi Denso Company)
- **Agri-Tech: Precision Technology for Economical welfare of Farmers:** As the project team is working with HP Enterprises CSR pilot project "IoT in Agriculture" for complete automation of IoT technology enabled agriculture at Installation Agastya International foundation, Gudipalle, this project is still under installation. Our project team has been under training, executing & implementing the project on stage by stage. Stage-1 task having design of soil property measurement & monitoring is completed successfully, Stage-2 Task having controlling parameters is under final stage and finally integrating all stage tasks on IoT app is under development.

3. Other important highlights (new initiatives), if any:

Kuppam Engineering College (KEC) R&D Centre and NewGen IEDC are working vibrantly through many initiatives in the field of Innovations & Entrepreneurship development, for upgrading the technical skill sets of science & technology students, to bridge the technical gaps between industry & academia by providing the quality education and training.

Few of the new initiatives are as follows;

1. MSME Business Incubator (MSME-BI)

Kuppam Engineering College (KEC) has been approved with MSME Business Incubator (MSME-BI) by PAMC, Ministry of Micro, Small and Medium Enterprises (MSME), Govt. of India on Jan 2020.

The Scheme provides opportunity to the innovators in developing and nurturing their new innovative ideas for the production of new innovative products. Host institute can explore the new innovative ideas from the Incubatee of various sectors which may be entrepreneurs or students from the any streams.

Objectives

The main objective of the scheme is to promote & support untapped creativity of individual and to promote adoption of latest technologies in manufacturing as well as knowledge based innovative MSMEs.

Nature of assistance

1. Financial assistance up to 15 lakh for developing and nurturing of an idea to Student/Entrepreneurs of the Institute.
2. Financial assistance up to 1.00 Cr. for procurement and installation of Plant and Machines in BI in order to strengthen the technology related R&D activities of BI.
3. Financial assistance of up to 1.00 Cr. as grants in aid for the seed capital support to HIs/BIs for converting deserving ideas in to start-ups.

2. Livelihood Business Incubator (LBI)

KES has applied for Livelihood Business Incubator (LBI) under ASPIRE scheme and waiting for the approval.

The main objective of LIVELIHOOD BUSINESS INCUBATOR (LBI) is to create jobs at local level and reduce un-employment by creating a favourable ecosystem for entrepreneurial development in the country. The main focus area under the livelihood incubation is to take up those commercial activities, which are need based to create enterprises in the rural areas of the country.

Objectives of LBI:

- To set up business incubators so that eligible youth can be adequately incubated in various skills and be provided the opportunity to set up their own business enterprises;
- To impart entrepreneurship, and skill development training to youth;

- To provide mentoring and hand holding with facilitation for funding with a view to empower them to set up own business enterprises.
- To promote new low-end-technology/livelihood based enterprises.

3. Intellectual Property Facilitation Centre(IPFC)

KEC applied for Intellectual Property Facilitation Centre(IPFC) & Awaiting for establishment grants. IPFC is a joint project of NRDC and MoMSME, which aims to promote awareness and adoption of Intellectual Property Rights amongst entrepreneurs and MSMEs in India while making accessible to high-quality IP services and Resources.

IPFC organizes training programs on specific themes relating to IP. Programmes are designed and coordinated by IPFC as per the need of the audience. Participants receive certificate of participation from NRDC. IPFC also arranges 'Free IP awareness talk for MSMEs' - to get an overview of IP and to sensitize and spread awareness on 'How to protect Intellectual Property'.

Objectives:

1. To Provide services such as IP protection, IP awareness & Training, consultancy & advisory services.
2. To provide assistance for "Technology Transfer" to faculty and or students, who have patents in their name and would like to commercialize it
3. To provide awareness about the protection and enforcement of IPR's from infringements.
4. To establish interaction between industries and academics in IPR.
5. To conduct various training programs/ seminars in academia for awareness on IP Rights.
6. To provide knowledge on patent drafting, filing and granting process among the student and faculty community.

4. Student Startup Companies Registered

1. "Kuppam Electro Solutions Pvt. Ltd" Student startup company registered for **LiveWire Detector** project idea**.**

2. "Damasmart (F2C)" Student startup company registered for Farmer-to-Customer online delivery service project idea**.**

4. Student Projects (Please provide the following details for each student project)

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
PROJECT-01: "CAMCULATOR"				
1	**Student Team:** **1.** B Syed Abdul Rahim (257195144148) **2.** J R Dheeraj Kumar (323674975173) **3.** C. Kalyan Kumar (234846685328) **4.** V.B Pavithra (459845826893) **Mentor:** Dr.G.N Kodanda Ramaiah HOD, Dept. of ECE **Project Description:** There is variety of digital calculators in the market ranging from simple to complex scientific calculators. But the fact is all the calculators are manually operated, need more time & careful attention to enter and calculate the desired math calculations. As the digital calculators are used by many sections of the society for numerous purposes like; In educational institutions especially, students use digital calculators to solve complex engineering problems, during the calculation erroneous entries & inadequate information about operation ends up with wrong results. Similarly, in vendor shops consumer goods/commodities are billed on plain papers & calculated manually leading to more time consumption in calculation due	**Conceptual Level** ➢ Feasibility study, discussed with Science & Technology students about CAMCULATOR idea. ➢ Technology description & Requirement elicitation ➢ Prepared detailed concepts Business plan.	➢ Project team had demonstrated the conceptual model to the Science & Technology students and shop vendors about the idea & further improvisation(feedback). ➢ The team has successfully developed proof-of-concept (POC) prototype, after the discussion with the PHOTOMATH (OCR Technology) Developers. The Team Leader B Syed Abdul Rahim participated 2 weeks online training program on "AI & Optical Character Recognition (OCR) Technology" and developed Improvised Prototype of CAMCULATOR.	➢ Developed **"POC Prototype"** ➢ Patent filing under process, Documents submitted for patent search and filing. ➢ Demonstrated the Prototype to the Many S&T students and Experts, R&D Directors for further improvisation (feedback) on the product. Discussed with; • Dr.Suresh Babu, CEO, TBI, Adhiyaman College of Engineering • Dr.Satish, CEO, Atal Incubation Centre, SKU-Ananatapur. ➢ To convert Prototype to Product and Commercialize through Start-up, applied for funding support under; o Idea of New India

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	to fear of mistakes. So, to address afore mentioned issues, we propose CAMCULATOR product to simply the process of math calculations automatically by simple scanning, which in turn saves the time, avoids fear of mistakes & maintains accuracy of calculated results.			Challenge-2020, innovate.myGov.in o MSME Business Incubation, through Kuppam Engineering College. MSME-BI.
PROJECT02: "E-PluginSense: Efficient solution for water wastage & utility in residential-Public places"				
2	**Student Team:** 1. P Vinitha (720613656702) 2. P.Manjunath Reddy (335599138748) 3. R Nethra (763028524849) 4. Hara Venkateswara Naidu (509907995811) **Mentor:** Mr.Santhosh B Panjagal Associate professor, Dept. of ECE **Project Description:** Now-a-days we have seen unnecessary water wastage & utility at both residential & public places due to many factors (irresponsibility, ignorance, timely unavailability etc.). To address the issues of Untimely and un-uniform water supply and billing management, we propose to design an electronic plug-in device for sensing water supply status, water utility management & controlling the water supply channels automatically. In absence of residents, E-	**Analysis & Conceptual level** ➢ Conducted Real-Time Survey to identify real problems attached to water utility & wastage ➢ Prepared Innovative solutions & technology description ➢ Project Roadmap & requirement elicitation ➢ working on Sensing/water Availability detection circuit ➢ Laboratory testing module is under development ➢ Prepared complete Business Plan of the Innovation.	➢ Project team had demonstrated the conceptual model to the Rural water supply (PWD) department and corporate building owners for possible adoption of the idea & further improvisation. ➢ The team has successfully developed proof-of-concept (POC) prototype, under the supervision of technical experts of Technologics, Bengaluru. ➢ The team was able to develop a customized "Demo Model" of the POC, after one of the team member K.Hara Venkateswara Naidu(team	➢ Developed **"Prototype Demo Model"** ➢ Patent filing under process, Documents submitted for patent search and filing. ➢ Demonstrated the Demo model to the Rural water supply (PWD) department (Panchayat office), corporate building owners and some rural residents for inception of the product. ➢ To convert Prototype to Product and Commercialize through Start-up, applied for funding support under; o Idea of New India Challenge-2020,

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	sense device will automate the water supply to underground sumps & overhead tanks based on sensing. Mainly to address the problem of un-uniform water supply, E-Sense device will measure the water usage of every residents & stores in the database for billing according to the water utility at the end of every month.		leader) undergone 2 Months internship on PCB Design & Embedded IoT, at Sanjay Technical Services Pvt Ltd. Hyderabad.	innovate.myGov.in o MSME Business Incubation, through Kuppam Engineering College. MSME-BI.
PROJECT03: "AI BASED ELECTRONIC EYES FOR BLIND PEOPLE"				
3	**Student Team (with AADHAR):** **1.** M S Chandana (**489303764071)** **2.** C. Manogna (**460895162229)** **3.** M. Sathya Kumar (**824349509784)** **4.** N.Shaziya (**923538219149)** **Mentor:** Mr. P Ajay Kumar Reddy Assistant professor, Dept. of ECE **Project Description:** In day to day life blind people are facing many problems while crossing the roads, Finding obstacles, Reading, Payments (Demonetization), Identifying Persons, Identifying medicines, Identifying the location etc. An AI based electronic eyes for a blind person is introduced. Camera	**"Analysis Level"** ➢ Feasibility of idea & its impacts on social wellbeing was discussed. ➢ Discussed with the official's ad school teachers of blind school for these product specifications. ➢ Business plan and financial analysis was planned.	➢ Approached Navajeevan Blind Relief Center, tirupathi for understanding the requirements in developing the model. ➢ Discussed with technical experts of Evezon India Private Limited for practical feasibility and technological implementations. ➢ Developed proof-of-concept (POC) successfully with the assistance of Mr. J. Yashwanth, CEO of Evezon India Private Limited in PCB designing and prototyping.	**"Demo Model"** ➢ Process in filing the Patent for the developed system. ➢ Participated in regional level IIC Innovation Contest 2019 held in Coimbatore in August 2019.

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	and Ultrasonic sensors are used in it. The webcam captures the objects/persons and by the Digital image processing technique it can detects the object and the browser finds the relative image. OCR converts the image to speech. Camera and Ultrasonic sensor gives the distance of the object from the person in different situations.			
PROJECT04: "Centralized ground water management system"				
4	**Student Team (with AADHAR):** 1.G Thulasi Ram (518711258352) 2.B. Srinath reddy (386859192556) 3. S. Swapna (805958253381) 4. S Ajith (846436737949) **Mentor:** Dr. S Nanda Kishor, Associate Professor/ Dept. of E.C.E. **Project Description:** Groundwater has emerged as the primary democratic water source and poverty reduction tool in India's rural areas. On account of its near universal availability, dependability and low capital cost, it is the most preferred source of water to meet the requirements of various user sectors in India. Ground water has made significant contributions to the growth of India's Economy and has been an important	**"Analysis Level"** ➢ Project Team interacted with farmers about ground water depletion problems in the land. ➢ Formulated the concept with cost effective solutions. ➢ Prepare business plan.	➢ Discussed with Farmers (nearly 50) of kuppam rural area, chitoor dist, Andhra pradesh with 10 questionnaires for Proof of Concept. ➢ For PCB design we are associated with S Technologies, Bangalore, ➢ The Project team has finally developed a "Demo Model" of the project.	**"Prototype Model"** ➢ The "Prototype model" is demonstrated at Atal Incubation Centre, S.K University, Anantapur (A.P) to draw the government attention for commercialization. ➢ Presented our model in front of COE Horticulture Department State Of Andhra Pardesh, P.B Natham,Kuppam, Andhra Pradesh

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	catalyst for its socio economic development. Its importance as a precious natural resource in the Indian context can be gauged from the fact that more than 85 percent of India's rural domestic water requirements, 50 percent of its urban water requirements and more than 50 percent of its irrigation requirements are being met from ground water resources. When ground water is very less, at that time when a farmer used a motor to pull the water it damage the motor or it dry the water source. Both conditions are not fine. We are designing a system which automatically control the motor when the ground water is less.			
PROJECT05: Track_ReFuel : "Remote monitoring of Fuel Usage, Theft & Refuel Alert System"				
5	**Student Team :** 1. K. Mounika (476601257254) 2. M. Saravana kumar (209225890671) 3. K Sai Bhavya Sree (713740819469) 4. Balavinay (453644512302) **Mentor :** Dr. D. Jaya Kumar, Associate professor, Dept. of ECE **Project Description:** In the recent days we are constantly hearing about petrol bunk frauds. Most of the petrol bunks today have manipulated the pumps such that it displays the amount as entered but the quantity of fuel filled in the	**"Analysis Level"** ➢ Feasibility of idea & its impacts on social wellbeing was discussed. ➢ Business plan: Target customers, market size, financial analysis, technical aspects, consumer analysis etc. discussed & prepared the roadmap. ➢ Level sensors were simulated in laboratory to	➢ Project team developed proof-of-concept (POC) prototype successfully, under the supervision of technical experts of Technologics Pvt. Ltd., Bengaluru. ➢ The Project team has finally developed a "Demo Model" of fuel monitoring system	**"Demo Model"** ➢ Submitted for Patent search. ➢ The "Prototype was demonstrated at in Project expo's and Idea competions held within and outside the college. ➢ Preparing for attending national level startup events to draw attention from angel investors.

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	customer's tank is much lesser than the displayed value. The pumps are tampered for the benefit of the petrol bunks owner. This results in huge profits for the petrol bunks but at the same time the customers are cheated. Some of the vehicles in India consist of analog meters hence it is not possible to precisely know the amount of fuel currently in the vehicle and also it is not possible to cross check the quantity of fuel filled in the petrol bunk. Our motive to focuses on creating a digital display of the exact amount of fuel flowing into the vehicles tank also when the fuel tank lock is opened the SMS will be send to the vehicle owner indicating the amount of fuel present in the tank, when the fuel tank lock is closed again the SMS will be send to the vehicle owner indicating the amount of fuel filled at the fuel filling station. So that it helps in cross checking the quantity of fuel filled at the petrol bunk.	check the filling status. ➢ Experimental set-up was developed .		
PROJECT06: "Electronic Braille Reader for Learners & Blind Peoples"				
6	**Student Team:** 1. B P yogeshwari (693001316512) 2. Y Madan Mohan (309773848161) 3. S Charan (752248424408) 4. E Pavithra (393747670066) **Mentor**: Mr.D Sivakumar Associate professor, Dept. of ECE	**"Conceptual Level"** ➢ Developed conceptual paper model and discussed with experts for improvisation. ➢ Prepared documents for filing the patent.	➢ Discussed with Navajeevan Blind Relief Center, tirupathi for Proof of Concept. ➢ For PCB design we are associated with S Technologies, Bangalore, ➢ The Project team has finally	**"Demo Model"** ➢ Patent filed with application number 201941031640 dated 05/08/2019 ➢ The "Demo Product model" is demonstrated

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	Project Description: Braille literacy statistics in India show that there are 15 million blind people in India, two million of who are children. In fact, one out of every three blind people in the world lives in India. So the major issue is educating the blind people. Due to financial condition it is often difficult for the families to provide necessary support for development of their skills. In day to day life blind people are facing many problems especially for learning Braille language. The teachers are getting exhausted when they want to teach the alphabets for the blind kids. So to overcome this problem simple device is to be designed where a teacher can teach the kids with less effort. The Main objective of this system is to teach the Indian local Language alphabet and numbers for visual impaired kids as fun with low cost.	➢ Prepared Business plan for the idea.	developed a "Demo Model" of the project.	at Atal Incubation Centre, S.K University, Anantapur (A.P) to draw the government attention for commercialization. ➢ Presented our model in the innovation festival-2020 at regional science Centre, tirupathi.
PROJECT07: "Agri-Tech: Precision Technology for Economical welfare of Farmers"				
7	**Student Team:** 1. K Siva Sankar (444785041434) 2. S Rajkumar (666761202164) 3. A Pavan Sree (432070723327) 4. K Ramya (954389974880) **Mentor:** Mr. V Harinath Associate professor, Dept. of ECE	**Conceptual Level:** ➢ Study of existing methods & Technology in traditional farming ➢ Interacted with rural farmers & Collected data for urgent need for	➢ Project team has been working HP Enterprises since 8 months on its Pilot Project "IoT in Agriculture" a Corporate Social Responsibility (CSR) project implementing at Agastya	➢ Proof-of Concept (POC): Stage-1: Measuring and Monitoring Sensor networks completed. Stage-2:Filed Parameter control system completed.

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	Project Description: Problems identified: The problems in present agriculture system are the Appropriate crop selection, Irrigation problems, Fertilizer problems, Lack of knowledge in Organic Farming and Unavailability of direct marketing systems. The main objective of smart agriculture is to make farmers to know about the complete information of the crops and how to grow them to get more yield and profits. We are making an app with the collected details. Where any person who taps the location, would get the details of the soil from database, and it would suggest various crops, which can be cultivated in that particular place. Also when he/she selects the crop, it would suggest them which is less cultivated and would get best demand, by showing figure of other crops cultivated percentage. When you select particular crop, it would suggest the entire procedure to do, like fertilizer (also a suggestion for best price & order), water, etc. by doing this anybody can engage in agriculture, also in future we can add pre booking of output yield. Also the entire system will be automated and can monitor and maintain through mobile using IOT.	precision technology in agriculture ➢ Developed detailed concepts on design & implementation.	International foundation, Gudipalle, to train & provide precision technology for the farmers. ➢ The team is undergoing training at Agastya International foundation, Gudipalle by the HPE team regularly and executing the Agri-Tech project stage by stage. ➢ Project team visited Centre of Excellence in Horticulture, Kuppam, an Indo-Israeli collaborative project and had discussion with experts on soil property characterization, crop selection based on soil type, water holding capacity of soil etc.	Stage-3: Integration & Testing at final stage, and also coordinating, monitoring all tasks on IoT is under final stage of development. Note: Real-Time Implementation of HPE project is in final stage at Agastya International Foundation. ➢ Project team had participated in a 2-days hackathon on "Agri-Tech solutions" and won 3rd prize for "Field specific Crop Management Precision solution" @ Atal Incubation Centre, S.K University, Anantapur on 23rd and 24th December, 2019.

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
PROJECT08: "Automated temperature monitoring and controlling system for poultry farm"				
8	**Student Team:** 1. P Puneeth (319374671881) 2. S Renuka Devi (651458333009) 3. P Praveen Kumar (771108584906) 4. E Asha (778563877441) **Mentor:** Mr. M Lakshmipathy Associate professor, Dept. of ECE **Project Description:** An automated temperature management system provides the continuous monitoring of the internal conditions of the farm by measuring the temperature humidity and air quality for every 10 seconds and compares it to the desired values set by the users to switch to the particular mode. Wastage of power and energy because of running coolers or heaters for a long time after the requirement is achieved.	Analysis 1. The problem is discussed in detail with the suguna poultry management and the data is collected from the farmers as well as from the management.	1. NewGen IEDC has created an opportunity to meet the experts in the afield of IoT. 2. The feasibility of the market is studied.	1. The demo model is prepared. 2. The device is installed in the nearby poultry farm. Collecting the data for further modification.
PROJECT09: "Solar powered Pest Repeller"				
9	**Student Team (with AADHAR):** 1. R. Pradeep Kumar (890556901337) 2. Vishnu Soman (771108584906) 3. R Rakshitha (286252610272) 4. Bibin Babu (283064222667) **Mentor:** Dr. K. Mahalakshmi, Associate professor, Dept. of ECE	**"Analysis Level"** ➢ Feasibility of idea & its impacts on social wellbeing was discussed. ➢ Concept of pest repeller were developed. ➢ Business plan: Target customers, market size,	➢ Discussed developed proof-of-concept (POC) prototype successfully with the experts from Atal Incubation Centre, S.K University, Anantapur for implementation. ➢ The Project team has finally developed a "Demo Model"	**"Demo Model"** ➢ The proposed idea has been presented in the AGRI-TECH Hackathon conducted by Atal Incubation Centre, S.K University, Ananthapur (A.P) on December 25,

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	Project Description: Agriculture is the main field and it plays vital role in our human's life. It decides the survival of human and other creatures. Now-a-days, farmers are using the pesticides to kill the insects those affect the crops in the agriculture land. As a result, most of the insects are killed by the pesticides but it may affect the farmers during the process and it changes the nature of grains, and other outcomes of agriculture field. In this proposed project work, solar powered pest repeller has been proposed. The proposed device consists of following components in its structure namely solar powered high voltage mesh circuit, LDR enabled UV lighting unit, adjustable stand and castor oil container. During the day time, the pests crossing this device may killed by the high voltage mesh circuit and some of the pests falling on the castor oil also will be killed. During the night time, LDR based UV lighting unit is switched on and it will attract the pests towards the device and it makes the pest killing process as easier process. The device height can be adjusted based on the crop growth. With the proposed device, the pests affecting the	financial analysis, technical aspects, consumer analysis etc. discussed & prepared the roadmap. ➢ High voltage circuit and adjustable stand with castor oil contained have designed and verified in the R&D laboratory of Kuppam Engineering College. ➢ Experimental set-up was developed in lab.	of Solar Powered Pest Repeller by consulting the various farmers and experts in agriculture field.	2019 and Won first prize of Rs. 1,00,000/-. ➢ The proposed idea is in process of filing for patent. ➢ The prototype model has been completed and field tested at farmers' land. ➢ The proposed work has been selected and presented in Anveshana 2020 conducted by Agastya International Foundation at Hyderabad after various levels of selection process. It helped in taking the attention of Government and other sponsors to promote this product. ➢ Selected and presented in the Tech and Innovation Fair 2020 conducted by IIT Madras ➢ Selected and presented in Innovation Festival 2020 conducted by District Science Centre, Tirunelveli conducted between January 23-25,

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	agriculture process can be controlled significantly.			2020.
PROJECT10 :"Lightning Detector & Early Warning System"				
10	**Student team:** 1. A Mahesh (818706097763) 2. E Nandini (437774240203) 3. K C Niroopa (213303596717) 4. N Sarala (919308375978) **Mentor:** Mr.M Ranjith Kumar Asst. professor, Dept. of ECE **Project Description:** Thousands of people are dying due to a natural disaster called lightning strike. The In late April this year, Andhra Pradesh recorded 36,749 (30,000 in previous year) lightning strikes over a period of 13 hours. Statistics from the National Crime Record Bureau show that more than 2000 people have died every year due to lightning strikes since 2005, compared to the average of 27 deaths in the US. It also leads to memory loss, severe headache; blow out eardrums, constant muscle twitches and severe nerve damage. The proposed system involves the design of lightning detector using IOT cloud, which helps the people to know the lightning strikes in advance through SMS alert/early warning through sound & visual	➢ Proof of concept/Prototype module of the idea was developed. ➢ SWOT analysis is under process for Minimum Viable Product (MVP) development ➢ Prepared the Business plan for "Idea-to-Marketing"	➢ The team had developed lighting detection system with the help of our alumni of E2Get Solutions. ➢ The team has worked with Startup company from Chennai and developed Demo Product under the guidance of ISRO Scientist B.V Srikanth, APSCHE Chairman S Varadharajan and Disaster Management team of A.P Government.	➢ Developed **"Demo Product"** ➢ Patent filing under process, Documents submitted for patent search and filing. ➢ Demonstrated the Prototype to the Many S&T students and Experts, R&D Directors for further improvisation (feedback) on the product. Discussed with; • Dr.Suresh Babu, CEO, TBI, Adhiyaman College of Engineering • Dr.Satish, CEO, Atal Incubation Centre, SKU-Ananatapur. ➢ To convert Prototype to Product and Commercialize through Start-up, applied for funding support under;

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	notifications to take precautionary measures to rescue themselves. It will intimate about the lightning strike before 40 minutes of time within 40 Kms range.			○ Idea of New India Challenge-2020, innovate.myGov.in ○ MSME Business Incubation, through Kuppam Engineering College. MSME-BI.
PROJECT11: "Damasmart: E-COMMERCE Application which directly Benefits Farmers And Promotes Organic Farming (F2C)"				
11	**Student Team (with AADHAR):** 1. K.V.Sanjana (563231709223) 2. S.Rachana (733287585471) 3. M.NirmalKumar(905570171916) 4. D.Bharath (913183551772) **Mentor:** K Ganesh, M.Tech, (Ph.D) Head of Dept. of ME **Project Description:** Our project is about an online platform which acts as a bridge between the **Farmers and Customers**. We collect the vegetables and fruits from Farmers and we supply the Fresh vegetables and fruits to the customers, so that there is no middlemen involvement. Thus, we can give to the farmers and even the customers can get fresh and organic Fruits and vegetables. Along with the Organic Fruits and Vegetables we are also a part in Online Food Delivery. When customers give an order through our application, then that	**Analysis Level** ➢ Feasibility of idea & its impacts on social wellbeing was discussed. ➢ Discussed with the farmers regarding their problems in the market and made a detailed report to those problems. ➢ **Business plan:** Target customers, market size, financial analysis, consumer analysis etc. discussed & prepared the roadmap.	➢ Project team also discussed with the employees who orders food to the Hotels and enquired about the Delivery charges charged by the Hotels. ➢ We made a contract with the Hotels regarding the food Delivery. ➢ We have come up with a new application which is available in play store. ➢ Minors set back in the applications ➢ We have come up with an updated application which is available in play store.	**"Application Product"** ➢ Developed Mobile application & Commercialized the mobile application product named "F2C". ➢ Registered the startup company "Damasmart (F2C)" ➢ Based on the customer feedback we are planning to expand the operations in new places. ➢ Interacted with Angle investors regarding the fund raising for scaling up operations

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	order would be delivered within 10-15 min with low delivery chargers.			
PROJECT12: "Live Wire Detector"				
12	**Student Team (with AADHAR):** 1. RITHIN K.THEDEVOS (705234988328) 2. BALARAJU GARI HEMANTH (7821 9909 6065) 3. CHRISTO.V.G (465902948601) 4. V.HARISH (802532747057) **Mentor:** Dr. K.Ramesh, Professor and Head/ Dept. of E.E.E. **Project Description:** Forest guards in Forest and other common people in various places get electrocuted due to electrical power lines and some of them lose their life by touching the electrical lines directly or when there is a leakage in supply lines. This proposed device will detect the electrical power lines and give the alert signal to the user. The proposed idea is to • Develop as a low cost handheld/ wearable device. • Detect the power lines before minimum distance of 10 feet • Give alert signal through buzzer and/or vibration unit to the user • Use an Emergency lighting system	**"Analysis Level"** ➢ Feasibility of idea & its impacts on social wellbeing was discussed. ➢ Concept of live wire detection has been developed. ➢ Business plan: Target customers, market size, financial analysis, technical aspects, consumer analysis etc. discussed & prepared the roadmap. ➢ Antenna and live detection components were designed. Experimental set-up was developed in lab.	➢ Discussed with technical experts of Technologics, Bengaluru for practical feasibility and technological implementations. ➢ Project team was able to developed proof-of-concept (POC) prototype successfully, under the supervision of technical experts of Technologics, Bengaluru. ➢ The prototype model has been developed as per the requirements given by World Wide Fund (WWF) for Nation, Jabalpur and is field tested at Bandhavgarh National park, Jabalpur	➢ The device has been developed as a Prototype Model. ➢ "Kuppam Electro Solutions Pvt. Ltd." Startup Company has been registered to promote this product. ➢ Won First prize in the Ideathon conducted by Atal Incubation Centre-SKU. ➢ MoU has been signed between Atal Incubation Centre-SKU, Ananthapur and the proposed startup company. ➢ Applied for Patent filing. ➢ The "Demo Product model" is demonstrated at Atal Incubation Centre, S.K University, Anantapur (A.P) and at World Wide Fund (WWF) for Nation, Jabalpur regarding Incubation work.

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	to see the Powerline in the path during night time • Use an additional electronic circuit for battery power indicator The proposed idea consists of a small device that can be attached to a walking stick/ patrolling stick or be carried in pocket/back packet or used as a wearable device that can generate an alarm sound when it detects a live wire (domestic power supply line) in the vicinity (maximum of 5m range).			➢ The project has been demonstrated at E-Summit 2020 conducted by Indian Institute of Information Technology to draw the government attention for commercialization and Won Third Prize. ➢ Presented the prototype model in Innovation Festival conducted District Innovation Centre at Tirupathi during Feb. 28- March 01, 2020. ➢ Applied for HACKSAGON 2020 conducted by IIIT and it has been shortlisted for second level of selection process.
PROJECT13: "Smart Bike – Theft and Accidental Notification"				
13	**Student Team (with AADHAR):** 1. DEVRAJ KUMAR (462782182196) 2. JITENDRA KUMAR (458238257378) 3. RAFI RIYAZ (762358061820) 4. DODDANNAGARI RAJITHA (544542607568) **Mentor:** Mr. V. Srimaheswaran,	**"Analysis Level"** ➢ Feasibility of idea & its impacts on social wellbeing was discussed. ➢ Concept of theft and accidental notifications were developed.	➢ Discussed with Asahi Denso (Manufacturer from Japan) in association with World 1 Group for the development of prototype model. ➢ Project team was able to developed proof-of-concept	➢ The proposed "Smart Bike – Theft and Accidental Notification" has been implemented in an existing vehicle model. ➢ The proposed work is in

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	Assistant Professor/ Dept. of E.E.E. **Project Description:** By keeping user's safety and vehicle safety in consideration, smart auto bike solutions have been developed in this prototype model. This prototype model covers the theft identification/alert system using GPS system, fuel indication using ultrasonic sensors, accident identification and notification using GPS and google map, mobile charging facility and fuel theft prevention unit. The prototype model has been developed using Raspberry Pi controller module and associated sensors and control units.	➢ Business plan: Target customers, market size, financial analysis, technical aspects, consumer analysis etc. discussed & prepared the roadmap. ➢ Node MCU and Blynk based control circuits have been developed. ➢ Experimental set-up was developed in R&D lab.	(POC) prototype successfully. ➢ The Project team has finally developed a "Demo Model" of Smart Bike Solutions by covering the Vehicle safety and user safety constraints.	the process of Patent filing. ➢ It won the First prize of Rs. 1,00,000/- in the Ideathon on "Smart Auto Bike Solutions" conducted by Asahi Denso (Manufacturer from Japan) in association with World 1 Group. ➢ Project covers new Vehicle and user safety features and is completed by Department of E.E.E. has been verified by Asahi Denso officials Mr. Yusuke Sawaki, General Manager, Mr. Suresh Gandhi, Deputy General Manager, Mr. Shalabh Jain, Engineering Manager in the presence of Mr. Tomoyuki Yamato, Founder Partner and Director of World 1 Group. Asahi in the presence of Kuppam Engineering College

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
				Chairman Mr.B.C. Nagaraj and Vice Chairman Dr. N. Sunilraj, Dr. S.Sudhakar Babu Principal, Dr. G.N. Kodanda Ramaiah, Director R&D, Dr. K. Ramesh, Professor and HoD/E.E.E. ➢ Transfer of Technology has been done between Kuppam Engineering College and Asahi Denso (Manufacturer from Japan).
PROJECT14: "Low Cost Seed Sowing Machine"				
14	**Team Members:** 1.C.Rajesh (371042381473) 2. B Muneesh (931990194785) 3.Sai yashawanth (309633795797) 4.G. Lokesh (266269113284) **Mentor:** NAGESH N M.Tech, (Ph.D) Dept. of Mechanical Engineering **Project Description:** The basic requirement of sowing machine: should be suitable to all farms, all types of corps, robust construction, also it should be reliable. Thus we made sowing machine which is operated manually but reduces the efforts of farmers thus increasing the	➢ Conducted real time survey to identify the real problems for seed sowing. ➢ Discussed with rural farmers about different seed sowing process. ➢ Selection of material requirement and mechanism. ➢ 4.prepared detailed concept (3D model) of seed sowing.	➢ Project team demonstrated the conceptual model to the rural farmers for suggestions and further improvisation. ➢ the team has successfully developed proof of concept model under supervision of technical experts of techonologies, Bangalore ➢ the team was able to design and fabricate a customized demo model of proof of concept ➢ This seed sowing machine	➢ Developed a proto type model ➢ Demonstrated the proto type model to the rural farmers ➢ The Demo prototype model demonstrated at agriculture university, Kuruburu, Chintamani ➢ Demo model was present at Atal incubation center Ananthapur, to convert prototype model to product.

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	efficiency of planting also reduces the problem encountered in manual planting. For this machine we can plant different types and different sizes of seeds also we can vary the space between two seeds while planting. This also increased the planting efficiency and accuracy. We made it from raw materials thus it was so cheap and very usable for small scale farmers. For effective handling of the machine by any farmer or by any untrained worker we simplified its design. Also its adjusting and maintenance method also simplified. This planter is very simple to use hence, unskilled farmer is able to handle this machine. We simplify the design also made it cheaper and affordable to every rural farmer. In this machine no wastage of seeds because every rotation of wheel according to the adjustment it allows the seed to fall into the hopper. We can adjust the depth. And also we can plant different sizes of seeds**. In this rack and pinion mechanism is more useful while rotating the wheel**		helps the farmers in large scale. Farmers can easily do their work, even an unskilled person can also work with this machine.	
PROJECT15 : "Automated sericulture Bed Monitoring System"				
15	**Student Team (with AADHAR):** 1. C. Harsha vardhan Reddy (333764099733)	**"Analysis Level"** ➢ Feasibility study, discussed with sericulture farmers to identify real	➢ Discussed with technical experts of Mindset Technologic, Bengaluru for practical feasibility and	**"Prototype"** ➢ Patent filing under process, Documents

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	2. K. Jabeer (574451889062) 3. V. Yugandhar (909678684583) 4. N. Jaya Chandra (680236301823) **Mentor:** Mr. Manoj Kumar Asst. Professor, Dept. of ME **Project Description:** In India, Sericulture is one of the most important agro and forest-based cottage industry earning a foreign exchange of Rs400 corers/annum and providing gainful employment to over six million people technically sericulture is rearing of silkworms either on mulberry or non-mulberry plants for production of silk. Today India is the second largest silk producer of raw silk and also has the distinction of being the worlds largest consumer of silk in India sericulture farming play a vital role in the improvement of rural economy there are many reason why our country is in second place in silk production? The main thing is the designing of sericulture farm that means Indian sericulture farmers wasting so much of floor space because of conventional farming technic. The conventional type beds consume the entire room and it is fixed. To overcome this we are implementing ABSF	problems about sericulture process. ➢ Selection of materials and mechanisms. ➢ concept of sericulture bed monitoring system has been developed ➢ mechanism and components were designed.	technological implementations. ➢ Project team was able to developed proof-of-concept (POC) prototype successfully, under the supervision of technical experts. ➢ Project team had demonstrated the conceptual model to the Rural technical experts for possible adoption of the idea & further improvisation ➢ The team was able to design and fabricate a customized demo mode.	submitted for patent search and filing ➢ "Participating the Ideathon conducted by Atal Incubation Centre-SKU ➢ The "Demo Product model" is demonstrated at Atal Incubation Centre, S.K University, Anantapur (A.P) ➢ The Demo prototype model demonstrated at agriculture university, Kuruburu, Chintamani

Sl. No	Team/Project Discussion	Project status at the beginning of the year	Interventions made	Current status
	(Automatic Bedshifter in Sericulture Farm).By implementing ABSF we can increase the number of beds. With a help of a switch we can shift the beds up to down &vice versa, so we can utilize the height.			
ADDITIONAL PROJECTS COMPLETED				
PROJECT16 : "Design and Fabrication of automatic pesticide sprayer with DOF"				
17	**Student Team :** 1.D.Harsha vardhan Reddy (**867278132210)** 2. G Vamsi (**995134598811)** 3. S Allimuthu (**242393200109)** **4.** Febin Sebastian (**808395665217)** **Mentor :** VINODA KUMAR.P Asst. Professor, Dept. of ME **Project Description:** In the case of pesticides spraying there are many innovations but they are causing small amount of burden. In order to solve such burden, some change is needed and that is done in this project. Keeping weight a part, age of a man plays a key role. Using this wheel pesticide sprayer, area covered is more for the same period of time so the time consumption is also less.	➢ Analyzing the marketing, Feasibility of idea & its effectiveness was discussed. ➢ Required data collecting from farmers ➢ We are studying on existing problem ➢ Preparing concept of wheel pesticide sprayer. ➢ Selecting raw material and develop an experimental setup. ➢ Based on existing problem and farmers suggestions we are going to develop a prototype	➢ For proof of concept we have to meet agriculture university at GKVK, Bangalore and Atal incubation centre CEO Mr Sathish Kumar for proof of concept ➢ We have simplified the design also made it cost efficient and affordable to every rural farmer ➢ Project team was able to do sprayer nozzle design ➢ For developing prototype model to meet turbo tech engineering solution. ➢ Tie up with small scale farmers in rural. ➢ For additional information to consult Atal incubation centre Ananthapur ➢ We have to go field test after completion of prototype model.	➢ The Demo prototype model demonstrated at agriculture university, Kuruburu, Chintamani. And Atal incubation centre, S.K University Ananthapur ➢ Collecting feedback data from farmers and experts ➢ We are going to develop proto type model to product level. ➢ Based on the farmer and experts suggestions we are going to scale up the model.

ENCLOSURE-I

Photos of Prototype/Product Modules along with students & Mentor Team

PROJECT01: CAMCULATOR

Project Team with Working Demo Model of CAMCULATOR

Demonstration of CAMCULATOR working by project team

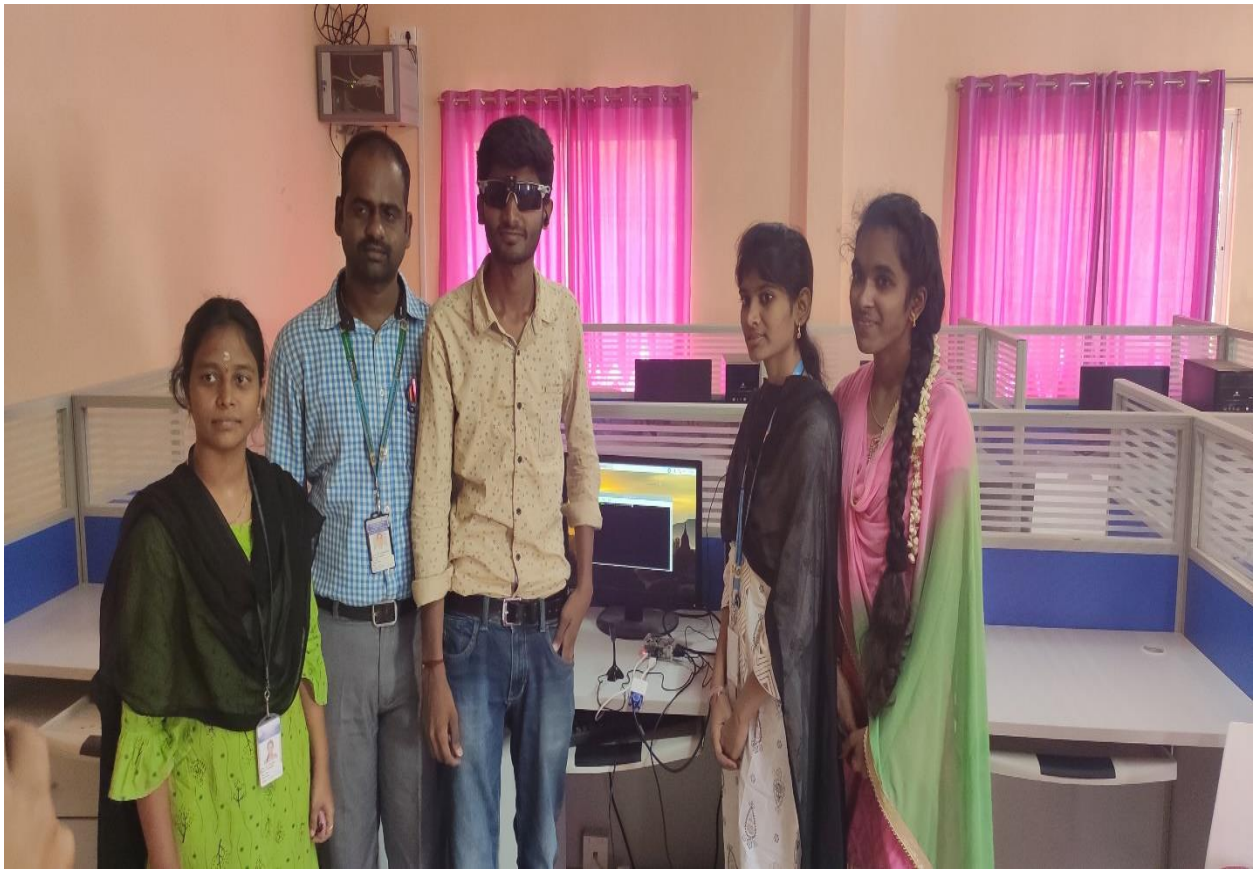
PROJECT02: "E-PluginSense: Efficient solution for water wastage & utility in Residential-Public places"

Project Team with Prototype Model

Testing E-PluginSense Prototype Model at water supply points

Testing E-PluginSense Prototype Model at water supply points

PROJECT03: “AI BASED ELECTRONIC EYES FOR BLIND PEOPLE”



Project Team with Working Prototype Model of AI Based E-Eye

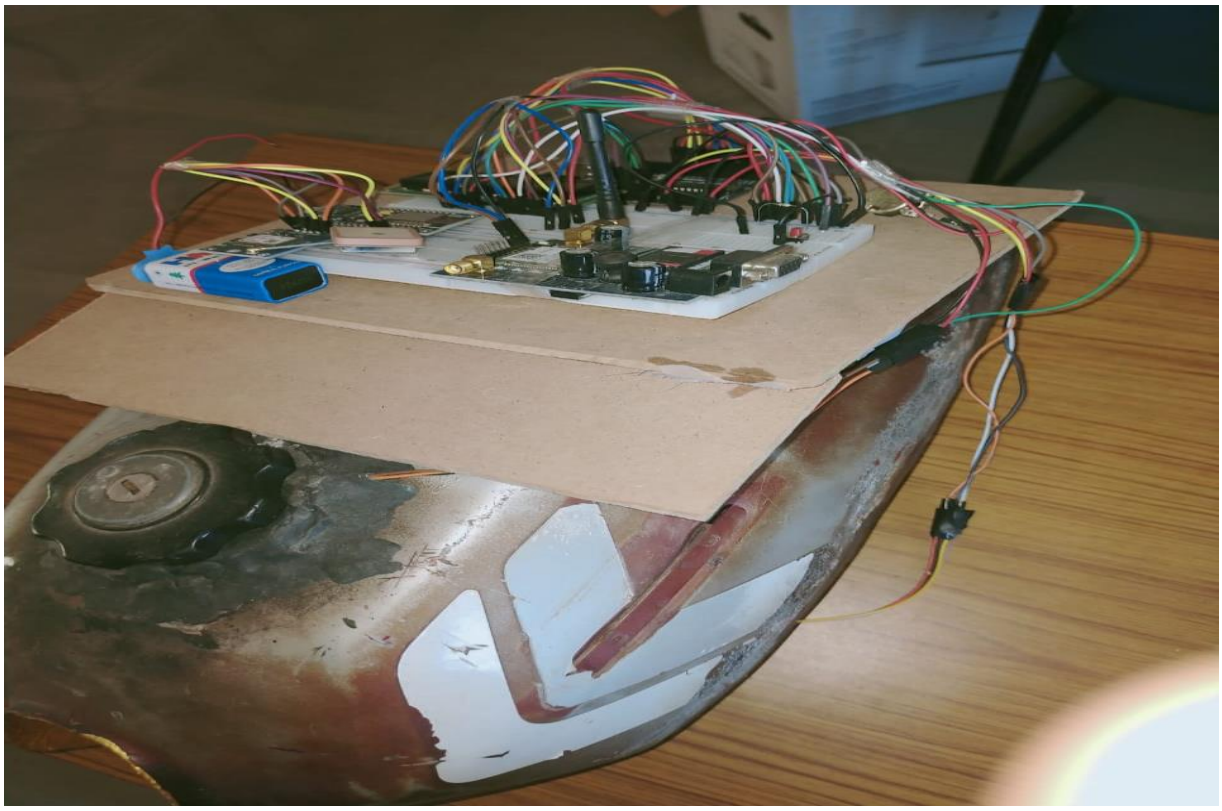
PROJECT04: "Centralized ground water management system"

Project Team with Working Prototype Model

Project Team with Working Prototype Model

PROJECT05: Track_ReFuel : "Remote monitoring of Fuel Usage, Theft & Refuel Alert System"

Project Team with Working Prototype Model



Prototype Model of Fuel-Theft monitoring system

PROJECT06: "Electronic Braille Reader for Learners & Blind Peoples"

Project Team with Braille Project Prototype

Presented Prototype in the innovation festival -2020 held at regional science centre, Tirupathi.

PROJECT 07: "Agri-Tech: Precision Technology for Economical welfare of Farmers"

Project team participated AGRI-TECH HACKATHON conducted by AIC SKU 24th December 2019 and team bagged 3rd prize.

Project demonstrated Sensors installed at Agastya International foundation under HP enterprises ‘IoT in Agriculture” CSR Project.

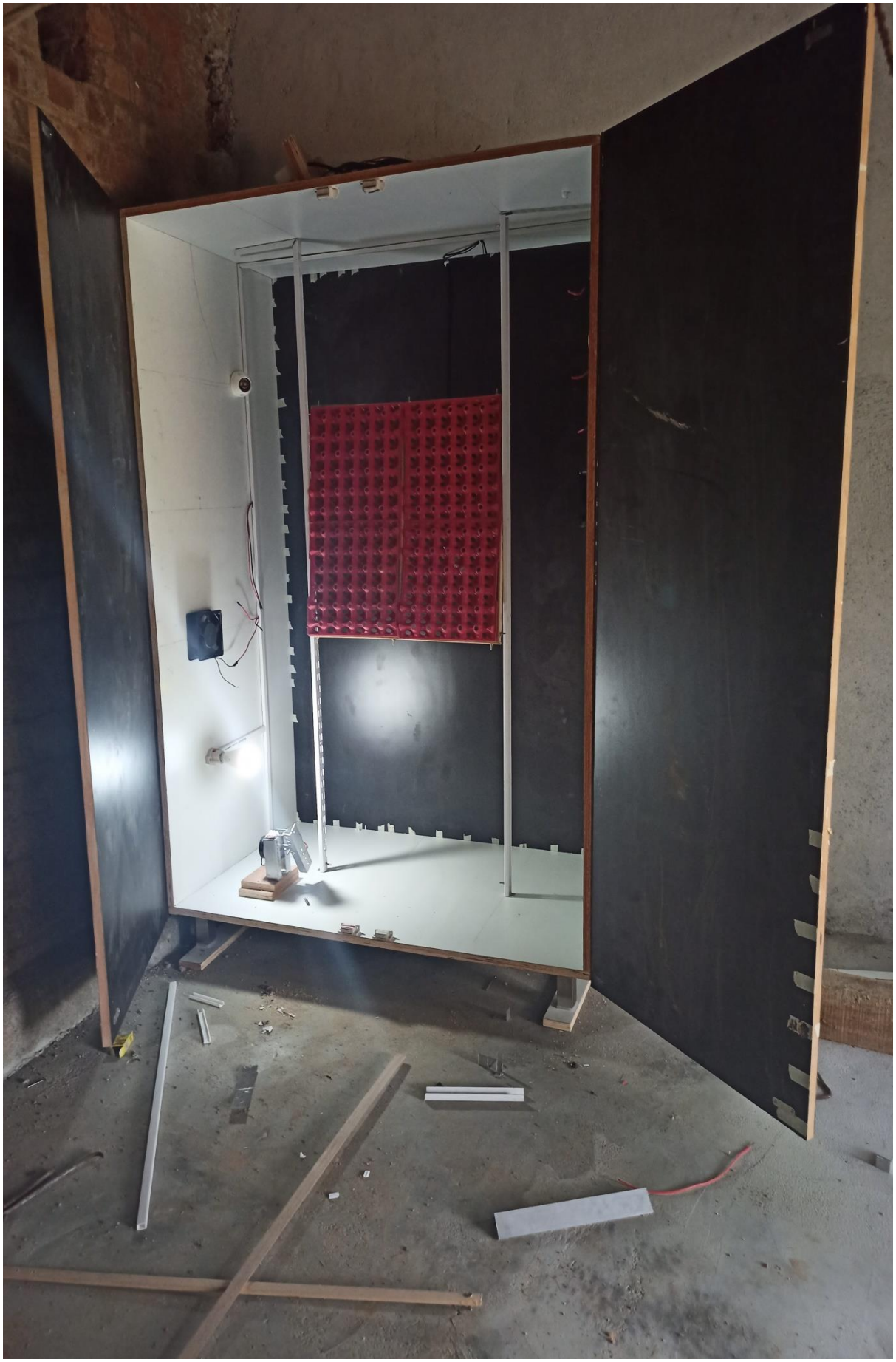
Project team selected for "IoT in Agriculture" CSR Project by HPE Entreprises during workshop held at KEC

Project Mentor Attended “Precession technology for Agriculture” event hosted by Centre of Excellence Horticulture an Indo-Israeli Project Chaired by Israeli scientists

PROJECT08: “Automated temperature monitoring and controlling system for poultry farm”


100% HARDWOOD


100 % HARDWOOD



PROJECT09: “Solar powered Pest Repeller”

Project team with the Demo Prototype Module

Project team Demonstrating the working of Pest Repeller Prototype Module

Pest Repeller idea was presented in the AGRI-TECH Hackathon conducted by Atal Incubation Centre, S.K University, Ananthapur (A.P) on December 25, 2019 and Won first prize of Rs. 1,00,000/-.

The prototype model has been field tested at the Agri-land

PROJECT10 :“Lightning Detector & Early Warning System”

Project Team with Lightning Detector & Early Warning System Product

Testing of the product through Mobile Application Commands

Technical demo and launching of early warning system for lightning strike pilot project inaugurated by Dr S Vardarajan A.P Higher education secretary, B.V. Srikanth ISRO scientist

PROJECT11: "Damasmart: E-COMMERCE Application which directly Benefits Farmers And Promotes Organic Farming (F2C)"

Project Team with Damasmart (Farmer-to-Customer, F2C) Application Product

One of the Project start-up team member explained the F2C business model to the Investor Mrs. D.A.Sathya Prabha M.D Mysore fruits Pvt Ltd for further fund Raising

PROJECT12: "Live Wire Detector"

Project Team with LiveWire Detector Demo Product

Project Team testing the LIVE wire using the Demo Product

Prototype was demonstrated by Dr.K. Ramesh, Project mentor at Bandhavgarh National Park, Jabalpur in front of WWF, Jabalpur officials on December 08, 2019

The Demo Product of LiveWire was presented @Business Model Canvas of E-Summit 2020 and Won 3rd Prize, conducted by Indian Institute of Information Technology, Allahabad (Prayagraj) during Feb. 7-9, 2020.

PROJECT13: "Smart Bike – Theft and Accidental Notification"

Project team with Smart Bike Prototype Model

Project verification by the officials from Asahi Denso Mr. Yusuke Sawaki, General Manager, Mr. Suresh Gandhi, Deputy General Manager, Mr. Shalabh Jain, Engineering Manager in the presence of Mr. Tomoyuki Yamato, Founder Partner and Director of World 1 Group.

Transfer of Technology has been done between Kuppam Engineering College (Innovator) and Asahi Denso (Manufacturer from Japan).

PROJECT14: "Low Cost Seed Sowing Machine"

Project team with Seed Sowing Prototype Model

Project team with Seed Sowing Prototype Model

PROJECT15 : “Automated sericulture Bed Monitoring System”

Project team with Seed Sowing Prototype Model

PROJECT16 : "Design and Fabrication of automatic pesticide sprayer with DOF"

Project with Pesticides Sprayer Prototype

Project with Pesticides Sprayer Prototype

Enclosure-III

Best Project Prototypes/Products/Start-ups Journey

Project Name: LiveWire Detector

i) Student team details (with contact information)

Sl.No	Name of The Student	Year of Study	Contact Details
1	RITHIN K.THEDEVOS	III	Address: 58/67, Kannaniyikkal House, Edwin Joseph Lane, Thevera, Perumanoor S.o 682015,Kerala,INDIA. Mobile: +91-8921138713 E-Mail: rithincr42@gmail.com
2	BALARAJU GARI HEMANTH	IV	Address: 1-32, Gonuguru Village, Kuppam Mandal, Chittoor District, Andhra Pradesh-517425. Mobile: +91-7993195750 E-Mail: hemanth15101@gmail.com
3	CHRISTO.V.G	III	Address: George v.v ,Varocky (House), Chalakudy , Thrissur, Kerala. Po:Potta Pin:680722 Mobile: +91-7012215718 E-Mail: christogeorge25@gmail.com
4	V.HARISH	IV	Address: Door No. 8/163, TB Road, Kuppam-517425. Mobile: +91-8074413807 E-Mail: harishbobby13@gmail.com

ii) Brief description about the student start-up

Start-Up Status:

A Start-up company named "KUPPAM ELECTRO SOLUTIONS PRIVATE LIMITED" with CIN: U36990AP2020PTC114222, dated 19/02/2020, Address: Kuppam Engineering College Mallanur Cross, Pedda Bangarunatham KUPPAM Chittoor AP 517425 IN.

Objectives of the Start-up to;

- Develop as a low cost handheld/ wearable device.
- Detect the power lines before minimum distance of 10 feet
- Give alert signal through buzzer and/or vibration unit to the user
- Use an Emergency lighting system to see the Power line in the path during night time
- Use an additional electronic circuit for battery power indicator

Designated Board Members of the start-up:

Name of the member	Designation
Rithin Kannaniyikal Tadevos	Chief Executive Officer (CEO)
Vijayan Srimaheswaran	Chief Operating Officer (COO)
Salvadi Nanda Kishor	Chief Marketing Officer (CMO)

iii) Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Start-ups entrepreneurial journey passed through the following two different stages with different activities undertaken to complete the project design & development process;

First Stage: (IDEA-to-Prototype)

- Project team & Mentor had discussed the specific problems the LiveWire idea addresses, innovations, practical feasibility, Commercial viabilities & social impact at the beginning of the year.
- Discussed with technical experts of Technologics, Bengaluru for practical feasibility and technological implementations.
- Project team was able to developed proof-of-concept (POC) prototype successfully, under the supervision of technical experts of Technologics, Bengaluru.
- Demonstrated the prototype model to many industrial experts, investors for possible intervention to take up to the product level. Following experts had given the feedback to improve the design aspects.

The proposed idea won the first prize in the hackathon conducted by World Wide Fund (WWF) for Nation in association with Atal Incubation Centre – Sri Krishnadevaraya University (SKU) on 18-06-2019.

Second Stage: (Prototype-to-Demo Product)

- MoU has been signed between Atal Incubation Centre-SKU, Ananthapur and the proposed startup company.
- Applied for Patent filing.

Prototype demonstration by Dr.K. Ramesh at Bandhavgarh National park, Jabalpur in front of WWF, Jabalpur officials on December 08, 2019.

The Demo Product of LiveWire was presented @Business Model Canvas of E-Summit 2020 and Won 3rd Prize, conducted by Indian Institute of Information Technology, Allahabad (Prayagraj) during Feb. 7-9, 2020.

Kuppam Engineering College - Official added 7 new photos.
Yesterday at 10:37 PM •

Five Project Teams of Kuppam Engineering College Participated E-Summit 2020 during 7th to 9th February, 2020 and Presented Business Model Canvas for Innovative Project Ideas developed under NewGen IEDC, KEC and Won 3rd Prize and Consolation prize for Projects respectively held @Indian Institute of Information Technology (IIIT) Allahabad (Prayagraj), Uttar Pradesh.

20

Like Comment Share

Presented the prototype model in Innovation Festival conducted District Innovation Centre at Tirupathi during Feb. 28- March 01, 2020.

స్మార్ట్‌గా క్లీనింగ్

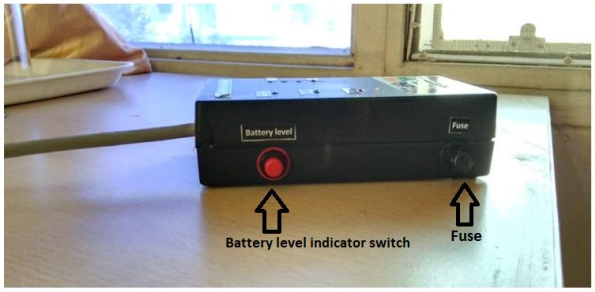
మ్యాన్‌హోల్స్ నుంచి వచ్చే గ్యాస్ కారణంగా పారిశుద్ధ్య కార్మికులు అనారోగ్యం తోపాటు చర్మవ్యాధులకు గురవుతున్నారు. ఈ నేపథ్యంలో మ్యాన్‌హోల్స్‌లో పూడికను తొలగించడానికి కుప్పం ఇంజినీరింగ్ విద్యార్థులు స్మార్ట్ డ్రైనేజీ క్లీనింగ్‌కు పరికరాన్ని కనుగొన్నారు. సెన్సార్, రిమోట్ సాయంతో నడిచే ఈ పరికరానికి కెమెరాను అనుసంధానించినట్లు విద్యార్థి తేజ తెలిపారు.

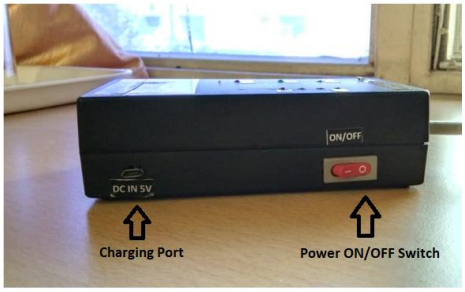
విద్యుత్తు ప్రమాదాలు దూరం

లైవ్ వైర్ డిటెక్టర్.. అటవీ శాఖ సిబ్బంది.. రైతులు.. అందులకు ఉపయోగ పడుతుందని విద్యార్థులు కోమల్ కుమార్, కార్తీక్ తెలిపారు. విద్యుత్ సరఫరా ఉన్న సమయంలో తీగలు తెగిపోయినప్పుడు అందులో ప్రవహించే వాట్స్ ఆధారంగా పరికరం ద్వారా శబ్దం వస్తుంది. ఆ ప్రాంతంలో విద్యుత్ తీగలు ఉన్నట్లు తెలుస్తుంది. రైతులు పొలాల వద్ద విద్యుత్ తీగల కారణంగా మృత్యువాత పడుతున్న వారికి ఈ పరికరం ఉపయోగకరం.

Eenadu epaper

Live Wire Detector Dem Product sent for final field test to WWF, Jabalpur.





iv)Contribution of NewGen IEDC in the same

The chief-coordinator & project coordinators of NewGen IEDC, KEC have played a key role in promoting the student idea to start-up level by bridging the industries with our institution.

Varies levels of support & contribution made by KEC, NewGen IEDC are;

- Provided the financial assistance to develop the prototype module of the project idea.
- Invited many industrial experts, R&D Directors, CEO's and Successful entrepreneurs for demonstrating the project modules developed by the students & sought the feedback for further improvement in the project design.
- Permitted the project team to work with R&D team of Technologics company to develop the proof-of-concept (LiveWire).
- Encouraged the project team to demonstrated the Prototype & Demo Product model is at Atal Incubation Centre, S.K University, Anantapur (A.P) and at World Wide Fund (WWF) for Nation, Jabalpur regarding Incubation work.
- Promoted the project team to take part in E-Summit 2020 conducted by Indian Institute of Information Technology to draw the government attention for commercialization and Won Third Prize.
- Promoted the project team to participate in all innovation & Entrepreneurship activities at free of cost.
- Provided industrial exposure by referring student teams to various companies for Internships.

v) Future plan

- To be a successful start-up firm for providing low cost, feasible and Reliable LiveWire product within 3 years from the date of company registration.
- Collaborating with all the Atal Incubation Centre and World Wide Fund (WWF) for Nation, Jabalpur, for introducing and Commercializing the LiveWire product.
- Increasing customers base through market expansion.
- Training rural youths & providing employment opportunities.
- Extending R&D activities to cope up with the future technologies.

2. Project Name: Damasmart(F2C)

i) Student team details (with contact information)

Sl.No	Name of The Student	Year of Study	Contact Details
1	KV.SANJANA	IV	Address:564nakkalapalli(v),bevanahalli(p) Hindupur(m),ananthapur(d), Andhra Pradesh,515201 Mobile: 9652526179 EMail:kvsanjana9491@gmail.com
[2	S.RACHANA	IV	Address:12-3-2,near chinamarket,opposite Nethaji school, hindupur, Anathapur,Andhra Pradesh, 515201 Mobile: 8886045983 E-Mail:S.rachana221998@gmail.com
3	D.BHARATH	III	Address:184,diguvamagham(v), thavanamtalli(m), Chittor(d),Andhra Pradesh, Mobile: 9550087529 E-Mail:medama1512@gmail.com
4	M.NIMAL KUMAR	III	Address:617/a,kenamakulapalli, shanthipuram(m),chittor (d), 517423 Mobile: 9989625277 E-Mail:nirmalrandy7@gmail.com

ii) Brief description about the student start-up

Start-Up Status:

AStart-up company named "Damasmart" with CIN: UAN AP02D0008765, dated01/09/2018,Address:KuppamEngineeringCollege,MallanurCross,PeddaBangarunatham KUPPAM Chittoor AP517425 IN.

Objectives of the Start-up to;

- Buying crops directly from farmers and supplying to customers
- No, middle person will not be their between the farmers and customers
- We can give best price to the farmers
- We can supply directly to customers through app, so they can save time

Designated Board Members of the start-up:

Name of the member	Designation
Director-1	Dama mithun (founder)
Director-2	Dama Bharath (CEO)
Director-3	Dr.K.Ganesh (COO)
Director-4	Dr.G.N.Kodandaramaiah (CMO)

iii) Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Start-ups entrepreneurial journey passed through the following two different stages with different activities undertaken to complete the project design & development process;

First Stage: (IDEA-to-Prototype)

- As, we have seen many problems which are facing by farmers in backward villages by not able to transport their crop for good price
- So, we decided to take the cropd directly from farmers and to supply the consumers through application
- At starting we have tied up with 50 farmers and we have given our numbers to some hostels, canteens ,local people and asked them that if you need any vegetables ew will delivery with best price and good quality
- We got succeeded in that and we got good response

Second Stage: (Prototype-to-Demo Product)

- By receiving a good response from the costumers we thought to start the application and to serve the customers through application
- But before investing the money in application development we thought to start the demo application
- So, we have purchased an readymade application and we have started our business
- Within short time we got huge orders and we got great support

- Nearly 5k ciustomers have downloaded the demo application

One of the Project start-up team member explained the F2C business model to the Investor Mrs. D.A.Sathya Prabha M.D Mysore fruits Pvt Ltd for further fund Raising

Project team held meeting with Investor Mr. Galla Ramachandra Naidu for further fund Raising.

Agreement made with Farmers for ensuring continuous supply of Fruits and Vegetables.

Project Team with Damasmart (Farmer-to-Customer, F2C) Application Product

iv)Contribution of NewGen IEDC in the same

The chief-coordinator & project coordinators of NewGen IEDC, KEC have played a key role in promoting the student idea to start-up level by bridging the industries with our institution.

Varies levels of support & contribution made by KEC, NewGen IEDC are;

- Provided the financial assistance to develop the prototype module of the project idea.
- Invited many industrial experts, R&D Directors, CEO's and Successful entrepreneurs for demonstrating the project modules developed by the students & sought the feedback for further improvement in the project design.
- Permitted the project team to work with R&D team of Technologics company to develop the proof-of-concept (Damasmart).
- Promoted the project team to participate in all innovation & Entrepreneurship activities at free of cost.

- Provided industrial exposure by referring student teams to various companies for Internships.

v) Future plan

- Expansion in metropolitan cities tire-1,tier-2,tier-3 cities.
- Planning ware houses in each and every village.
- Supplying the crop which we have collected from the farmers and transporting to metropolitan cities.

3. Lightning Strike Detection & Early Warning System

i) Student team details (with contact information)

Sl.No	Name of The Student	Year of Study	Contact Details
1	A Mahesh	III	Address: 10-694, Lingisettypalyam street Dharmavaram, Anathapur(dist) Mobile: 6281803437 E-Mail: mahesharakala1@gmail.com
2	E Nandini	III	Address: Near bharathi navodaya TM palyam ,punganur, Chittoor (dist) Pin code:517247 Mobile: 8790004428 E-Mail: nandudad1234@gmail.com
3	K C Niroopa	IV	Address: D. No : 4-96 Muddanapalli (post), Ramakuppam (mondal)

			Chittoor (dist), Pin code : 517401 Mobile: 9652421925 E-Mail: niroopa15@gmail.com
4	N Sarala	M.Tech	Address: N. Sarala Paibada, kuppam Mobile: 9959600951 E-Mail: sarala.sai5@gmail.com

ii) Brief description about the student start-up

Not Yet registered the Start-up Company.

As this project was developed in collaboration with Andhra Pradesh State Council for Higher Education (APSCHE), ISRO, SHAR, Disaster Management of A.P Government and a startup company from Chennai. After field trial and approval from the government and proceedings from all the collaborators, we will apply for startup registration.

iii) Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs.

Andhra Pradesh Government Successfully launched "VAJRAPAAT" a software application developed in collaboration with APSCHE, ISRO SHAR, Disaster Management, Costprize Online India Pvt Ltd and a team of Kuppam engineering college on July,2017. VAJRAPAAT App was only a software application which doesn't cover remote places and rural areas, therefore there was a need of Hardware device complementary and works in coordination with VAJRAPAAT Platform. In this regard Dr.S Varadarajan, Secretary, APSCHE and Mr.B.V Srikanth, Deputy Manager, ISRO SHAR, addressed our KEC students to come out with simple hardware solution for lighting strike early warning system at remote areas. As a result KEC team came out with an innovative idea "lighting Detection & Early warning system".

- Project team & Mentor had discussed the specific solutions, ways of innovations, practical feasibility, Commercial viabilities & Raeliability at the beginning of the year.
- Discussed with technical experts of APSCHE, ISRO Scientist for practical feasibility and technological implementations.
- Project team was able to developed proof-of-concept (POC) prototype successfully, under the supervision of Dr.S Varadhrajan, APSCHE and Mr.Srikanth, Deputy Manager, ISRO and KEC R&D team.

- Demonstrated the prototype model to many industrial experts, investors for possible intervention to take up to the product level. Following experts had given the feedback to improve the design aspects.

Dr.S Varadharajan, Secretary, APSCHE and Mr.BV Srikanth, ISRO addressing KEC students to come out with innovative hardware solutions for lightning early warning system.

Technical demo and launching of early warning system for lightning strike pilot project inaugurated by Dr S Vardarajan A.P Higher education secretary, B.V. Srikanth ISRO scientist

Demonstration of Lightning Strike & Early Warning System Hardware Product to Sri Pradyumna P.S., IAS, Chittoor collector

పిడుగులపై అప్రమత్తతే లక్ష్యం

❖ ఉన్నతవిద్య మండలి కార్యదర్శి డా.వరదరాజన్ ❖ కుప్పంలో పైలట్ ప్రాజెక్టు ప్రారంభం

యంత్రం పనితీరును వివరిస్తున్న డా.వరదరాజన్

కుప్పం పట్టణం, న్యూస్‌టుడే: పిడుగుపాటుతో సంభవించే మరణాలను నివారించేందుకు ఆంధ్రప్రదేశ్ విపత్తు నివారణ సంస్థ, ఇస్రో, కేఈసీల సంయుక్త ఆధ్వర్యంలో ప్రత్యేక అప్లికేషన్‌ను రూపొందించినట్లు రాష్ట్ర ఉన్నత విద్య కౌన్సిల్ కార్యదర్శి డా.వరదరాజన్ తెలిపారు. కుప్పం ఇంజినీరింగ్ కళాశాల (కేఈసీ) రూపొందించిన 'పిడుగులపై అప్రమత్తం చేసే యంత్రాన్ని' శనివారం ఆయన ఇక్కడ ప్రారంభించారు. ఈ సందర్భంగా మాట్లాడుతూ వర్షాలు కురిసే సమయంలో పిడుగులు పడి ఎందరో అమాయక ప్రజలు పిడుగుపాటుకు ప్రాణాలు కోల్పోతున్నారని, ముందస్తు సమాచారం అందించి అలాంటి వారిని రక్షించాలన్న ఉద్దేశంతో ఏడాది క్రితం పిడుగులు పడే ప్రదేశాన్ని ఇస్రో ఏర్పాటు చేసిన యంత్రాల ద్వారా కనిపెట్టి, కేఈసీ రూపొందించిన 'వజ్రపథ్' అప్లికేషన్ ద్వారా సమీప ప్రజల చరవాణికి అరగంట ముందే సమాచారం పంపుతున్నారన్నారు. మారుమూల గ్రామీణ ప్రాంతాల్లో సెల్‌ఫోన్ నెట్‌వర్క్ సమస్య ఉన్నచోట్ల, నిరక్షరాస్యులు, చరవాణి లేని పేదలు, వృద్ధులకు పిడుగు పడే సమాచారం అందించాలన్న ముఖ్యోద్దేశంతో 'పిడుగులపై ముందస్తు అప్రమత్త సమాచార యంత్రాన్ని' తయారు చేశారన్నారు. వజ్రపథ్ అప్లికేషన్ ద్వారా ఈ యంత్రానికి సమాచారం అందిన వెంటనే శబ్దం వెలువడుతుందన్నారు. ప్రత్యేకంగా ఏర్పాటు చేసిన ఏవియేషన్ బల్బు వెలిగి కాంతిపుంజం ద్వారా కూడా ప్రజలకు సమాచారం హెచ్చరిక అందుతుందన్నారు. ఈ యంత్రం ద్వారా కిలోమీటరు దూరం వరకు ఉన్న ప్రజలకు శబ్దం వినిపిస్తుందని, బల్బు వెలుగు కనిపిస్తుందన్నారు. ఇస్రో సహకారంతో ఈ యంత్రానికి కొన్ని మార్పులు, చేర్పులు చేసి పైలట్ ప్రాజెక్టుగా ఆవిష్కరిస్తున్నట్లు తెలిపారు. గ్రామ గ్రామాన దీనిని ఏర్పాటు చేసి ప్రాజెక్టు విజయవంతమైతే రాష్ట్రవ్యాప్తంగా అమలు చేసేందుకు ప్రణాళిక రూపొందిస్తున్నట్లు వివరించారు. ఈ కార్యక్రమంలో బీసీఎన్ విద్యా సంస్థల చైర్మన్ బీసీ నాగరాజ్, కేఈసీ వైస్ చైర్మన్ డా.సునీల్‌రాజ్, ఇస్రో శాస్త్రవేత్త శ్రీకాంత్, కేఈసీ ప్రిన్సిపల్ డా.సుధాకర్‌బాబు తదితరులు పాల్గొన్నారు.

కేఈసీ రూపొందించిన యంత్రం

Paper Clip published on Launching of Lightning Strike and Early Warning System.

Project Team with Lightning Strike & Early warning hardware system with mobile application

iv) Contribution of NewGen IEDC in the same

The chief-coordinator & project coordinators of NewGen IEDC, KEC have played a key role in promoting the student idea to Demo Product level by bridging the industries & Government with our institution.

Varies levels of support & contribution made by KEC, NewGen IEDC are;

- Provided the financial assistance to develop the prototype & Demo Product module of the project idea.
- Demonstrated to industrial experts, R&D Directors, AP Higher Education secretary, ISRO Scientist and IAS Officer, Chittoor.
- Extended all the support system for the project team to work with APSCHE, ISRO, Disaster Management and technical experts.
- Promoted the project team to participate in all innovation & Entrepreneurship activities at free of cost.
- Provided industrial exposure by referring student teams to various companies for Internships.

v) Future plan

- After the final Approval from the government and proceedings from all the collaborators, we will apply for startup registration.
- Planning to collaborate with Atal Incubation Centre, S.K University and NIDHI Technology Business Incubator (TBI), Aadiyaman College of engineering, Hosur for attracting angel investors and venture capitalists.
- Training rural youths & providing employment opportunities.
- Extending R&D activities to cope up with the future technologies.

NewGen IEDC
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC : NewGenIEDC-Ramachandra College of Engineering

Name of the Chief Coordinator : Prof. K. Venkatesh

Period under Review : 2018-19

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1.	Entrepreneurship Development Program	• Create Awareness on Entrepreneurship Development. • Information given about government schemes MSME & KVIC. • Successful Entrepreneurs shared their experiences with the students. • Advised students to identify the local domestic, agriculture, industry, individual problems and work on it.
2.	Women Entrepreneurship Development	• Importance of women as an Entrepreneur. • Schemes of assistance& support available from government to women entrepreneurs. • Successful women entrepreneurs shared their experiences with the students.
3.	Entrepreneurship & Intellectual Property Rights	• 10 teams are in process to file patents
4.	Entrepreneurship Awareness Program	• Entrepreneurial development programme (EDP) is a way to achieve the aforesaid goal. EAPs are planned programmes developed to identify, inculcate, cultivate, develop, and polish the capabilities and skills as the prerequisites of a person to become an entrepreneur. Students Motivated and Come with Society problem solve Technology for Next year Project proposals

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1.	IU-Tech Summit-2019, Narsapuram. Got Appreciation certificate and Prize for Technology enhancement in current trends	4 Projects exhibited in IU-Tech Summit Drone technology, Electric vehicles, Batteries, Fixtures, BLDC Motors.Got prize
2.	I-Tec, Reva University, Bangalore. Organized by IIC, MHRD.	Six Project Teams participated in contest and one project of Low cost battery production project Team got first prize for their technology
3.	Conducted Drone Technology Awareness camps in rural areas	Awareness camps conducted in 5 villages to create awareness about our product and marketing. (Darmajigudem, Singannagudem, Pinakadimi, Duggirala, Vatluru Villages)
4.	Smart India HACTHON	SIH Organized to develop problem solve capability to student

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1.	Interaction session with Aha 3D-Founder, CEO, Jaipur.	Program designed to Motivate the students to start a start-up and about 3D printing Technology
2	Interaction and training Program with Dr.Chandra sekhar, Program Director, Addwize,WIPRO-3D Bangalore,	Industry Interact session at Wipro Bangalore to analyze and to Know the current trends in Manufacturing.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

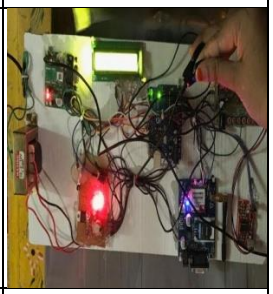
3. No Deviation as per the given schedule.Other important highlights (new initiatives), if any:

a) Given awareness on entrepreneurship, patents to 2000 participants
b) Conducted Workshop on innovation-aqua culture.
c) 15 Days Training Program on Machine Learning
d) Conducted Workshop on Drone Technology
e) Organized Technical program on Additive manufacturing Technology

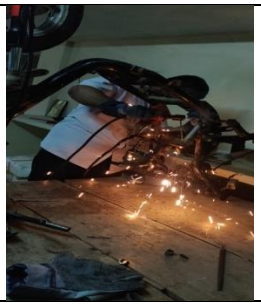
4. Student Projects (Please provide the following details for each student project)

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
1	**Project Title :** Automatic Self Booking Cylinder **Team Members** K. Yasaswini S.Moulika Preethi M.SaiKrishna Mohan P. Pavan Sai **Mentor : Jagan Mohan Rao S.** **Project Description :** The main objective of our project is to measure the weight of the gas cylinder continuously, and to book the new refill automatically by sending an SMS to the gas agency, as soon as the gas reaches to a set value	Idea to implement	With the idea, we developed the prototype with Arduino and load cells, which is working satisfactorily. Tested with 50 kg single load cell (Cantilever beam). Also tested with 4X10 kg load cells (bridge) and working satisfactorily. We tested the heat run test also.	Prototype model with Arduino is working satisfactorily. Also modified the device with Node MCU and trying to connect with Mobile, in order to reduce the cost of product.
	Photos			
2.	**Title of Project:** Industrial Safety Helmet	Idea to implement	With the idea, we developed the prototype with Arduino and 3D accelerometer for the safety helmet. Initially, we faced technical issues in	Prototype model with Arduino is working satisfactorily. Also modified the device with Node

	Team Members : M. Vamsi Srinivas N.M.V.Sai Kumar P.Sata vani sri M.Pooja **Mentor :** Jagan Mohan Rao.S **Project Description** The main objective of our project is providing immediate medical assistance to employees/workers in work place environments such as industrial or construction sites, when he/she meets an accident, due to falling objects or impact with other objects or accidental falling down or falling down because of illness, by alerting the medical team		integrating the accelerometer in 3 dimensions. Later, we succeeded and the developed model is working satisfactorily. We tested the heat run test also. In order to make commercialize, we thought of making it as a complete safety system suitable for all the employees in an industry. We changed the concept. The has to work with Wi-Fi integrated microcontrollers and with a single alerting system. Now we are working on the same and succeeded to the integration of helmet with Node MCU and 3D accelerometer. Testing and development of is in process.	MCU and trying to connect with centralized microcontroller, in order to reduce the cost of complete safety system.
	Photo			
3.	**Project Title :** Pulse in your hand using wireless communication **Team Members :** S.JanaPriya	Idea with Theoretical analysis	a.Adopted GPS technology b.Implemented GSM Technique c.Pulse sensing with Optic sensor structure	Developed working model Prototype

	N.Indira S.Divya Bindu V.L.Anitha **Mentor :** Sudhakar.P **Project Description** Pulse in your hand using wireless communication To design a system which continuously monitors the pulse rate of a person and notifies his family member if the condition is serious? It also requests the nearest hospital for an ambulance facility. When person was effected went outside then his location will be traced. Moreover the condition of the patient regarding BP, pulse rate can be seen in a mobile application. Owing to late diagnosis of heart attack we are inadequate to save the lives of many humans.			
	Photos			
4	**Title of Project:** Designing Of Dc-Dc Converters , Chargers , Digital	Ideology stage	The higher quality charger, converters & controllers are designed for electric scooty & bikes	Proto-type is developed and planning for mass development.

	Multimeters For Electrical Vehicles. **Team Members** 1.Gantasala Pavan 2.K.Pavan 3.Putti Tulasi 4.P.Ratna Kumar 5.Gollapudi sowmya **Mentor :** Dr. Dola Sanjay .S At present we are working on DC-DC Converters. The input of this Converter is connected to the battery which voltage is about 36volts-72volts dc.The output of this converter is connected to operate low voltage devices which voltage is about 12volts dc. In the market the cost of the converter is a bit high. So we need to design this with low cost and with good reliability and quality			
	Photos			
5	**Title of Project:** Designing of Fixtures for moped electric vehicles **Team Members:**	Ideology stage	The structure of the chassis is redesigned for retrofitted	Proto-type is developed and planning for mass development

	S.Bharath, K.Chaitanya Varma, B.Sujith, P.Madhubabu, P.Harika, **Mentor :** V. IndraTeja **Project Description:** Due to increase of pollution & decrease of fossil fuels, the interest towards electric vehicles is increasing day by day. Even though there are various new electric vehicle growth is slow. The major reasons for the slow growth is the customers are not willing to switch over to electric vehicles from traditional combustion engine since its efforts more money as well as un-usage of existing combustion vehicles.		electric vehicles.	
	Photos			
6	**Title of Project**: Pro MAC –Progressive Mechanised Air conditioning system **Team members :** G.Uma Naveen	Idea with Theoretical analysis	a. Adopted Sub cooling technology b. Implemented Evaporative cooling Technique c. Cooling pads with honey comb structure	Developed working model Prototype

	D Ravi sai E.Novah G.Sumanth **Mentor:** Bhavanarayana.K **Project Description :** Developed a technology to save the electrical energy by increase the efficiency of Air conditioner system. In the study of sub cooling technology, theoretically proved it has the feasibility to work in Ac. Air conditioner works on Vapour compression cycle our technology is placed in condenser.			
	Photos :			
7	**Title of Project:** Construction Of Low Cost Brushless Dc Motor For Moped Electric Vehicle **Team Members:** 1 P. Jaya Ram 2.B.Sowjanya 3.K.KusumaPriya 4.Ch.Nagaraju 5.G.Yamuna 6.B.Nanaji **Mentor:** Dr. Suryanaryana.V **Project**	Ideology stage only .	The higher quality motors are designed for electric scooty & bikes.	Proto-type is developed and planning for mass development

	Description: •When converting electricity into mechanical power, brushless motor are more efficient than brushed motor. It is due to better performance of position sensor. •Under high mechanical loads, brushless motors high efficiency. •The major drawback in brushless Dc motors is expensive than brushed Dc motors. •The various types of sensors used in BLDC motors are optical sensors, Magnetic sensors, Hall sensors and Capacitive sensors .			
	Photos			
8.	**Title of Project:** Drone Technology for Pesticide Spraying **Team Members:** P. Sai Harish G. Chiranjeevi **Mentor :** Mr.P Rajesh **Project Description :**			

	•An agricultural drone is an unmanned aerial vehicle applied to farming in order to help increase crop production and monitor crop growth. •By implementing drone technology, farms and agriculture businesses can improve crop yields, save time, and make land management decisions that'll improve long-term success. • Farmer's today have a variety of complex factors that influence the success of their farms. From water access to changing climate, wind, soil quality, the presence of weeds and insects, variable growing seasons, and more.			
	Photos :			
9	**Title of Project:** Fire and Smoke Detection in Tobacco Barren **Team Members :** Gaayathre	Idea with theoretical analysis	Added Water Sprinklers	Developed working model prototype

	G.LeelaDeepthi J.SravaniDurga B.P.Nagaambica Afreen Begum P.RaniSalomi K.Goutham M.N.R.S.Kamesh **Mentor :** Dr.M.N.Rao **Project Description:** To detect fire and smoke issues in tobacco using fire detection system.The innovative idea of our project, Many of the farmers where commiting suicide So we came with a idea that is nothing but a Fire and Smoke Detection In Tobacco Barren.When the fire detects in the tobacco barren fire detector detects the fire and we are using sprinklers which are used to sprinkle the water.The sprinklers won't sprinkle the water entire tobacco barren it only sprinkle where is the starting of a fire we place a nozzle at a certain place.So, That the nozzles will activate the and start sprinkling the water.So the tobacco			

	barren won't be filled with water			
	Photos :			
10	**Title Of Project :** **Team members :** M V S R Sudheer SK Kalesha Y K Kalyan I Venkateswara Rao **Name of the Mentor** : Mr. V Nagarjuna **Broad Area of the project** Aquaculture Technologies **Project Description :** Optimal Recirculation aquaculture systems (ORAS) represent a new and unique way to farm fish. Instead of the traditional method of growing fish outdoors in open ponds and raceways, this system rears fish at high densities, in indoor tanks with a controlled environment. Recirculating systems filter and clean the water for	Theoretical Analysis with Idea		

	recycling back to fish culture tanks			
	Photos :  			
				
11	**Title of Project :** Plastic to fuel conversion **Team members : Mentor : S.Sarma Project description :**	Theoretical Analysis with Idea	Evaluated the existed conversions Developed a simple condenser Optimized the condensation process	Proved prototype setup for plastic to fuel conversion technology
	Photos : 			
12	**Title of Project :** Advanced Thermoelectric water cooler **Team members : Mentor :** K.Venkatesh **Project Description :** Basically we are	Idea to develop in to prototype	Different variant of models evaluated according to capacit	Prototype developed

	using refrigerators for extract heat from any object, process is well known as refrigeration a refrigerant is working fluid to produce chilling effect, it consist of chlorofluorocarbons etc., it causes effect on environment when it was escaped to atmosphere: by eliminations the refrigerant in refrigeration process it will helps to save environment in one small factor. To overcome this problem we have to develop a refrigerator without refrigerant. By using peltier effect we aim to develop a system without a refrigerant. In the presented paper we make research on peltier based refrigeration to avoid above mentioned **drawbacks**			
	Photos :			
13	**Project Title:** CIL cards(comapct	Collect data from the	Data implementation technique is change by	-Location has to be set into

	information and live location). **Team Members :** G s s v vijaydeepak K sai sruthi J goutham sree ram P eswar kumar **Mentor name** G.Hari Hara kumar **Project description** The project is dealing with the complete information about the student's education and the live location of the particular student. The data is available to the parent by scanning a QR code that is assigned to the specific student.	schools and make website and generate QR codes.	software change	the id cards. -ID With software tagging is completed - Product ready with different variants of options
	Photos:			
14	**Title of Project :** Wireless Communication Network For Building Monitoring **Team members :** **Mentor :** R.Mehar Chaitanya, U. Venu, D. Sai Teja, A.Chandu Kumar, G.Sai Thrilok **Project Description**	Idea to develop in to prototype	Different variant of models evaluated according to capacity	Prototype developed

	: Advanced Design of Wireless Communication Network for Building Monitoring Apartments, Multiple storied buildings, Large Government offices, Shopping malls, Large educational institutions etc, where large people residing and servicing.			
	Photos:			
15	**Project Title :** Battery pack Assembling Unit for Electric vehicles and Drones **Team Members :** S. Tej mani pavan Ch. Chaitanya K. Krishna sashank K.Chaitanya Varma **Mentor :** Dr.J.Ranga **Project Description :** From the time Electric Vehicles (EV) came in to Indian market, the growth is slow but steady. This is due to huge initial cost. ▪Nowadays, the	Idea to develop prototype	Improved 1st prototype and conducted durability and some other tests on the battery pack and obtained best results	We are at the stage of start-up ,once if we commenced with start-up we can accelerate our sales into market

	most expensive part of an electric vehicle is the battery, which represents 25 ... 50 % of the price of the electric vehicle, depending of the technology used. ▪A decrease in the acquisition price of the electric vehicles is mandatory until it reaches a level closer to that of the internal combustion engine vehicles. ▪Which will determine a significate decrease in the acquisition price of the electric vehicles. ▪The costing of batteries is reducing in recent days but still it shares the major cost ▪The pricing of battery can be reduced by importing the cell of thebatteries and then assembling them			
	Photos:			

- Submit three/four high resolution (at least 300 dpi) pics in jpeg format showing the prototype/product along with the students and their mentor

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

- Student team details (with contact information)
- Brief description about the student start-up
- Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs
- Contribution of NewGen IEDC in the same
- Future plan

SUBMISSION OF PROGRESS REPORT BEST PROJECT-1

1. **Title of Project: Pro MAC –Progressive Mechanised Air conditioning system**

2. **Team Details**

Project Batch members:				
Sr. No	Roll no	Name	Email id	Mobile
01	1817ME5A0311	G.Uma Naveen	umanaveen0772@gmail.	833303941
02	1817ME5A0309	D.Ravi sai	Dudiravisai217@gmail.co	818686993
03	1817ME5A0310	E.Novah	elikanovah@gmail.com	888677645
04	1817ME5A0312	G.Sumanth	Gollapallisumanth123@g	773185482

Details of The Mentor				
Sr. No	**Name**	**Designation & department**	**Email id**	**Mobile**
01	Bhavanarayana.K	Assistant Professor, Mechanical Dept	bhavanarayanakotte@gmail.com	8333039416

3. **Project Description**

Air conditioning (often referred to as **AC**, **A/C**, or **air con**) is the process of removing heat and moisture from the interior of an occupied space, to improve the comfort of occupants. Air conditioning can be used in both domestic and commercial environments. This process is most commonly used to achieve a more

comfortable interior environment. In further days AC are becoming essential appliance for human, But AC electricity consumption is very high it will state a impact on power demand and financially. We aim to develop a technology to save the electrical energy by increase the efficiency of Air conditioner system. In the study of sub cooling technology, theoretically proved it has the feasibility to work in Ac. Air conditioner works on Vapour compression cycle our technology is placed in condenser. **Objective**: Developing a technology to save the electrical consumption in Air conditioners.

The market (the size of the market and its growth potential): We can clearly observe that how the air conditioners become a necessary appliances in our daily life. In the present market air conditioners are available with 2 to 5 star rating and recently inverter air conditioners are also available. This technology representing that air conditioners have low energy consumption and those will save energy. As compared that our product gives higher savings of electricity. When this product is fixed to inverter air conditioner then also it will saves energy. So, by this entire analysis we can easily estimate how much market potential our product has. Cost of product is 2000/-, It is also an additional feature and it will become best product with less cost.

4. **Project status at beginning of the Year**

   Idea with Theoretical analysis

5. **Interventions Made**

a. Adopted Sub cooling technology

b. Implemented Evaporative cooling Technique

c. Cooling pads with honey comb structure

6. **Current Status of Project**

   Developed working model Prototype

7. **Brief description about the student start-up**

   a. Conduct demonstration features of this product to customers and dealers
   b. conduct awareness program about this product to village peoples
   c. Printing and distribution of brochures
   d. Tie up with local Suppliers and dealers
   e. Creating publicity to our product at national level to get more investment for further development and up gradation.

8. **Start-up entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs**
9. **Contribution of NewGen IEDC in the same**

New GEN IEDC channelizes our knowledge and the energy of our team towards becomes active partners in the economic development process. It catalyzes and promotes development of knowledge-based and innovation things in my team and it help us to promote employment opportunities among the students

10. **Future plan**

Starting a start up by acquiring fund from financial support banks etc

11. **Submit three/four high resolution (at least 300 dpi) pics in jpeg format showing the prototype/product along with the students and their mentor**

12. Other important highlights

Air conditioning (often referred to as **AC**, **A/C**, or **air con**) is the process of removing heat and moisture from the interior of an occupied space, to improve the comfort of occupants. Air conditioning can be used in both domestic and commercial

environments. Based on analysis Ac consumes 2 unit energy per hour.

On average in domestic usage AC working hours = 5hr/day.

Total consumption =10 units/day.

Buy installation of Pro MAC technology in AC we can save 2.1 units/day on the basis of 5 hours of working per day.

PROFORMA FOR SUBMISSION OF PROGRESS REPORT BEST PROJECT-2

Title of the Project: Optimal Recirculation Aqua System

Project Batch members

Sr. No	Roll no	Name	Email id	Mobile
01	17ME5A0322	M V S R Sudheer	Sudheermallapureddy 595@gmail.com	7013592071
02	16ME1A0385	Y K Kalyan	courageouskalyan@g mail.com	9494499255
03	17ME5A0302	A Yashwanth Sai	Yash.amruthaluri@g mail. com	8074542486
04	16ME1A0350	I Venkateswara Rao	Ivenkatesh352@gmail.com	8639268280

Details of The Mentors

S.no	Name	Designation & department	Email id	Mobile number
01	Mr V Nagarjuna	Associate Professor- Mech(Dept)	nvalleboyina@gmail.com	8978571600
02	Dr. J S Suresh	Head Of Department - Mech	mechhod@rcee.ac.i n	9848499599

Optimal Recirculation aquaculture systems (ORAS) represent a new and unique way to farm fish. Instead of the traditional method of growing fish outdoors in open ponds and raceways, this system rears fish at high densities, in indoor tanks with a controlled environment. Recirculating systems filter and clean the water for recycling back to fish culture tanks. This report, Recirculating Aquaculture Systems, provides an introduction to Recirculating Aquaculture Systems (RAS). This closed-loop fish farming facilities that retain and treat water within the systems. This form of aquaculture is quickly gaining popularity in the United States. Recirculating Aquaculture Systems also provides commercial case studies of existing successful RAS operations in the United States. Optimal Recirculation aquaculture systems (ORAS) represent a new and unique way to farm fish. **Instead** of the traditional method of growing fish outdoors in open ponds and raceways, this system rears fish at high densities, in indoor tanks with a "**controlled**" environment. Recirculating systems filter and clean the water for recycling back through fish

culture tanks. Land-Based Recirculating Aquaculture Systems, provides an introduction to Recirculating Aquaculture Systems (RAS). RAS are closed-loop fish farming facilities that retain and treat water within the systems. This form of land- based aquaculture is quickly gaining popularity in the United States. Land-Based Recirculating Aquaculture Systems addresses why RAS could be an important method of producing more fish for the United States; highlights research, development and technical innovations in RAS; and discusses concerns and recommendations for the future of these systems. Land-Based Recirculating Aquaculture Systems also provides commercial case studies of existing successful RAS operations in the United States.

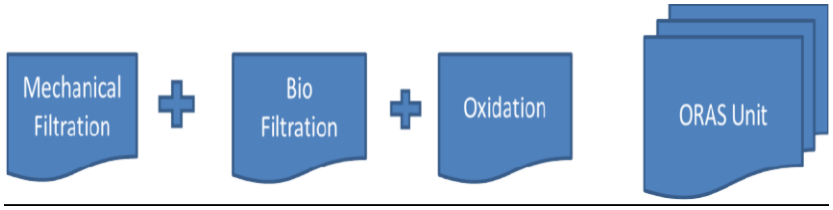
Consumer demand for cleaner, greener, safer seafood is on the rise. Many popular fish, like tuna, cod and certain snapper are depleted in the wild from many years of poor management, overfishing and other ecological problems like pollution and damage to key habitat areas. There is a need to supplement wild- caught fish to meet consumer demand for seafood. One method to produce more fish is known broadly as aquaculture — the rearing of aquatic animals in captivity. Aquaculture is also often called “fish farming,” as it can be likened to the farming of other food animals, like chickens, pigs and cattle. Aquaculture is increasing worldwide; between 2004 and 2006 the annual growth rate of this industry was 6.1 percent in volume and 11 percent in value. Fortunately, RAS can likely provide a cleaner, greener, safer alternative to open-water farms that does not compete with other ocean uses. These systems are usually land-based and reuse virtually all of the water initially put into the system. As a result, RAS can reduce the discharge of waste and the need for antibiotics or chemicals used to combat disease and fish and parasite escapes — all serious concerns raised with open-water aquaculture

This technology/process is classified into 3 different stages:-

Mechanical Filtration: Solid waste are separated from the waste water. In this project we used a old and effective conventional filtering method using various sizes of metal and sand.

Bio-Filtration: Ammonia contaminants are separated from water. Here we are using fab media and bio-balls in large quantities to create area for growing nitrification bacteria with converts ammonia into nitrites and nitrates.

Oxidation : Oxygen was added to the water. Here we use blowers to pump oxygen from the atmosphere to the deep water using air tubes and air stones for effective dissolve of oxygen into air. Thus, the waste water is turned into normal water by using this 3 stage process and we name it as **“Optimal Recirculation Aqua System”.**



Current status of the project

Using the prototype of the ORAS unit we conducted live analysis with around 9000 fishes in a pond with a volume of 3 lakh litre's of water for around 5 months of span.

The ORAS unit can actually filters the whole volume of the pond in about 36 hours and continuously turning the pond into fish friendly environment by reducing the solid waste , ammonia contaminants and also it balancing the oxygen levels in the pond.

And the growth of the fishes are also satisfactory but depending on the results we can improve the growth of the fishes for further by taking some extra measures.

Brief description about the student startup

From the Project ORAS (Optical Recirculating Aqua System) we are going to develop a Unit which supports aqua formers to farm their fishes at higher density with lower volume of area and water. And also reducing in chemicals with are used in conventional methods.

Our idea is to combine all the three filters into an unibody structure without any efficiency drop and also making it into cost effective for the customers (aqua farmers). For that we want to establish a start-up which has the capacity of building and assembling of various components used for our ORAS unit.

Start-up entrepreneurial journey from ideation to prototype

Start-up entrepreneurial journey from ideation to prototype

Contribution of NEWGEN IEDC

Actually NewGen IEDC RCE was the first board which identifies our idea and understand our proposal and their support us in every aspect from the beginning of the project ORAS prototype , In the Analysis of the outcomes of the project, Keeping safe the project 24/7 by providing us required security to it.

Future Plan

As we know that the aqua related exports from our country is **high and gradually** increasing every year.

Aqua farmers are high in number for example in our state we have around 65,000 ponds so, by implementing our Project/Product they can **easily double their production**.

AP itself having a great market for our product due to our neighbouring districts has approx more than 5000 ponds for aquaculture. So we make ORAS unit to cover the maximum market and production of the aqua culture by supplying our newly designed ORAS unit into the market.

NewGen IEDC
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of the College/Institution hosting NewGen IEDC	Sasi Institute of Technology & Engineering, Tadepalligudem		
Year of starting NewGen IEDC	2017		
Name of the Head/Principal of the Institution/College	Dr. K Bhanu Prasad		
Name of NewGen IEDC Coordinator	Dr. Krishna Chaitanya Nunna		
Contact Details of NewGen IEDC Coordinator • Mobile Number • e-Mail ID	9553100007 newgeniedc@sasi.ac.in		
Financial Details	Sanction Order No./ Date		Amount Sanctioned
Previous Sanction Order Details	1.	EDII/DST-NewGen IEDC/17-18/03 Dt. 15/06/2017	Rs. 47,50,000
	2.		

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	Seminar-cum-Meeting Conducted on 20-09-2019.	Students received objectives of New Gen IEDC and it's goals.
2	Individual team field trips for idea generation.	Students conducted case study for their idea practical applications

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	Project Idea Poster Exhibition	Students and mentors presented their ideas through poster and received comments and suggestions from audiences.

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1	Guest lecture by Mr. T V S Kishore Babu, Lead Archtect, Oracle, Bangalore.	Students learned management related ideas for successful organization.
2	Workshop on "Programming Languages for Idea development"	Students learned ideas in developing programming skills.
3	Participated in E-Summit at IITHyderad and IIIT Alahabad.	Students' idea and prototype is introduced to industry customers and received probable contacts for further production.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

A commercial exhibition is planned in the month of November and cancelled due to sudden changes in University exam schedule.

3. Other important highlights (new initiatives), if any:

One project got attention from IIT Hyderabad for startup establishment.

4. Student Projects (Please provide the following details for each student project)

S. No	Team/Project Description			Project status at beginning of the Year	Interventions made	Current status
1	Mr. V L N Sastry	S Raghu Sai P Mohan Krishna T Satya Manasa S Vasuki	Smart Energy Metering	Idea is developed and case study is performed	Budget and hardware estimation is completed	Prototype Completed and presented in commercial project exhibition
2	Mr. M. M. Swamynaidu	Nandamuri Suryachandrarao Siddhana Nagadurga Bhavani Nunna Naga Venkata Dasaradhi Yadlapalli Divya sri	GSM Based High Sensitive Alcohol and Pollution Detection with Auto Car Ignition Disable Function	Idea is developed and case study is performed	Budget and hardware estimation is completed	Prototype Completed and presented in commercial project exhibition

S. No	Team/Project Description			Project status at beginning of the Year	Interventions made	Current status
3	Mr. P Ajay Sai Kiran	R Amulya Sri Varsha K Sri Rama Krishna K Guru Prasad	Integration of Electric Ambulance to Grid (A2G) and Grid to Electric Ambulance (G2A)	Idea is developed and case study is performed	Budget and hardware estimation is completed	Prototype Completed
4	Mr. E V Sandeep	D Supriya E Janeesha B Dharani K Srishitya	Smart ID Card for Smart Campus	Idea is developed	Budget and hardware estimation is completed. Existing system is tested with real-time applications	Prototype Completed and presented in commercial project exhibition
5	Dr. P Kiran Kumar	S Eswar Prasad M Vinay Kumar S Farookh D Lokesh	A Cost Effective Grass Cutting Machine using IoT – Agriculture	Idea is developed	Budget and hardware estimation is completed. Existing system is tested with real-time applications	Prototype Completed and presented in commercial project exhibition
6	Dr N Krishnaraj	K Manikanata S NagaRajau D Rohit V PurnaSundeep	Smart Cradle	Idea is developed	Budget and hardware estimation is completed	Prototype Completed and presented in commercial project exhibition
7	Mr. G. Vijaya Raju	G Sai Bhargavi S Sumasri T Sai Suvarna V E N Sai lakshmi	Control of Road Accidents by Waste Tyres	Idea is developed and case study is performed	Interacted with traffic police and conveyed the importance of project. Budget and hardware estimation is completed. Existing system is tested with real-time applications	Prototype Completed
8	Mr. K Chiranjeevi	M Rajesh P Jyothi M Ramyareethika K Geethanjali	Estimation of the quantity of water require for crops	Idea is developed and case study is performed	Interacted with local farmers and presented the idea. Budget and hardware estimation is completed	Prototype Completed
9	Mr. B Kiran Kumar	M Ajay Kumar K Mani Kanta M Ramesh M S K Ganesh	Cocoa Bean peeling machine	Idea is developed	Budget and hardware estimation is completed	Prototype Completed and presented in commercial project exhibition
10	Dr. R B Choudary	G S Prasanna Kumari	Manual aquatic weed harvester	Idea is developed and	Budget and hardware	Prototype Completed and

S. No	Team/Project Description			Project status at beginning of the Year	Interventions made	Current status
		G Swathi N Krishna Kumari V Durga Bhavani K Kanthi		a prototype is tested using existing structures	estimation is completed	presented in commercial project exhibition
11	Mr. P Chaitanya Krishna	M Srinivasa rao K Naga vamsi M Sai rama Akhil L Tanuja	HUMANOID ROBOTIC BORE WELL RECUSE SYSTEM	Idea is developed and existing systems were studied	Budget and hardware estimation is completed	Prototype Completed
12	Mr. T Venkateswara Reddy	S Naga Sai Teja V S Sree Ram B Sesha Sai Kumar Gupta S Pavani Niharika	MEDICARE	Idea is developed	Budget and hardware estimation is completed. Programming part is started.	Prototype Completed
13	Mr. Y Himanth	K V R Sastry S Soma Shankar Ch Satya Krishna Sri K Leela Sri	Drainage Automation System	Idea is developed	Budget and hardware estimation is completed	Prototype Completed
14	Mr. G Swami Naidu	Ch Mohan Krishna K Sri Rama Chandra Murthy K Siddhartha Chadra Sekhar Sarma B Jaya Satya Ramya	Automatic Water Supply System for Sharing-basis Agriculture Farms	Idea is developed	Idea is developed and case study is performed	Prototype Completed
15	Mr. B V Pavan Kumar	I Sri sai Nikitha A Sri Teja B Yazna Sri Ch H Satya Sri Ram	Automatic Vehicle Accident Detection and Messaging System to nearest Hospital	Idea is developed	Idea is developed and case study is performed	Prototype Completed

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

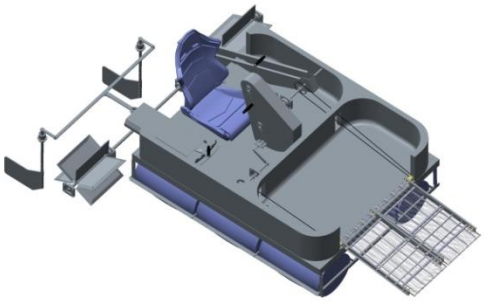
The following projects were implemented and two best projects identified are (Details are discussed in the following pages):

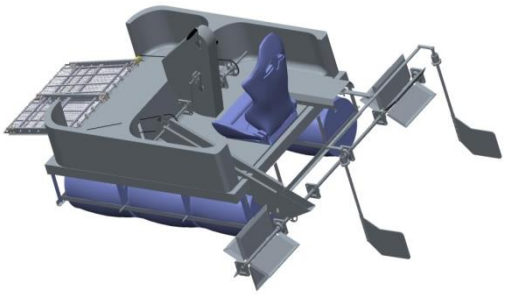
1. **Project Name: : Pedal Operated Aquatic Weed Harvester (AWH)**
   Mentor Name: Dr. R B Choudary, Dept. of ME

Project Abstract

This report describes the design, manufacture and testing of a manual aquatic weed harvester suitable for small ponds and irrigation canals. A pedal raft, with a conveyor attached to the front, was made with recycled parts. Accessories available include weed trays, a water filter, sludge management chains, weed trimmers, weed traps and more. The harvester can clean a water surface of 90 x 90 meters per hour at a speed of 3.04 m / min.

Keywords: Pedal operated system; Aquatic weed; Harvester





Innovativeness of the Proposed Solution

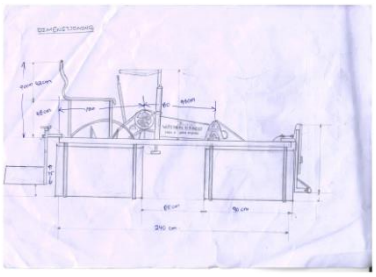
The PVC drums are collected from lubricant sellers. The square pipe used for frame, square mesh, steel rods, cables, etc. are collected from recycled parts. The harvester can be used for feeding fish, emergency personnel evacuation purpose.

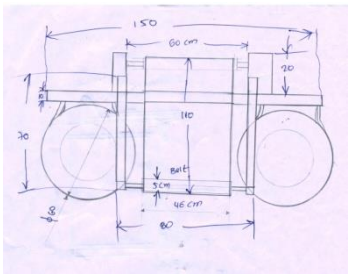
Impact of the proposed solution

The manual aquatic weeder will be used by capture fisheries (feeding), water sports resorts (pleasure, fishing), harbours/ponds/canals (cleaning). It works on "clean the weed in the early stage" principle and avoids huge cleaning cost in later stages.

SWOT Analysis

Strengths	Cost cutting
Weaknesses	Cheap look
Opportunities	Fishing, rafting
Threats	Legal issues





Pedal boat with conveyor

Working phenomenon : The weeder is pedaled near to the aquatic weeds run it against the weeds. The belt conveyor collects weed plants and collects them into a tray. Once the tray is filled unload them on the bank.

Precautions in operating prototype/product

- Wear life jacket
- Use gloves
- Apply grease to chain, bearings and other moving parts

2. **Project Name:** Smart Energy Metering
Mentor Name: Mr. V L N Sastry, Dept. of EEE

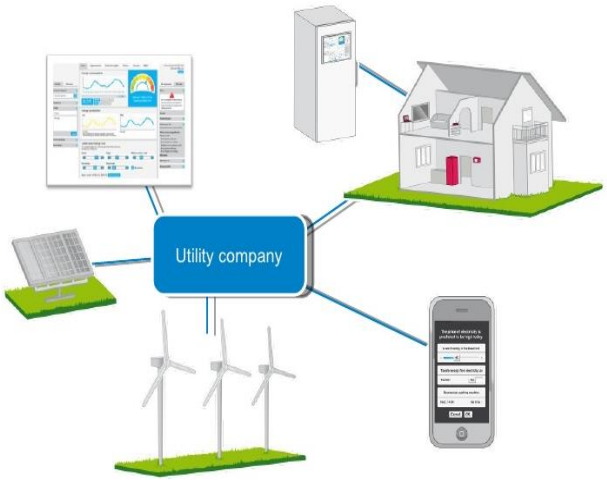
Project Abstract

The power demand is increasing tremendously day by day. In order to install new power generation units which incur huge costs, it is better to identify off-peak loads and suggest the consumers to utilize the off-peak time by announcing tariff discounts besides reducing transmission losses. This emphasizes the need for collecting categorical electrical consumption of households which also facilitates accurate and economic method of measuring electrical consumption by consumers. This project aims at designing a smart switch (which can measure power consumption and communicates to central device through some sort of communication) and/or smart modular electrical board along with smart meter.

This work presents a smart energy meter along with a categorical data analysis of each load for an automatic and superior metering and billing system. The integration of the Arduino, GSM Short Message Service (SMS) and Internet of Things (IoT) provide the meter reading system with some automatic functions that are predefined. The proposed energy meter system can incorporate with embedded controller and GSM modem to transmit the data like consumed energy in kWh, generated bill, security services (line Cut/On) over GSM mobile network such as data can be then fed and integrated into existing energy management systems located at power companies or organizations to provide the services among the customers without man-power. The categorical analysis of meter reading can also enable the distribution company to class the users into various categories and the billing can be done based on the category. So that this technology will uplift the people which are below the poverty line.

Keywords

Smart Energy Meter, Internet of Things (IoT), power loss, Categorical Analysis, GSM, Arduino.



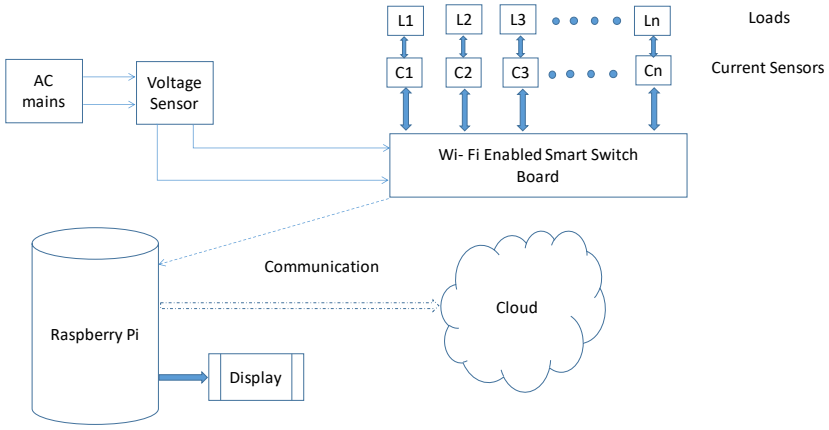
Proposed method of Smart Energy meters:

In the proposed method we would like to concentrate more on the categorical data analysis by using a smart switch. The smart switch is a Wi-Fi enabled device and it can be utilized to trace the readings of each load where it is connected and given to the central server. Till now all the smart energy meters was show the consumption of a particular

house as a whole. But the proposed meter will give the consumption based on the category of the load. This feature of proposed meter will enable the user to either switch on and off the particular device which can cause more utilization of energy. In the same way the utility company will categorize the consumers as various levels based on the loads and consumption of each load. This will ensure the utility company such that the tariff of the consumers may varies based on the level of consumers.

Innovativeness of the Proposed Solution

- Wi – Fi enabled load for better access to the load pattern
- Categorical consumption analysis of loads.
- Communicates relevant consumption estimates and tariff data to the user via an LCD
- Is able to forcibly remove power to non-essential loads on behalf of the utility.



SWOT Analysis

Strenghts	Weaknesses
Existing clients Know-how about metering Project management skills Legitimacy to manage data lifecycle from end to end	Skills (IT, broadband, etc.) Deep operational impact – change management added value needed
Opportunity	**Threats**
Strongs drivers : technology, customer, regulator, smart grid and smart city effect Starting point for a revolution in the business : new offers, new business models (tarifs, etc.) Better asset & ressource management	No standards Relies strongly on technology and IT issues Ability to meet the deadlines (complexity) Strong and established business case to create New competitors Privacy issues Assets owner strategy

Prototype

NewGen IEDC

Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC	**:**	**L.J INSTITUTE OF ENGINEERING & TECHNOLOGY NEWGEN IEDC**
Name of the Chief Coordinator	**:**	**Ms Debopriya Chakroborty**
Period under Review	**:**	**November 2018 to October 2019**

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	IoTthon	A workshop aimed at developing the skills of students in the domain of Internet of Things. During this workshop, they learned interfacing of sensors with cloud and techniques to collect data from remote places.
2	Presentation skills	It was organized for students of all branches. During our incubation interactions, we noticed a lot of void in the presentation skills of students. Thus we planned and came up with a 2 day workshop on presentation skills in which we included refining the presentation pattern of the ideas with better clarity and confidence.
3	IoT Plug & Play	IoT being one of the emerging technologies, we found many students interested in involving this technology in their projects. But we also found that these students don't have much clarity about the in and out of the technology. Plug and play IoT, a session which gave them much breakthrough about the basic understanding of how IoT works in solving user problems.
4	Virtualty into reality	During the preincubation phase of our projects we have released rapid prototyping as a very important step in the pre commercialization phase. Never the less, rapid prototyping involves much more than just 3D printing. We aimed to created an atmosphere where we can provide an amalgamation of software and hardware portions of product designing, hence the session virtualty into reality
5	Architype	Find problems is an art which needs to be developed and to do this, we conducted a week long process where students were asked to visit places and find problems and then prepare a solution around it.
6	Stadd Pro	Civil engineering being the core engineering branch and the backbone of development of any country. But it still lacks innovation

Sr. No.	Activities	Outcome/Achievements
7	Design Thinking Workshop	Some of the world leading brands such as apple, google and others follow the design thinking approach in growing their businesses. The best part of design thinking is, it doesn't have an exclusive right to be owned. It is a though process which needs to be imbibed irrespective of being an innovator or not. This workshop aims to empower the participants with pragmatic tools and techniques to enhance creative thinking and innovation in their budding businesses or even routine activities to obtain superior results.
8	Falcon (The Robotics Club)	Robots, Robotics …. A fascinating world of excitement, technology and development. In L.J.I.E.T, Robotics club named – "FALCON" which participates in regional, national level robotics events and also does robotics workshops. The journey of Robocon started from 2013 with a bunch of enthusiastic students. ROBOCON is an annual international robotics event conducted by Asia-Pacific Broadcasting Union (ABU) in different countries. Every year a new theme is introduced which brings about a fresh vibe in all the robotic-nerds. Generally, the theme of Robocon represents the culture of the country hosting the event. One team from each country represents and competes in the competition.
9	Blackhawks (The Automotive Club)	Team Blackhawks is a team of L.J. institute of engineering and technology. The team consists up to 25 members of under graduate students and a faculty advisor. The team was started in 2014 by a group of auto enthusiasts students which designs, analysis, fabricate and construct All-terrain vehicle(ATV). We participate in various international and national competitions like SAE BAJA, MEGA ATV, ATVC, GTU ATV etc. In year 2020 team has its 6th edition since 2014 and has grew up significantly in performance. In 2014 our ATV weighed 375 kgs and by optimizing our design and material we reduced the weight of ATV to 152 kgs in 2020. We were able to reduce the weight by keeping safety as our No. 1 priority. Top speed of our ATV has been increased from 55 kmph to 74 kmph over the years. We also started making our own customized components by proper sound engineering technique in which we learn about the industry. We make our own customized ATV frame and other components by inhouse fabrication.
10	IPR Awareness	We noticed that IPR awareness was not prevalent amongst students and thus we conducted a workshop in IPR awareness. This includes sessions on prior art search and then we applied for 40 provisional patents.
11	Code Geek workshop	We found a lot of students interested in designing apps and games of their own. We also found that apps and games have a lot of entrepreneurial potential if worked out well thus we conceptualized the code geek workshop.

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	L J Innovation Village	Acting as a driving force in building the backbone of the innovation ecosystem, L J has been organizing L J Innovation Village since 2013. It provides an opportunity to innovators to interact with students, faculties, industrial experts and potential seed investors. The additions and deletions during this process ignites a creative instinct in the innovator.
2	L J Startup week	L J Startup week comprises of Idea Improvisation BMC/TMC training Market study Product Development Customer Validation Lean Startup methodologies Mentor – Innovator relationship building Multi domain mentoring 12-15 hours of rigorous mentoring One to many mentoring
3	L J Institute of Innovation & Entrepreneurship	LJIIE is a finishing school for nurturing innovators and entrepreneurs. It is an 80-100 hours coursework. This course is designed for bridging the minute gaps which exists in the entrepreneurial journey of budding entrepreneurs. The special features of this coursework includes 30+ mentors for prototype development or service building. 10+ specific domain mentors Financial support under central and state government.
4	The Patent Week	This is a step zero just before L J Innovation Village, we planned to go one step forward in the commercialization process by understanding the patentability of our innovations. We were successful in filing 40 provisional patents. In the coming year we are planning to file the final patents and fill another round of provisional patents.
5	Smart Gujarat Hackathon for New India	In collaboration with Department of Technical Education, Govt. of Gujarat. We hosted the regional round of smart Gujarat hackathon. We catered around 1400+ attendees including students, mentors and industrial expetrs.

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1	Faculty Hackathon	A faculty hackathon was conducted for development of faculties in association with jhaveri associates. The idea was to provide faculties with real life challenge in construction industry. The faculties were asked to design customized houses.
2	L J Design Centre	A platform to develop the designing skills of students and faculties. The centre has now catered to over 500 students in industrial design. The centre has also started training industry professionals.
3	Master rooms for industries	This initiative aimed to increase the presence of industry inside academic campus. In this initiative we provide master rooms of a few industries in our IoT lab. This ensured that our projects got timely mentoring and the projects developed can be industry ready.
4	Financial Hackathon	This hackathon was launched in association with financial institutions to improve the economic literacy of students. Through this initiative, the companies were able to identify talent in financial sector.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

- One of the most frequently addressed issues is that the students need continuous improvement on their idea. Idea validation needs more attention.
- Driving the thinkability of the students to observe and observe skillfully towards a problem and then to its doable solution is a challenging task. This cannot happen overnight. It needs patience and consistency, for the same we have come up with L J Institute of Innovation & Entrepreneurship (LJIIE), to grow an entrepreneurial culture.
- Proper selection of team frames a perfect picture for a commercial product. This is something that is lacking in 60% of our student teams. It becomes difficult for us to predict the team diversity at their nascent stage, as we dont wish to demotivate their spirit when they come up with an idea. Nevertheless, we have planned to discuss a justified work profile of each team member during their project enrollment to avoid as much failure as possible.
- The major shortfall in prototype development is that product based projects need more than 1 year for development and proper fund utilization. Thus we have committed funds to the innovators of more than 30 projects.

3. Other important highlights (new initiatives), if any:

- We have developed the Industrial 4.0 compliant Lab for product Development and were able to get 3 companies on board for co-development.
- We have organized a pure fundraising event of upto 1 million dollars. We invited applications from all over India. Within a promotion of 15 days we got 55+ registrations, out of which we selected 10 best pitches and invited them for a closed door pitching in front of potential investors.

4. Student Projects (Please provide the following details for each student project)

Sr. No	Team/Project Description	Project status at beginning of the Year	Interventions made	Current status
1	HEAT PUMP BASED CLOTH DRYER	1. Project was at the idea level. 2. The project didn't have any market review	1. Helped them come up with a final product through interventions in product design.	1. The team has come up with a final product.
2	NANO PARTICLES AND IT'S APPLICATION	1. Project was at the idea level. 2. The project didn't have any market review	1. Provided lab facility for testing and mentoring support for product development	1. The product is ready
3	RICE TRASPLANTER	1. They had a basic prototype but it was not functional	1. Connected them with farmers and helped them in designing through mentoring inputs	1. The students were able to prepare a product which has been given for testing
4	Black Smith Furnace	1. They had the idea and the basic design	1. Helped them source material through various connects	1. The students developed a project which was helpful for blacksmith people.
5	DESICSANT COOLING SYSTEM	1. The project was at idea level	1. Helped them improvise their design and do dedicated market survey	1. The project has been closed after developing initial prototype
6	Phoenix	1. They had a basic working prototype but lacked the finishing	1. We connected them to design mentors and helped them make the final product. Also helped them with the graphics part.	1. The team has made a final product and are waiting for user validation
7	Blockchain License Management	1. They has the basic version ready	1. We connected them with a company working on blockchain which helped them complete their platform	1. The team has developed a platform for watermarking of videos.
8	Wizmet	1. The project was at the prototype stage	1. Helped them in doing prior art search and complete their market survey.	1. The team was unable to develop a final product due to poor demand.
9	Ergo Modifier	1. The team had a basic working prototype	1. We connected them with a group who is extensively into healthcare and they also did some user trials	1. The team were able to develop a final product

Sr. No	Team/Project Description	Project status at beginning of the Year	Interventions made	Current status
10	Interactive Projector	1. The team displayed potential by building a basic prototype	1. Connected them with an augmented reality company and the team was able to develop a better version of their prototype	1. The team has developed another prototype which is under user testing
11	Agrobot	1. The team was at the idea stage.	1. They have collaborated with a sensor development company	1. The team gas developed a design for new sensor
12	Digital Umbrella	1. The team had the basic working prototype	1. We helped them in product design and making distribution network	1. The team has already started commercializing
13	Humanoid	1. The team was at the idea stage	1. They have been connected with a robotics company and we also helped them with the product design	1. The team is building a prototype to address few important aspects of human interactions in educational institutes during this pandemic situation
14	Optimization of heat exchanger	1. The team was at the idea stage	1. Connected them with heat exchanger manufacturing industry for product design	1. The team has developed a final product which is now under use.
15	Weather Station	1. The team was at the idea stage	1. We helped them with the design and product development part	1. The team has developed a prototype and is currently working to develop the final product
16	FOLDABLE FURNITURE	1. The team had basic prototypes	1. We helped them get market presence by connecting them with distributors	1. The team has already started their venture
17	ADDICTION BREAKER	1. The team has a basic working application	1. They we connected with a mentor who helped them create their final product	1. The team is working to develop the final product
18	GOOD BYE MUNNA BHAI	1. The team was at the idea stage	1. We are helping them in their system design	1. The team had received initial users and are working to develop the final product

Sr. No	Team/Project Description	Project status at beginning of the Year	Interventions made	Current status
19	SEMI AUTOMATIC CONVERTER FoR FIRE EXTINGUISHER	1. The team had a basic working prototype	1. We helped the team for product design, development and testing	1. The team has developed the final product and even testing has been done
20	Variable steering mechanism	1. The team had a basic working prototype	1. We provided the team with a working car for testing of their product. Also provided them industrial and business mentors	1. The team is currently testing their prototype on a vehicle
21	SUSTAINABLE TRANSFORMATION METHODS OF SOLAR E WASTE MANAGEMENT	1. The team had an idea and did a basic market search.	1. We connected them with energy consultants and helped them make a process for recycling	1. The team has published two research papers and is now working to develop their own process of solar e waste processing
22	TSM FOR EMERGENCY VEHICLES	1. The team was at the concept level	1. We provided them mentoring through government and other agencies and also helped them for product testing	1. The team had deployed the solution and it is currently under user testing
23	ERGONOMICS SEAT FOR TWO WHEELER	1. The team had a basic prototype	1. We helped them make the product design and do user testing. Also connected them with various industrial mentors	1. The team has developed their final design for the product
24	BLIND AUTOMATION STICK	1. The team had a basic prototype	1. We helped them connect to industrial mentors and prepare their final product	1. The team is working on final product by the inputs from users on their current prototype
25	LJKonnect	1. The team had built a platform which was used in a national level event	1. We gave them a platform for their product testing. It was tested at a national level event conducted by LJ	1. The team is working on their final product.
26	SOCIETY SYNC	1. The team had a basic idea	1. We connected them with a mentor who helped them design their system	1. The team has worked extensively for their final product

Sr. No	Team/Project Description	Project status at beginning of the Year	Interventions made	Current status
27	Employee Management System	1. The team had few graphics with a basic working application	1. They were connected with an industrial mentor who helped them pivot their project towards attendance management	1. The team is now focusing on making an attendance system for the corporates
28	wearable intravenous stand	1. The team had a working prototype	1. We connected them with hospitals for user trials	1. The team is ready with their product but is waiting for user trails
29	BIOMETRIC LOCK FOR TWO WHEELER	1. The team had a basic prototype	1. We helped them develop their product and connected them with industrial mentors	1. The team is now working on the final product. The prototype has been successfully tested on vehicles
30	NOURISHING HAIR GEL	1. The team had a basic product	1. We helped them for lab testing and in formulation	1. The product is under lab testing for final market fit
31	Micro oil diffuser	1. The team had a basic product	1. We mentored them in preparing the right formulation and also connected them to industry mentors	1. The final product is under lab testing
32	HERB BLACK HAIR GEL	1. The team had a basic product	1. We helped them connect to industry mentors and develop a stable product.	1. The final product is ready

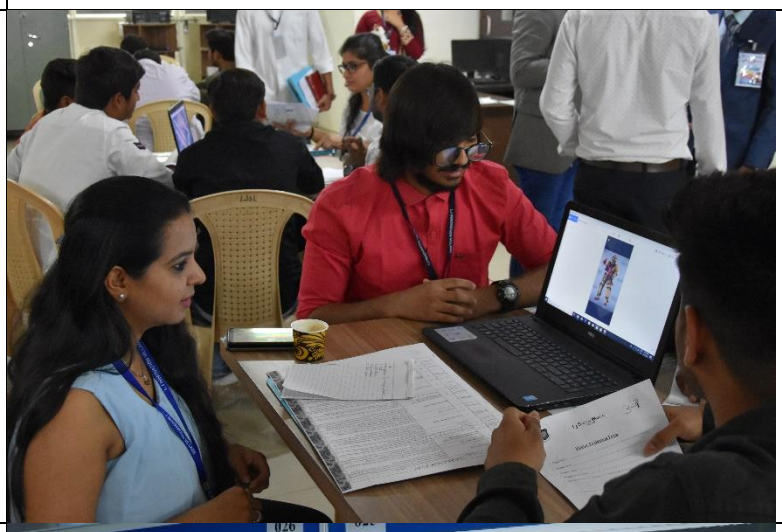
FEW PHOTOGRAPHS OF OUR INNOVATORS

Sr. No	Team/Project Description	Photographs
1	HEAT PUMP BASED CLOTH DRYER	
2	NANO PARTICLES AND IT'S APPLICATION	
3	RICE TRASPLANTER	

Sr. No	Team/Project Description	Photographs
4	Black Smith Furnace	
5	DESICSANT COOLING SYSTEM	
6	Phoenix	

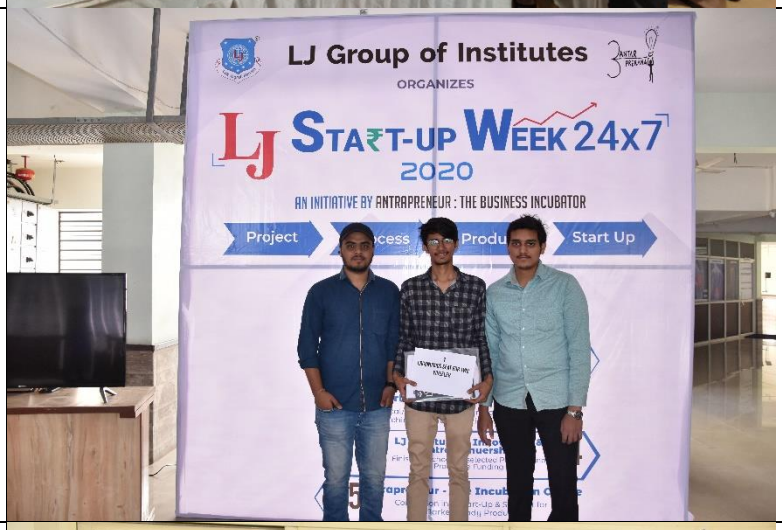
Sr. No	Team/Project Description	Photographs
7	Blockchain License Management	
8	Wizmet	
9	Ergo Modifier	

Sr. No	Team/Project Description	Photographs
10	Interactive Projector	
11	Agrobot	
12	Digital Umbrella	

Sr. No	Team/Project Description	Photographs
13	Humanoid	
14	Optimization of heat exchanger	
15	Weather Station	

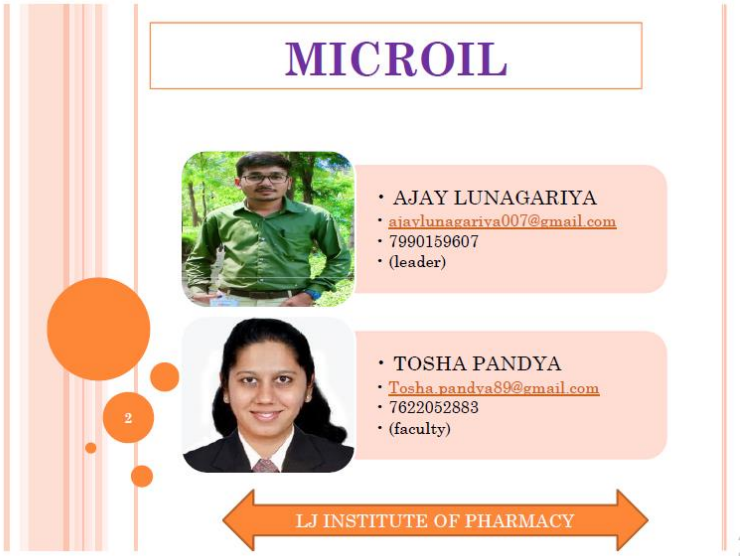
Sr. No	Team/Project Description	Photographs
16	FOLDABLE FURNITURE	
17	ADDICTION BREAKER	
18	GOOD BYE MUNNA BHAI	

Sr. No	Team/Project Description	Photographs
19	SEMI AUTOMATIC CONVERTER FoR FIRE EXTINGUISHER	
20	Variable steering mechanism	
21	SUSTAINABLE TRANSFORMATIO N METHODS OF SOLAR E WASTE MANAGEMENT	

Sr. No	Team/Project Description	Photographs
22	TSM FOR EMERGENCY VEHICLES	
23	ERGONOMICS SEAT FOR TWO WHEELER	
24	BLIND AUTOMATION STICK	

Sr. No	Team/Project Description	Photographs
25	LJKonnect	
26	SOCIETY SYNC	
27	Employee Management System	

Sr. No	Team/Project Description	Photographs
28	wearable intravenous stand	
29	BIOMETRIC LOCK FOR TWO WHEELER	
30	NOURISHING HAIR GEL	

Sr. No	Team/Project Description	Photographs
31	Micro oil diffuser	
32	HERB BLACK HAIR GEL	

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

DIGITAL UMBRELLA CASE STUDY

1. Student team details with contact number

Adib Mansuri 9898813463

2. Brief about the innovation

- Digital umbrellas are specially designed for police, security guards, street vendors and people who have to survive the whole day under the sun and this umbrella is fixed or compact and portable with built-in solar panel fan, flashlight, water spray, USB charger. With the help of solar panel energy is produced which converts into electricity and we can use fans under the umbrella,use flash light, also charge the phone, and use mist spray during summer.

3. Startup entrepreneurial journey.

-The journey started from LJ Innovation village at LJ. I had a rough idea of my product. The best part of LJ Innovation Village was that it catered many visitors, they validated my idea and found it much useful. Mentors who visited the LJIV exhibition also found the idea very lucrative for solving the issues of vendors and traffic police particularly. Following that with continuous mentoring from the Incubation and Innovation team on design, technicality and market feasibility, I came up with 2 prototypes, one was heavy structure and another is a lighter version. We implemented the heavy model at LJ Institute, for the security guards and the light structure at police chowk (Sarkhej & Ujala circle) which was found useful for the police and we got lot of appreciation from police, media and even scientists and researchers from ISRO and IIT shared a message of appreciation with us.

4. Contribution of LJIET NEWGEN IEDC in the same

-Under LJIET NEW GEN IEDC, mentors from the incubation center helped us from all the directions when and where it was needed to shape my idea into a product. The mentors helped in designing the structure and we got training from mentors from our field and other fields too. The incubation guided very well from beginning till the date, from idea validation to market placement.

5. Future plan

- As it is in the final prototype stage and we are doing testing on it. So we want to commercialize the product.the next stage we to do marketing through both online and offline sources. As this product is useful in every area like police,security guards, street vendors, beach, resort.

PHOENIX

1. Team Members:

Harsh Patel: +91- 9408112506

Priyam Shah: +91-9924368288

2. Brief about the innovation

Approximately 15% of the world's population, experience some or other form of disability and generally developing countries experience a higher rate of disability between 110 million and 190 million people, i.e., approximately one-fifth population experience significant disabilities. Government of India is a signatory to the promulgation adopted in the meeting to launch the Asian and Pacific decade of disabled persons year 1993-2002 at Beijing from 1st to 5th year December had to implement a law for the benefit of the disabled citizen. Hence the persons with disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act 1995 was passed in the parliament. Disability includes vision impairment, deaf or hard of hearing, physical disability, mental health condition, acquired brain injury. Phoenix focuses on three types of disability, i.e. Deaf, mute and low vision. Technological inventions are rapidly advancing in every field. However, surprisingly there are very few researches or inventions which are conducted for disabled people.

Young people transition from a state of the dependent minority to an independent adult identity have been measured in terms of a developmental stage model. The key markers of adulthood have commonly been regarded as leaving full-time education and entering the labor market; moving out of the parental home to establish an independent household. However, in the case of deaf and mute people, they lack quality knowledge and education which have direct effects on their upcoming future. Generally, it is seen disabled children have limited long term memory and, in normal education sessions, they experience the difficulty to retain a learned concept. It is necessary to design certain activities for disabled children which on the one end introduce novelty and create new challenges, and on the other end include moments in which children repeat and consolidate what they have previously understood.

Disable person finds quite difficult to get proper employment which affects their social life as well and if they can find a job then sometimes it's seen these jobs are below dignity jobs which overall sabotage their confidence towards work. However, it is understood that disable people are more focused as well as dedicated to their jobs. Due to the expected deterioration in the working-age group, especially in European countries, people with disabilities are now more often acknowledged as a valuable resource in the workforce, and research work in the field of disability and their employment facility is more important than ever.

POS is an efficient method to automate the checkout method, providing a faster and better customer experience. It can be found almost in every Retail store, Restaurants, Clubs and Bars, Supermarkets. Point of sale (POS) terminals have been in the market for many years now but there are hardly any devices or inventions which enables a low vision, or a deaf or mute operator to interact with customers without the need of an additional helper. If a person has low vision, is deaf or mute, it is very difficult for him to get employment in any industry as communication with them is crucial and thus, the person has to be dependent on some alternative sources of income which may be not sufficient to earn his livelihood which leads them to a happy life.

Team Phoenix is working on developing a device which is specially designed for mute, deaf person people the device has been developed which enables a person with relatively low vision (not blind) to view the screen placed at the sales terminal (counter) of shopping malls, theatres, departmental stores, offices, etc. The device has 'braille' engraved on it so such low vision people can also operate the system efficiently. Systems have been developed which enable a person with low vision (not blind) to view the screen placed at the point of sale counter of departmental stores, shopping malls, offices, etc. Such people can be trained to use braille script also. The device is designed keeping in mind the needs of disabled people so that they can easily learn and operate the device without any technical expertise.

3. Start-up entrepreneurial journey

In December 2018 we started a survey regarding difficulties faced by specially-abled people in finding employment, We have long been associated with Blind People's Association based in Ahmedabad and have made several friends there. Conversations with them have helped me deeply understand their financial issues due to a lack of employment opportunities. With an aspiration to

use my skills and knowledge to impact the community around me, I decided to work on a project that could help these people combat their issues. Hence, I started working on a project named ‘Phoenix’ and started surveying on the internet, visiting government institutions, and meeting the regional employment officers to understand the employment opportunities in our society for differently-abled people.

Through the first-hand data collection, I came to know how most of them got their employment through local shopping malls and departmental stores, where they were entrusted with stacking and piling up the goods for the stores’ inventories. Upon careful analysis, I filtered my work to concentrate on updating the Point of Sales Terminal System and make them user-friendly for specially-abled people. This was followed by a dedicated phase of working on the designing and modelling of an IoT based device.

4. Contribution of ljiet newgen in the same

Talking about our journey with LJIET Incubation centre, the journey begins the day when I first met Ms. Debopriya Chakroborty and that was the turning point for the idea. Holding a few sheets of sketches and a vague idea in my mind, our first meeting lasted for 1 hour where Debopriya ma'am guided me who should I figure out our plan and how to define a road map in order to implement the idea, In 2-year journey Debopriya Ma'am has been a guide and mentor, her motivating attitude and ready to help nature has helped us a lot, from selecting mentors to help in research work she has always been a strong pillar for our team. Also, Bhushan Sir who helped us with the design and other hardware aspects of the development phase. Talking about Rahul Sir, our development and testing may not be possible without his constant guidance, he also helped us a lot in getting a few pivotal hardware components which one doesn't get easily in the market. Evolution of our POS system from sheets of white paper to a 3D printed model without Sagar sir's designing expertise. Sanket Sir's vast network and industry experience have provided us with an opportunity to get exposure outside the college campus. And at last Viral Sir's exemplary vision has always been the guiding light. We feel fortunate enough that we are incubated at LJ.

We cordially thank the entire LJ team for their constant guidance and motivation

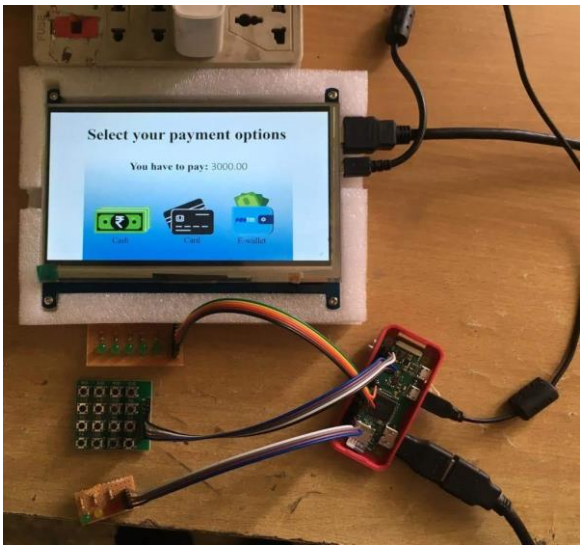
Team Phoenix!

5. Future Plans

Emerging future trends in the interaction of identity and disability as a homogeneous whole. There are certain issues whose identity relates to the type of impairment experienced with disable people and the range which impairment covered by ‘disability’ is enormous. Though categorizing disabilities is problematic, the following paragraph will focus on three types of disability in order to demonstrate how different impairments can relate to issues of identity:

intellectual disabilities, and D/deafness.

The device provides an interconnection between all the systems working within a specific area to provide the performance boost to system functioning so the author will try to create a private network for the system which can enable the interconnectivity between them. Also, the devices for store inventory authors are planning to apply several ‘data analytics algorithm’, to keep a track record about goods sold and to provide a statistical report for the sales of a particular entity in the company. Thus, the PWD personnel can act as a helping hand for the store’s inventory management which is overall beneficial for the companies.



NewGen IEDC

Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC : Manav Rachna International Institute of Research & Studies, Faridabad

Name of the Chief Coordinator : Dr. Monika Goel

Period under Review : From 01.11.2018- 31.03.2020

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements	Month
1	Pitching Drill and Preparation for Startup Jalsa	Students were given training on how to effectively showcase their startups and how to attract both the investor and customers.	November 2018
2	Startup Jalsa	6 startup teams, 5 mentors and 5 E-cell students participated in startup jalsa held in Dharamshala, HP. 3 Startups were selected for the final round of investors pitch.	December 2018
3	Startup masterclass IIT Kanpur- Delhi	A one day event organized by IIT Kanpur in New Delhi, where 8 students from NewGen IEDC startups participated. The event was to promote activities related to Entrepreneurship.	April 2019
4	Entrepreneurship Awareness Camp	82 Students from all different streams participated in the three day camp where expert sessions were held with industry exposure	February 2019
5	Entrepreneurship Awareness Camp	96 Students from all different streams participated in the three day camp where expert sessions were held with industry exposure	March 2019
6	Business Idea pitching competition	A 10 day entrepreneurship awareness drive to motivate the new batch of students to look beyond jobs and enlightening them about the different prospects and support system at NewGen IEDC.	July 2019
7	Entrepreneurship Awareness camp	109 Students from all different streams participated in the three day camp where expert sessions were held with industry exposure	February 2020

Sr. No.	Activities	Outcome/Achievements	Month
8	Pitch deck preparation for Youth Jalsa	A one day event where more than 80 students and 15 startups participated to learn the art of presenting their ideas in front of jury within a very short span of time. Elevators pitch, Idea generation.	January 2020
9	Youth Jalsa	A one day grand event where more than 200 students including more than 40 startups participated for presenting their projects and ideas for investment.	February 2020

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements	Month
1	Entrepreneurship Development program(2018-19)	A 30 day program where 20 student ideas/startups were given a chance to present their ideas in front of more than 30 resource persons, to understand different aspects of the product and market approach.	February 2019
2	TEDP(2019)	An idea development program of 30 days, where 27 students participated to learn the insights of business with the help of industry experts.	February 2019
3	WEDP(2019)	A special training event for the women entrepreneurs, where 21 students participated.	February 2019
4	Review Committee	One day interactive session among the startups and external industry expert	Feb 2019
5	Screening Committee Meeting	10 students presented their ideas infront of the jury for selection process in NewGen IEDC scheme.	Jan 2019
6	Review Committee	One day interactive session among the startups and external industry expert	Feb 2019
7	Investors Meet	The objective of the program was to present NewGen IEDC Student startups to a panel of Investors/Bankers to understand future scope of investment.	March 2019
8	E-Week	A full week of entrepreneurial activities for the startups and students with live sessions by experts and investment opportunities	March 2019
9	E-Summit	4 selected startups along with E-cell students participated in a three day event held in IIT-Kanpur.	August 2019
10	Startup Jalsa IIT Delhi	5 startups with 5 Ecell students pitched their idea infront of juries for 1st round of selection.	October 2019

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements	Month
1	Faculty Development program	A two week program for 21 faculty members was conducted where 27 internal and external resource persons shared the insights of business and how to promote it among the upcoming students.	

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

- **The nomenclature of events has changed at the time of organizing though the scope of activity and achievements have been similar to action plan.**

3. Other important highlights (new initiatives), if any:

- Organized eight events under DST Nimat scheme for entrepreneurship promotion and development.
- In process with entering into MOUs with accelerators for taking the startups to the next phase.

4. Student Projects (Please provide the following details for each student project)

Sr. No	Team/Project Description	Project status at beginning of the Year	Interventions made	Current status
1	Pinaca	Designing & Conceptualization	Supported in concept refinement, USP identification, prototype development and business model preparation.	First prototype ready. Working on the final prototype to be market ready.
2	VADS Creation	Ideation & demand analysis	Supported in product selection, USP identification and business model preparation.	Working on website development.
3	Lynista Gaming	Ideation	Supported in product selection, USP identification and business model preparation.	Working on developing games for beta testing.
4	Metro Masti	Conceptualization & Market Testing	Supported in concept refinement, USP identification, prototype development and business model preparation.	Application ready, launched on Google playstore. Working on incorporation.
5	Travel Gram	Conceptualization	Supported in concept refinement, USP identification, prototype development and business model preparation.	Beta version of website ready.
6	Smart Water Sprinkler	Prototyping	Supported in concept refinement, USP identification, prototype development and business model preparation.	Beta version of the prototype ready.

Sr. No	Team/Project Description	Project status at beginning of the Year	Interventions made	Current status
7	Nutri Fresh	Ideation & testing	Supported in product selection, USP identification and business model preparation.	Multiple samples tested. Working on final prototype.
8	Orchard India	Prototyping	Supported in concept refinement, USP identification, prototype development and business model preparation.	Beta version of prototype ready. Working on business model.
9	Medical Tourism	Market Research	Supported in selection of targeted market, USP identification, prototype development and business model preparation.	Ready with website. Working on the business model
10	One Touch	Conceptualization, Prototyping & Market Research	Supported in concept refinement, USP identification, prototype development and business model preparation.	Beta version ready, business model ready. In process of incorporation.
11	Bliss Board	Conceptualization	Supported in concept refinement, USP identification, prototype development and business model preparation.	Working on the prototype.
12	Jugal beats	Market Research	Supported in selection of targeted market, USP identification, prototype development and business model preparation.	Working on Web portal. Business model ready
13	Organic Farmfresh	Prototyping	Supported in concept refinement, USP identification, prototype development and business model preparation.	Prototype ready working for final product
14	ParkIn	Conceptualization & Prototyping	Supported in concept refinement, USP identification, prototype development and business model preparation.	Proof of concept is ready working towards making the prototype.
15	Nanomaterial portable water treatment	Ideation	Supported in concept refinement, USP identification, prototype development and business model preparation.	Startup working in nanomaterial based portable water treatment system.

- **Submit three/four high resolution (at least 300 dpi) pictures in jpeg format showing the prototype/product along with the students and their mentor.**

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

1. Helixsmartlabs formerly OneTouch

- Student team details (with contact information)

Dhruv Rohatgi (student)

Manav Rachna International Institute of Research and Studies

Mobile No- 9873932539

Email- dhruvrohatgi53@gmail.com

Dr. Suresh Kumar (Mentor and Assistant Professor)

Manav Rachna International Institute of Research and Studies

Mobile No- 9810487182

Email- suresh.fet@mriu.edu.in

- **Brief description about the student start-up**

  OneTouch is a startup incubated under New Gen IDEC Manav Rachna Innovation and Incubation Centre, MRIIRS. Its focus is to develop real time applications based on IOT platform. For the past 4 years they have developed more than 3 IOT smart solutions which can be market ready anytime soon. Their aim is to enhance the user experience and security of operating appliances from anywhere around the world with an ease of interaction while keeping the cost factor in mind.

- **Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs**

  The team started with the idea in November 2019 with 1 product and have come a long way since then, they have developed multiple new products keeping in mind the new problems (Coronavirus). They have also hired interns to boost up the developments.

- **Contribution of NewGen IEDC in the same**
  The NewGen IEDC has constantly supported the team all throughout in their journey. Be it in terms of connecting with people, participation in various events, in economic aspects, NewGen IEDC was always there to support and give shoulders.
- **Future plan**
  - The team is filling patent.
  - Getting Incorporated.
  - Commercialization of the smart switches.
  -

2. Ultimetro formerly Metromasti

- **Student team details (with contact information)**

Suraj Kumar (student)

Manav Rachna International Institute of Research and Studies

Mobile No- 7542952461

Email- surajkumar7542@gmail.com

- **Brief description about the student start-up**
- Ultimetro is a startup incubated under New Gen IDEC Manav Rachna Innovation and Incubation Centre, MRIIRS. Its focus is to develop an application for the Metro users to make their travel more convenient. The App has various features including, chat, games, metro routes, navigation etc.

- **Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs**
- The team has developed an application for google play store .The idea is to make the travel safer, efficient and convenient for the metro users, the application is user friendly even for first time users. The application is at testing stage and an investor has shown interest on proof of concept. However, as the metro services are on hold due to covid 19 lockdown the project, the negotiations have been stalled.

- **Contribution of NewGen IEDC in the same**
- Ultimetro got the best technologies as desired, that includes software license, assets, plug-ins, and the office space which helped them to work with a greater pace. The team also got mentoring on developing different business strategies and financials.

- **Future plan**
- The team plans to expand by adding new members to boost up the development process.
- Getting incorporated.

NewGen IEDC [2017-22]
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

Progress Report (As on January 2020)

Name of the College/Institution hosting NewGen IEDC	BNM Institute of Technology		
Year of starting NewGen IEDC	2017		
Name of the Head/Principal of the Institution/College	Dr. Krishnamurthy G N		
Name of NewGen IEDC Coordinator	Dr. L. Vijayashree		
Contact Details of NewGen IEDC Coordinator • Mobile Number • e-Mail ID	9980356098 vijayashreel@bnmit.in		
Financial Details	Sanction Order No./Date		Amount Sanctioned
Previous Sanction Order Details	1.	EDII/DST – NewGen IEDC/17-18/RLS-II/06 Dated 12-03-2019	Rs. 47.50 Lakhs

Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	Entrepreneurship Awareness Camp -1 (14/11/18 to 16/11/18)	V semester Computer Science Engineering Students got motivated and expressed their interest in joining the Entrepreneurship Development Cell. 12 students joined ED cell in the year 2018.
2	Entrepreneurship Awareness Camp-2 (15/11/18 to 17/11/18)	V semester Electronic & Communication Students were happy to know about entrepreneurship and expressed their interest in joining Entrepreneurship Development Cell.4 students joined ED Cell in the year 2018.
3	Entrepreneurship Awareness Camp -3 (15/11/18 to 17/11/18)	IV semester Electrical and Electronics Engineering Students got motivated and expressed their interest in joining the Entrepreneurship Development Cell.
4	Entrepreneurship Awareness Camp-4 (13/11/18 to 15/11/18)	IV semester Information Science Engineering Students were happy to know about entrepreneurship and expressed their interest in joining the Entrepreneurship Development Cell.
5	Entrepreneurship Awareness Camp-5 (14/11/18 to 16/11/18)	IV semester Mechanical Engineering Students got motivated and got motivated and expressed their interest in joining for Entrepreneurship Development Cell.
6	Entrepreneurship Awareness Camp-6 (14/03/19 to16/03/19)	IV semester Mechanical Engineering Students got motivated and got motivated and expressed their interest in joining for Entrepreneurship Development Cell.

Sr. No.	Activities	Outcome/Achievements
7	Entrepreneurship Awareness Camp-7 (28/03/19 to30/03/19)	IV semester Electronics and Communication Engineering Students got motivated and got motivated and expressed their interest in joining for Entrepreneurship Development Cell.
8	Entrepreneurship Awareness Camp-8 (21/02/19 to23/02/19)	IV semester Electrical and Electronics Engineering Students got motivated and got motivated and expressed their interest in joining for Entrepreneurship Development Cell.
9	Entrepreneurship Awareness Camp-9 (07/03/19 to09/03/19)	IV semester Information Science Engineering Students got motivated and got motivated and expressed their interest in joining for Entrepreneurship Development Cell.
10	Entrepreneurship Awareness Camp-10 (07/03/19 to09/03/19)	IV semester Mechanical Engineering Students got motivated and got motivated and expressed their interest in joining for Entrepreneurship Development Cell.

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	Innovative Project Lab (IPL)- Winter 2018	**IPL Winter Competition– 5th March 2019** IPL is a platform for the students to convert ideas in to proof of concept every semester. With the help of the IPL Competition, ED Cell BNMIT is able to find the best Proof of concept and encourage the winning teams to participate in the presentation for New Gen IEDC Funding. Amongst the IPL projects, three projects were shortlisted for the New Gen IEDC grants for the year 2018-19.
2	Innovative Project Lab (IPL)- Summer 2019	**IPL Summer Competition– 30th August 2019** IPL is a platform for the students to convert ideas in to proof of concept every semester. With the help of the IPL Competition, ED Cell BNMIT is able to find the best Proof of concept and encourage the winning teams to participate in the presentation for New Gen IEDC Funding. Amongst the IPL projects, four projects were shortlisted for the New Gen IEDC grants for the year 2018-19.

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1	IPR Workshop	Workshop on Significance of Patents and Prior Art Search for budding Entrepreneurs on 09.05.2019.
2	Panel Discussion	Panel Discussions held on Recent trends in Entrepreneurship across APAC region @ International Conference On Innovative Practices In Management & Entrepreneurship held at BNMIT on 27.12.2018 and 28.12.2018.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any: Nil

3. Other important highlights (new initiatives), if any:

A Five Days hand on technical workshop was conducted for various Engineering departments to enhance the practical knowledge in recent technologies.

Sr. No.	Departments	Workshop Details
1	Department of Computer science and Information Science Engineering.	**Workshop on Internet of Things, Department of Computer science and Information Science Engineering** (Sponsored by NSTEDB, DST, Govt. of India , 9th- 13th July, 2018) Twenty four students from Department of Computer Science and Engineering and Twenty three students from Department of Information Science and Engineering actively participated in the workshop.
2	Departments of Electronics & Communication Engineering and Mechanical Engineering.	**Workshop on IoT in Real Life Applications from Product Development** Perspective was organized for departments of Electronics and Communication Engineering and Mechanical Engineering (Sponsored by NSTEDB, DST, Govt. of India , 9th- 13th July, 2018). Twenty four students of ECE and twenty four students of Mechanical engineering were present in the workshop.

4. Student Projects (Please provide the following details for each student project)

Sr. No	Team/Project Description	Project status at beginning of the Year	Interventions made	Current status
1	Team : Aditya Mijar Shenoy, Someshwar S, Nagpoojith B R, Piyush R Golecha **CYCLOPACK** is a 3-wheeled hybrid trike made of mild steel. It runs on a tilt-steer mechanism and semi-pedaling transmission to enhance rider comfort, improve lateral stability and maneuverability. Disc brakes provided quick & safe braking. 10Ah, 36V, 250W, Li-ion battery for additional drive.	Proof of concept	• Prototype Development • Business Analysis • Product Design	*Prototype Completed Market test is yet to be done.
2	**Team:** Bramha. S. P., Chinmai. L, Abilesh. M, Akilesh. M **BALANCE MATE**:This project is based on weight distribution monitoring system, which is a small ankle wearable device that prevents unequal weight distribution in legs. The device consists of a skin sensitive low power vibration motor, which sends an alerting trigger signal when more pressure is exerted on one of the legs.	Proof of concept	• Prototype Development • Business Analysis • Product Design • Test Market	Pre Incubated at IISC for the research as the device is for health sector.
3	Team :Manu K J, MurudeshwarBarole, NamaVenkataNagasukesh, Nihaarika A Jagadish **MONEY BIN** :One of the biggest problems in India is maintaining cleanliness in the surroundings, especially at public places. However, in many instances, littering continues to pose a serious problem. Our idea is to provide a small incentive/reward for each person who contributes to the programme by using the product, Money Bin. The incentives motivate public to use the dustbins at public places, thereby reducing the littering. On successful disposal, points are awarded to the users. The users' account details and rewards earned are stored in Firebase cloud database for further retrieval of information.	Ideation	• Concept Development • Prototype Development • Product Design • Test Market	Prototype is ready.

4	Team : Syed Abrar, Swathi M, Kushal S **PLECO**: sticks to the wall using suction or adhesion created by ducted fans (4500kv). The power source for the same is supplied by lithium polymer battery. It can also be controlled manually using N. R. F aurdinonanorc receiver transmitter circuits in case of emergency. The product is designed in such a manner that it automatically gets charged when it reaches certain threshold voltage, in the nearest station installed at every floor. The charging is done either through induction or conduction using induction charger or groove switches. At the first stage the brushes rotate and remove the dirt accumulated on the glass.	Proof of concept	• Prototype Development • Business Analysis • Product Design • Test Market • If needed change in product design	Prototype is ready.
5	Team :Raghavendra D S, RishabhBhansali, Vishnu Prasad Bhat **DETACHABLE SMART FAUCET** : To implement a detachable smart faucet that recognizes the presence of hand and turns on the valve for water flow. The amount of water consumed is recorded and can be analyzed by the user to monitor current usage and predict the future consumption.	Ideation	• Concept Development • Prototype Development • Business Analysis • Product Design	*Functioning Prototype is ready. *Patent Applied.
6	**Team :** Ashith R C, Apoorva P.S **FOOT PRESSURE SENSOR FOR PHYSIOTHERAPY APPLICATIONS** The main innovation is in the sensor element which is special whose resistance will change with physical force applied across it. It is a pressure conductive polymer which consists of carbon black to make it conductive	Ideation	• Concept Development • Prototype Development • Product Design	*Functioning Prototype is ready. Pre Incubated at IISC for further research.
7	Team : Nishanth P.M, Tanish Islam **INTELLICOPTER – A RESCUE DRONE**: Heavy rains and natural disasters cause accident prone areas and high-altitude regions to be highly difficult for humans to explore, and during a rescue mission in these regions, stranded humans and animals may be difficult to locate due to poor accessibility. The capability of Intellicopter to gain high attitude and capture information about any region, makes it highly viable for Rescue Missions. Intellicopter provides a bird eye's view of any situation. The Intellicopter uses GPS Sensor in order to hold its position during flight, to aid stability.	Proof of concept	• Prototype Development • Product Design	*Functioning Prototype is ready. *Applicability of the usage is getting tested.

8	Team : Ankitha S, Raksha H, Namitha G, Daniel C Mathew **<u>LIFELINE ERV</u>:** This app will be used to locate and dispatch the closest emergency response vehicle in case of an emergency, to the respective location. The purpose of the application is to make the journey of the ambulance faster and smoother from the spot of accident to the nearest hospital.LifelineERV is an application in which the patient/helper can book the ambulance and track its live location. Each individual who uses the application can register and track the ambulance at every point. This app has a unique feature of broadcasting the live location, (via a pop-up notification) of the ambulance to all the app users in its vicinity of 250m - 500m. After the completion of the ride to the nearest hospital, the user can submit the feedback for the service.	Proof of concept	• Prototype Development • Product Design	*Functioning Prototype is ready. *Market testing Phase
9	Team :Aslesh Kumar A, Raghuveer S Bhat. Shwetha S, Alagar Krishna B **<u>FUZZY LOGIC ELECTRIC TRIKE</u>**: The project deals with the design and development of 3 wheeled tadpole structured electric trike. The design involves mechanical molding, battery selection, motor selection with control circuit. AI technology is been planned to implement in software for control mechanism.	Proof of concept	• Prototype Development • Business Analysis • Product Design • Test Market • Started a company VTRIKE • Commercialization	*Prototype Done *Received good feedback fromthe people who rode the vehicle. *Patent Applied Incubated at NID
10	Team : Deeksha More E K, Divya S, Kalyani G, Gouthami R **<u>AUTOMATICWASTE SEGREGATOR:</u>** Waste management is becoming a hot topic in policy circles. As a result of rapid increase in production and consumption,considerable increase in the volume of waste is generated. The main objective of this project is to design a system using Arm Cortex LPC2148 microcontroller for automatic segregating of waste at source and capable of cleaning.Thebin uses a vacuum cleaning mechanism forcleaning purpose. Moisture sensor is used to detect wet materials, Metal sensor is used to detect the metal.	Ideation	• Concept Development	*Prototype Done

11	Team : Jayanth S R, Ramalingeshwara H, ZubairNabi War, Sudeep S Rao **<u>3 WAY ACTUATED MEDICAL LABORATORY CENTRIFUGE</u>** A centrifuge is a piece of equipment that puts an object in rotation around a fixed axis, applying a large force perpendicular to the axis of spin (directionally outward). A laboratory centrifuge is a piece of laboratory equipment, driven by a motor, which spins liquid samples at high speed. The 3-way actuated centrifuge provides a viable, low cost alternative to current laboratory systems which can be used in low resource settings such villages and rural health centres. The system can be conveniently placed in any type of setting; be it a full clinical laboratory, a district government hospital, a rural health centre or a mobile blood testing camp with the system requiring a small space and not large dedicated workspaces.	Ideation	• Concept Development • Prototype Development	*Prototype Done
12	Team : Monisha S, ShrinivasaMahabaleshwarHegde, Yashas GR **<u>WIND INJECTION TURBINE</u>:**A new concept in wind power harnessing is described which significantly outperforms traditional wind turbines of the same diameter and aerodynamic characteristics under the same wind conditions and it delivers significantly higher output, at reduced cost. The second innovative feature of the project is that it captures wind flow through an omnidirectional intake and thereby there is no need for a passive or active yaw control. Third, it accelerates the flow within a shrouded Venturi section which is subsequently expanded and released into the ambient environment through a diffuser.	Ideation	• Concept Development • Prototype Development	*Prototype Done
13	Team : AnimeshAnand, ChithreddySaiRakshith, Akshay S Mane, Rakesh M V **<u>ORGANIC WASTE CONVERTER</u>**: System to convert wet waste into billets and reduce volume of waste. The billet is stored and converted to compost.	Ideation	• Concept Development • Prototype Development	*Prototype Done

14	Team : Suraj D M, Varun A Prasad, Sudhanva G Hebbale, Shwetha L **OBSTACLE DETECTION FOR THE BLIND**: The inability to perceive objects around oneself is the most disastrous things that could happen to a person. The designed model detects the closest obstacle using the sonar principle and in turn generates a vibro-tactile feedback that alerts the user about the direction of the object.	Ideation	• Concept Development • Prototype Development	*Prototype Done
15	**Team :** AfeeraMehnaz, Raksha J Bhat, Sejal Jain, SumukhVenugopal **DETECTION OF NEURO DE GENERATIVE DISEASES USING HANDWRITING ANALYSIS :** This project deals with an efficient way to detect the presence of neuro generative diseases through hand writing analysis. This will not only reduces the task of going through multiple scans or medical checkups but will also help the doctors ensure his decision towards predicting a disease. This project works on a real time input basis, taking in handwriting & other neunary parameters through a writing pad & a specialised pen.	Ideation	• Concept Development • Prototype Development	*Prototype Done
16	**Team:**MohamedSafeeulla, Shashank T, Suparna Bose, Sushmitha M **TRASHBOT :** This is an autonomous garbage seeking and segregating robot which reduces the human effort in cleaning and maintaining by collecting and segregating the garbage using sensors.	Ideation	• Concept Development • Prototype Development	*Prototype Done
17	**Team:**Kishan R, LohithkumarShetty M, Hariharan R N, Karthik. **BIODEGRADABLE SUPER ABSORBENT AND ABSORBENT DIAPERS :** The aforementioned work deals with the development and fabrication of biodegradable yet functionally equal if not superior to them existing diaper garment from completely biodegradable materials. This work involves development of a new superabsorbent material to absorb large volumes of fluid .it also includes the optimization study carried out using Taguchi technique for various aspects like maximizing absorption, Determination of least amount of wetback ,and minimizing surface dampness by calculating strike-through time.	Ideation	• Concept Development • Prototype Development	*Prototype Done *Patent filed

18	**Team:** Shashanka G, Tejas R Simha, Varun D Gurjar, Vishnuvardhan G **NEURAL NETWORK BASED OBJECT RECOGNITION SYSTEM USING STEREO IMAGES:** Neural networks can analyze information the way human brain does. Algorithmic approach requires programming, whereas neural networks can work as independent entities after training. The ability to learn and adapt from all the examples it encounters gives an edge over algorithmic approach in discovering patterns.	Ideation	• Concept Development • Prototype Development	Patent filed
19	**Team :** Raksha H, Ankitha S, Namitha G **SYSTEM AND METHOD FOR IMAGE ANALYSIS-CCTV FOOTAGE SURVEILLANCE:** Detect deviant behaviour in public spaces via CCTV camera and alert the security system of the organization in order to prevent mishap. To summarise the entire day's CCTV footage in order to view only the key frames without spending much time.	Ideation	• Concept Development • Prototype Development	Patent filed
20	**Team :** Shreyas G S, Thrupthi N **AUTONOMOUS ARIEL MEDICAL ASSISTANCE** The major objective of the project is to act as a proof of concept for small scale autonomous aerial medical assistances. To achieve this the drone is fitted with a GPS tracking system and is programmed to be able to fly from one location to another using GPS co-ordinates.	Proof of concept	• Concept Development • Prototype Development	*Prototype Done

- **Please Submit three/four high resolution (at least 300 dpi) pics in jpeg format showing the prototype/product along with the students and their mentor.**

1.BALANCE MATE

This project is based on weight distribution monitoring system, which is a small ankle wearable device that prevents unequal weight distribution in legs. The device consists of a skin sensitive low power vibration motor, which sends an alerting trigger signal when more pressure is exerted on one of the legs.

Team: Bramha. S. P., Chinmai. L, Abilesh. M, Akilesh. M
Mentors: Mrs.MadhuraPrakash

2.MONEY BIN

One of the biggest problems in India is maintaining cleanliness in the surroundings, especially at public places. However, in many instances, littering continues to pose a serious problem. Our idea is to provide a small incentive/reward for each person who contributes to the programme by using the product, Money Bin. The incentives motivate public to use the dustbins at public places, thereby reducing the littering. On successful disposal, points are awarded to the users. The users' account details and rewards earned are stored in Firebase cloud database for further retrieval of information.

Team :Manu K J, MurudeshwarBarole, NamaVenkataNagasukesh, Nihaarika A Jagadish

Mentors :Dr.SejalSantosh, Shraddha P

Newspaper Article about Money Bin

ಉದಯವಾಣಿ
ಜನಮನದ ಜೀವನಾಡಿ

ಮನಿ ಬಿನ್‌ಗೆ ಮನೆಯ ಕಸ ಹಾಕಿ ಕಾಸು ಗಳಿಸಿ

ವಿನೂತನ ತಂತ್ರಜ್ಞಾನ ಅಭಿವೃದ್ಧಿಪಡಿಸಿದ ನಗರದ ಕಂಪ್ಯೂಟರ್ ಸೈನ್ಸ್ ವಿದ್ಯಾರ್ಥಿಗಳು

• ಜಯಪ್ರಕಾಶ್ ಬಿರಾದಾರ್

ಬೆಂಗಳೂರು: ಮಹಾನಗರಗಳಲ್ಲಿನಿಮ್ಮಮನೆಯ ಕಸ ಏಲೇವಾರಿ ಮಾಡಬೇಕೆಂದರೆ ಕಷ್ಟಾಯವಾಗಿ ಸೆಸ್ ಪಾವತಿಸಬೇಕು. ಆದರೆ, ಇಲ್ಲಿ ಕಸ ಹಾಕಿದರೆ ನಿಮ್ಮ ಖಾತೆಗೆ ಹಣ ಜಮೆ ಆಗುತ್ತದೆ!

ಹೌದು, ಇಂಥದೊಂದು ವಿನೂತನ ವೈಜ್ಞಾನಿಕ ತ್ಯಾಜ್ಯ ಸಂಗ್ರಹ ತಂತ್ರಜ್ಞಾನ ಒಂದನ್ನು ಇಂಜಿನಿಯರಿಂಗ್ ವಿದ್ಯಾರ್ಥಿಗಳು ಸಿದ್ಧಪಡಿಸಿದ್ದಾರೆ.

ಪ್ರಸ್ತುತ ಬೆಂಗಳೂರಿನಲ್ಲಿ ತ್ಯಾಜ್ಯ ಸಂಗ್ರಹಣೆ ಹಾಗೂ ವಿಲೇವಾರಿ ಬಹುದೊಡ್ಡ ಸಮಸ್ಯೆಯಾಗಿದೆ. ನಿತ್ಯ ಸಾವಿರ ಟನ್ ತ್ಯಾಜ್ಯ ಉತ್ಪತ್ತಿಯಾಗುತ್ತಿದ್ದು ಆದರಲ್ಲಿ ಮನೆಗಳಲ್ಲಿ ಉತ್ಪತ್ತಿಯಾಗುವ ಬಹುತೇಕ ತ್ಯಾಜ್ಯವನ್ನು ಪಾಲಿಕೆ ಸಂಗ್ರಹಿಸುತ್ತದೆ. ಆದರೆ, ಸಾರ್ವಜನಿಕ ವಲಯದಲ್ಲಿ ನಿತ್ಯ ಉತ್ಪತ್ತಿಯಾಗುವ ತ್ಯಾಜ್ಯ ಸಂಗ್ರಹಕ್ಕೆ ಸೂಕ್ತ ವ್ಯವಸ್ಥೆ ಇಲ್ಲ. ಇಂದಿಗೂ ಚಿಂದಿ ಆಯುವವರನ್ನೇ ಅವಲಂಬಿಸಬೇಕಿದೆ. ಇಂತಹ ಸಂದರ್ಭದಲ್ಲಿ ಸಾರ್ವಜನಿಕಸ್ಥಳಗಳಲ್ಲಿಜನರೇಸ್ಫೂರ್ತಿಯಿಂದ ತ್ಯಾಜ್ಯ ಸಂಗ್ರಹಿಸುವಂತೆ ಪ್ರೇರೇಪಿಸಲು 'ಮನಿ ಬಿನ್' ಎಂಬ ಆ್ಯಪ್ ತಂತ್ರಜ್ಞಾನ ಆಧಾರಿತ ಕಸದ ಬುಟ್ಟಿಯನ್ನು ನಗರದ ಬನಶಂಕರಿಯ ಬಿಎನ್ ತಾಂತ್ರಿಕ ವಿದ್ಯಾಯಲದ ಕಂಪ್ಯೂಟರ್ ಸೈನ್ಸ್ ವಿದ್ಯಾರ್ಥಿಗಳು ಕಂಡುಹಿಡಿದಿದ್ದಾರೆ. ಶಿಕ್ಷಕರ ಸದನದಲ್ಲಿನಡೆಯುತ್ತಿರುವ ಆನ್ವೇಷಣಾ ವಿಜ್ಞಾನ

ಆನ್ವೇಷಣಾ ವಿಜ್ಞಾನ ಮತ್ತು ಇಂಜಿನಿಯರಿಂಗ್ ವಸ್ತು ಪ್ರದರ್ಶನದಲ್ಲಿ 'ಮನಿ ಬಿನ್' ಪರೀಕ್ಷಿಸಿದ ವಿದ್ಯಾರ್ಥಿನಿಯರು.

ಮತ್ತು ಇಂಜಿನಿಯರಿಂಗ್ ವಸ್ತು ಪ್ರದರ್ಶನಲ್ಲಿ 'ಮನಿ ಬನ' ಪ್ರದರ್ಶನಕ್ಕಿದೆ.

ಏನಿದು 'ಮನಿ ಬಿನ್' ಆ್ಯಪ್?: ಮನಿ ಬಿನ್ ಎಂದರೆ ಕಸ ಹಾಕಿದರೆ ಹಣ ನೀಡುವ ಕಸದ ಬುಟ್ಟಿ ಎಂದರ್ಥ. ಆ್ಯಪ್ ಹಾಗೂ ತಂತ್ರಜ್ಞಾನ ಆಧಾರಿತ ಸ್ವಯಂ ನಿರ್ವಹಣೆಯ ಕಸದ ಬುಟ್ಟಿ ಸಿದ್ಧಪಡಿಸಲಾಗಿದೆ. ಮೊದಲು ಆ್ಯಪ್‌ನಲ್ಲಿನ ನೇವಿಗೇಷನ್ ಸಹಾಯದಿಂದಸಮೀಪದಲ್ಲಿರುವ ಮನಿ ಬಿನ್ ಕಸದ ಬುಟ್ಟಿಯನ್ನು ಹುಡುಕಬೇಕು. ಬುಟ್ಟಿ ಬಳಿ ತೆರಳಿ, ಆ್ಯಪ್‌ನಲ್ಲಿರುವ ಓಪನ್ ಆಯ್ಕೆಯನ್ನು ಕ್ಲಿಕ್ ಮಾಡಿದರೆ ಕಸದ ಬುಟ್ಟಿ ತೆರೆದುಕೊಳ್ಳುತ್ತದೆ. ಆದರಲ್ಲಿ, ಕಸ ಹಾಕಿದರೆ, ಬುಟ್ಟಿಯಲ್ಲಿರುವ ಸೆನ್ಸಾರ್ ತಂತ್ರಜ್ಞಾನವು ಕಸ ಏಂಗಡಿಸಿ ಆದರ ಮೌಲ್ಯಕ್ಕೆ ಪಾಯಿಂಟ್ಸ್ ನಿಗದಿ ಪಡಿಸಿ ಪಕ್ಕದಲ್ಲಿರುವ ಡಬ್ಬಗಳಿಗೆ ಕಸವನ್ನು ತಳ್ಳುತ್ತದೆ.

ಕಸ ಹಾಕಿದ ಆ್ಯಪ್ ಬಳಕೆದಾರರಿಗೆ ಪಾಯಿಂಟ್ಸ್ ಸಿಗುತ್ತದೆ. ಈ ಪಾಯಿಂಟ್‌ಗಳನ್ನು ಡಿಜಿಟಲ್ ಕರೆನ್ಸಿಯಾಗಿ ಪರಿವರ್ತಿಸಿಕೊಂಡು ಬ್ಯಾಂಕ್ ಖಾತೆಗೆ ಅಥವಾ ಆನ್‌ಲೈನ್ ವ್ಯಾಲೆಟ್‌ಗಳಾದ ಪೇಟಿಎಂ, ಫೋನ್ ಪೇಯಲ್ಲಿ ಬಳಸಬಹುದು. ಇನ್ನು ಡಬ್ಬಿ ತುಂಬಿದ ಬಳಿಕ ಸ್ಥಳೀಯ ಸಂಸ್ಥೆಗಳಿಗೆ (ಬಬಿಎಂಪಿ) ಸಂದೇಶ ಹೋಗುತ್ತದೆ. ಆವರು ಬಂದು ಡಬ್ಬಿ ಬದಲಿಸಿ ಹೋಗಬಹುದು. ಸಂಗ್ರಹವಾದ ಕಸವನ್ನು ತ್ಯಾಜ್ಯ ಸಂಗ್ರಹ ಘಟಕಕ್ಕೆ ಅಥವಾ ಮರುಬಳಕೆದಾರರಿಗೆ ನೀಡಿ ಬರುವ ಹಣವನ್ನು ಮತ್ತೆ ಏನಿಯೋಗಿಸಿ ಸುಲಭವಾಗಿ ಈ ತಂತ್ರಜ್ಞಾನ ನಿರ್ವಹಣೆ ಮಾಡಬಹುದು. ಇನ್ನು ಈ ಮಾದರಿಯ ಒಂದು ಕಸದ ಬುಟ್ಟಿ ಸಿದ್ಧಪಡಿಸಲು ಕನಿಷ್ಠ 5 ಸಾವಿರ ರೂ. ಮೆಚ್ಚಿಗಾಗಲಿದ್ದು ದೀರ್ಘಕಾಲ ಬಾಳಿಕೆ ಬರುತ್ತದೆ ಎನ್ನುತ್ತಾರೆ ಸಂಶೋಧಕ ವಿದ್ಯಾರ್ಥಿ ಮನು.

ಕಸ ಕೂಡ ಆದಾಯ ಮೂಲ. ಆದರೆ, ಈ ಆಂಶವನ್ನು ಸುಲಭಗೊಳಿಸಿದರೆ 'ಸ್ವಚ್ಛ ಭಾರತ' ಕಲ್ಪನೆ ಸಾಕಾರಗೊಳಿಸಬಹುದು. ಈ ಆಲೋಚನೆಯಿಂಡಿ ಕಸ ಹಾಕಿ ಹಣ ಗಳಿಸುವ ತಂತ್ರಜ್ಞಾನ ರೂಪಿಸಿದ್ದೇವೆ. ಯೋಜನೆ ಸಾರ್ವಜನಿಕ ವಲಯಕ್ಕೆ ಬಂದರೆ ಪ್ರತಿಯೊಬ್ಬರು ಇದರಲ್ಲಿ ಭಾಗವಹಿಸುತ್ತಾರೆ. ಆ ಮೂಲಕ ನಗರ ಪ್ರದೇಶದ ಸಾರ್ವಜನಿಕ ಸ್ಥಳಗಳ ಕಸದ ಸಮಸ್ಯೆಯನ್ನು ಸುಲಭವಾಗಿ ಪರಿಹರಿಸಬಹುದು ಎನ್ನುತ್ತಾರೆ ವಿದ್ಯಾರ್ಥಿಗಳು.

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3.LIFELINE

This app will be used to locate and dispatch the closest emergency response vehicle in case of an emergency, to the respective location. The purpose of the application is to make the journey of the ambulance faster and smoother from the spot of accident to the nearest hospital.LifelineERV is an application in which the patient/helper can book the ambulance and track its live location. Each individual who uses the application can register and track the ambulance at every point. This app has a unique feature of broadcasting the live location, (via a pop-up notification) of the ambulance to all the app users in its vicinity of 250m - 500m. After the completion of the ride to the nearest hospital, the user can submit the feedback for the service.

Team :Ankitha S, Raksha H, Namitha G, Daniel C Mathew
Mentors :Smt.Sneha K, Smt.Manikantha

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

TEAM 1:

Student team details:

Aslesh Kumar A, Raghuveer S Bhat. Shwetha S, Alagar Krishna B

Product: Fuzzy Logic Electric Trike

Brief description about the student start-up:

The project deals with the design and development of 3 wheeled tadpole structured electric trike. The design involves mechanical molding, battery selection, motor selection with control circuit. AI technology is been planned to implement in software for control mechanism.

Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs:

Contribution of NewGen IEDC in the same:

- Prototype Development
- Business Analysis
- Product Design
- Test Market
- Commercialization
- Patent Filing

Future plan:

Stage 1: Incubated at NID and started a company.
Stage 2: Reaching out to investors to produce their product – Lithium Ion Batteries along with electric vehicle Trike.
Stage 3: Targeting electric vehicle segment for specially-abled people.

TEAM 2:

Student team details: :Raghavendra D S, RishabhBhansali, Vishnu Prasad Bhat

Product: Detachable Smart Faucet

Brief description about the student start-up:

To implement a detachable smart faucet that recognizes the presence of hand and turns on the valve for water flow. The amount of water consumed is recorded and can be analyzed by the user to monitor current usage and predict the future consumption.

Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs:

Contribution of NewGen IEDC in the same:

- Prototype Development
- Business Analysis
- Product Design
- Test Market
- Commercialization
- Patent Filing

Future plan:

Stage 1: To start the venture.
Stage 2: To commercialize the product in association with Sanitary Sector.

Stage 3: To convert existing taps in houses using low cost Smart Faucet without altering the present structure in order to save water and also aiming at large scale.

National wide other achievements
(Prototype exhibitions of students of various colleges)
PRODOTHON 1.0 @ BNMIT

BNMIT's NewGen Innovation Entrepreneurship Development Center (**New Gen IEDC)** funded by Department of Science and Technology, Government of India came up with a unique program called **PRODOTHON,** in collaboration with incubate firm Hycube works Pvt Ltd., similar to a Hackathon competitions going on in recent times. Engineering students from various disciplines participated and showcased their products in this event. The program was designed in such a way that it becomes a platform for young entrepreneurs to not only exercise their technical skills but also their business thinking, constructing and innovating vast solutions.

The 15 hour technical Prodothon was attended by around 100 students from different colleges on 14th November 2019. BNMIT hosted industrial mentors and investors to guide, support and encourage all the participants. **Dr. R S Hiremath**, CEO & Founder, Flexitron who has more than 600 innovations and **Mr. Shiva Shankar**, CEO JSS Incubation Mysore and an Entrepreneur with an engineering and management background were the guests of the program.

The first prize of Rs. 25k was bagged by students from NMIT and the runners up from AMC Engineering College took Rs. 15K. On the whole **Dr. Vijayashree**, Head NewGen IEDC & ED cell, BNMIT who conducted this event, felt that the energy level of both participants and the organizers were high till the end and during her feedback sessions the participants expressed their eagerness to be a part such events in future as well.

DETAILS OF PATENTS APPLIED

Sl.No.	Patent Ref.No.	Patent Application No.	Date of Application	Patent Title	Inventors	Patents Applied by
1	201941008707	TEMP/E-1/9379/2019-CHE	06.03.2019	Balance Mate	Brahma SP Keerthana Velilani Soumiya Rao T	Students of BNMIT
2	201941027532	TEMP/E-1/28958/2019-CHE	09.07.2019	Detachable Smart Faucet	**Dr.Jyoti R Munavalli** **Ms.Sumathi N** Raghavendra D S RishabhBhansali Vishnu Prasad Bhat	BNMIT - NewGenIEDC 2018-19 project
3	201941029985	TEMP/E-1/31642/2019-CHE	24.07.2019	Bio degradeable Diapers	**Hemanth Kumar C** **Dr.Jayanna B K** Kishan K Lohitkumar Shetty M Hariharan R N Karthik	BNMIT NewGenIEDC 2018-19 project
4	201941033734	TEMP/E-1/35639/2019-CHE	21.08.2019	Image Analysis - CCTV	**Dr.Sejal Santosh Nimbhorkar** Raksha H Ankitha S, Namitha G	BNMIT NewGenIEDC 2018-19 project
5	201941036072	TEMP/E-1/38189/2019-CHE	06.09.2019	Stereoscopic Images	**Ms. Chaitra N** Shashanka G Tejas R Simha Varun D Gurjar Vishnuvardhan G	BNMIT NewGenIEDC 2018-19 project
6	201941037512	TEMP/E-1/39742/2019-CHE	17.09.2019	Electric Three Wheeler Vehicle (Trike)	**Dr.Venkatesha K** **Dr.Parimala R V** Aslesh Kumar A Raghuveer Bhat Shwetha S Alagar Krishna B	BNMIT NewGenIEDC 2018-19 project

Success stories of New Gen IEDC students 18-19

Bramha. S. P, SoumiyaRao T, KeerthanaVelilani, of III Semester and V ISE and CSE have won **3rd Prize** for their project **Balance Mate** in the competition organised by **IIT, Kanpur** on **9th March 2019.**

Awards Received by IEDC students 2018-19

Bramha. S. P, Soumiya Rao T, Keerthana Velilani, Nayana Bhat of III Semester and V ISE and CSE have won 1st **Prize** for their project **Balance Mate** in the competition organised by **KSIT, Bangalore** on 10th November 2018.

Awards Received by IEDC students 2018-19

Money Bin demonstration by students of Government higher primary school, Rajarajeshwari Nagar at Anveshana 2019.

IEDC Project – Money Bin

Money Bin is a dustbin, an initiative to promote Swachh Bharat movement. For effective utilization of this dustbin, incentives are rewarded to people using Money Bin in public. This will encourage public to use dustbins more frequently, thereby maintaining cleanliness. Money Bin idea was generated and developed by **Manu, Nihaarika, Naga Sukesh and Murudeshwar of Computer Science and Engineering Dept.** The project was selected for the final competition at Anveshana 2019.

It bridges the knowledge gap between school and higher education through integration of ideas and learning concepts.

Newspaper & TV coverage for IEDC students 2018-19

ಉದಯವಾಣಿ

ಮನಿ ಬಿನ್‌ಗೆ ಮನೆಯ ಕಸ ಹಾಕಿ ಕಾಸು ಗಳಿಸಿ

ವಿನೂತನ ತಂತ್ರಜ್ಞಾನ ಅಭಿವೃದ್ಧಿಪಡಿಸಿದ ನಗರದ ಕಂಪ್ಯೂಟರ್ ಸೈನ್ಸ್ ವಿದ್ಯಾರ್ಥಿಗಳು

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Money Bin project exhibited in *Anveshana 2019* was reported in Kannada newspaper-Udayavani on 27/02/2019.

TV Coverage Link:
firstnews.tv,
firstnewskannada.
https://youtu.be/40spqvlosWs

Newspaper coverage for IEDC students 2018-19

hindustantimes

Origin stories: Students turn inventors at this Mumbai festival

3D-printed prosthetics, a wi-fi-enabled undersea vehicle and new ways to help the disabled get around... here's how they did it.

EDUCATION Updated: Jan 23, 2019 20:12 IST

The 3D-printed prosthetic arms made by a mechanical engineering student from Bengaluru cost less than Rs 10,000.

Organised by Somaiya's Research Innovation Incubation Design Laboratory (RiiDL) from January 17 to 19, Maker Mela featured 18 students among the 100 inventors aged 8 to 83, from Pune, Nashik, Ahmedabad, Bengaluru, Kochi, Jaipur and Tripura, among other cities.

One team created a 3D-printed arm, with moving fingers. Another had worked out a prototype for an underwater vehicle that could take pictures of coral reefs and marine life and share them in real time over Wi-Fi.

Gaurang Shetty, chief innovation catalyst at RiiDL, says that apart from showcasing their innovations, students get feedback to help improve.

"Out of the lot, we shortlist six to eight of the top innovations. There is a session arranged for them to pitch their ideas to industry experts. The experts ask them various questions, and this is where the team's presentation and communication skills come handy.

They learn a great deal through the pitching session. And as they move around checking other exhibits, they get to interact with other inventors as well."

A handy trick

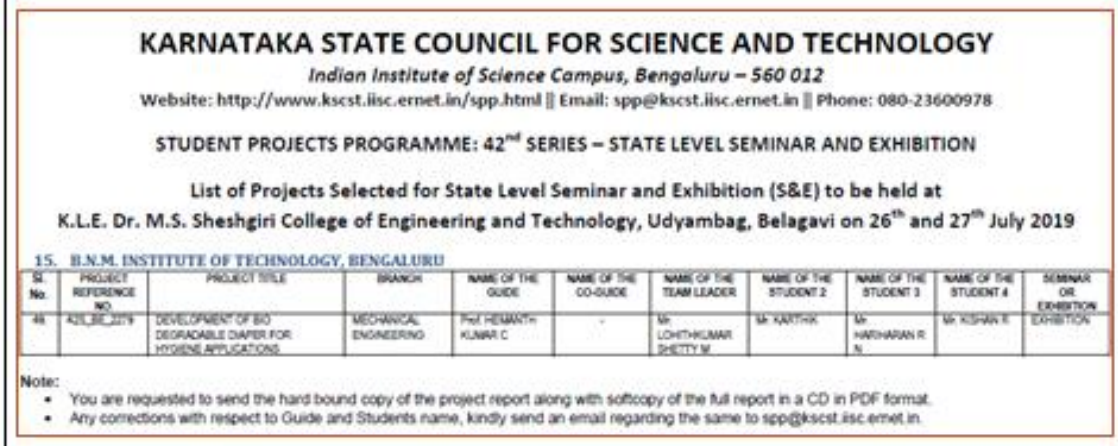
For 21-year-old Reethan DL, a mechanical engineering student from Bengaluru, the physical rehabilitation centre near his house was the inspiration to create a 3D-printed prosthetic arm and hand. "Our primary aim was to make it low-cost, because affordability is a big problem with today's prosthetics," he says.

He and fellow engineering students Shreyas SP and R Aishwarya worked with Mukesh Patil, head of the department of mechanical engineering at their college, BNM Institute of Technology, and with L Vijayashree, head of the MBA department, to create a prototype.

They have received a grant of Rs 2.5 lakh from the Karnataka state department of science and technology. "The arm we have created costs less than Rs 10,000," Reethan says.

"My team already was well-versed in 3D printing and it wasn't much of a task to make the prosthetic arm. The prototype cost us Rs 12,000 to Rs 17,000. But if we create in bulk, the it will be much cheaper to make. With the government grant, we are now planning to make more such arms, reach out to the disabled at give it to them at a low cost," he adds.

State Level representation by IEDC Students 18-19



KARNATAKA STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

Indian Institute of Science Campus, Bengaluru – 560 012

Website: http://www.kscst.iisc.ernet.in/spp.html || Email: spp@kscst.iisc.ernet.in || Phone: 080-23600978

STUDENT PROJECTS PROGRAMME: 42nd SERIES – STATE LEVEL SEMINAR AND EXHIBITION

List of Projects Selected for State Level Seminar and Exhibition (S&E) to be held at

K.L.E. Dr. M.S. Sheshgiri College of Engineering and Technology, Udyambag, Belagavi on 26th and 27th July 2019

15. B.N.M. INSTITUTE OF TECHNOLOGY, BENGALURU

Sl. No.	PROJECT REFERENCE NO.	PROJECT TITLE	BRANCH	NAME OF THE GUIDE	NAME OF THE CO-GUIDE	NAME OF THE TEAM LEADER	NAME OF THE STUDENT 2	NAME OF THE STUDENT 3	NAME OF THE STUDENT 4	SEMINAR OR EXHIBITION
48	42S_BE_3019	DEVELOPMENT OF BIO DEGRADABLE DIAPER FOR HYGIENE APPLICATIONS	MECHANICAL ENGINEERING	Prof. HEMANTH KUMAR C	-	Mr LOHITHKUMAR SHETTY M	Mr. KARTHIK	Mr HARIHARAN R N	Mr. KISHAN R	EXHIBITION

Note:

- You are requested to send the hard bound copy of the project report along with softcopy of the full report in a CD in PDF format.
- Any corrections with respect to Guide and Students name, kindly send an email regarding the same to spp@kscst.iisc.ernet.in.

Campus Pre Incubation and Post Incubation:

1. **HyCube Works Pvt. Ltd.,** a Venture Started by our alumni Reethan Doijode & Shreyas S P (ME Dept) Started in 2018 and now has a client base across India. It has been selected as one among the Top 30 of 300 Startups from all over India and was **pre-incubated by Launchpad Cohort 12 at NSRCEL, IIM Bangalore. They are now a very successful startups in NSRCEL Incubation centre.**
2. **VTRIKE** : TRIKE was preincubated at our college and now Incubated at NID, Bangalore
3. **Balance Mate:** Balance Mate Team is been pre incubated at our college premises, but yet to start their company. They are chosen for incubation at IISC Centre, Bangalore.
4. **Tedora Tech:** Shreyas G S, Thrupthi n students who designed autonomous Ariel medical assistance started a web designing company at Campus.

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NewGen IEDC [2017-22]
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

Progress Report (As on March 31, 2020)

Name of the College/Institution hosting NewGen IEDC	University of Science and Technology, Meghalaya
Name of NewGen IEDC Coordinator	Dr. AMIT CHOUDHURY
Contact Details of NewGen IEDC Coordinator • Mobile Number • e-Mail ID	Dr. AMIT CHOUDHURY Dean, SCHOOL OF BUSINESS SCIENCES Phone : 8761007133 / 9854453170 E-mail: amich1970@gmail.com

Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements	
1.	**Entrepreneurship Awareness Camp**	Duration	Participation
	EAC-01 03/03/2019to 05/03/2019	3 days	Total : 63 Male : 23 Female : 40
	EAC-02 10/03/2019 to 12/03/2019	3 days	Total : 61 Male : 30 Female : 31
	EAC-03 24/04/2018 to 26/04/2019	3 days	Total : 29 Male : 14 Female : 15
	EAC-04 07/05/2019 to 09/05/2019	3 days	Total : 30 Male : 12 Female : 18
	EAC-05 21/05/20189to 23/05/2019	3 days	Total : 44 Male : 21 Female : 23
	EAC-06 05/08/2019 to 07/08/2019	3 days	Total : 41 Male : 24 Female : 17
	EAC-07 20/09/2019 to 22/09/2019	3 days	Total : 45 Male : 33 Female : 12
	EAC-08 04/10/2019 to 06/10/2019	3 days	Total : 42 Male : 24 Female : 18
	EAC-09 26/10/2019 to 28/10/2019	3 days	Total : 58 Male : 33 Female :25
	EAC-10 29/10/2019 to 31/10/2019	3 days	Total : 34 Male : 17 Female : 17
	EAC-11 02/11/2019 to 04/11/2019	3 days	Total : 43 Male : 26 Female : 17
	EAC-12 06/11/2019 to 09/11/2019	3 days	Total : 67 Male : 33 Female : 34
	EAC-13 11/11/2019 to 13/11/2019	3 days	Total : 55 Male : 33 Female : 22

	EAC-014 15/11/2019 to 17/11/2019	3 days — Total : 36 Male : 19 Female : 17
	EAC-015 18/11/2019 to 21/11/2019	3 days — Total : 39 Male : 19 Female : 20
2.	Brainstorming amongst Faculty of USTM and others E-Club Formation at USTM	August - 2019 — 08 Student Projects were initiated September - 2019 — 12 Student Projects were initiated
3.	**Industrial Visit**	08 Industrial Visit were conducted with total 270 students participations namely in the industries of CG Products, Repose, Bitchem Industries, CIPET, Nezone.
4.	**Motivational Talk by Successful Entrepreneurs/ speakers**	Mr. Dipankar Bhattacharya (NLP & Mind Coach) Mr. Parag Phukon, Ex VP Reliance Defence Miss C. Tapsey GM, HR, Zaloni Technologies Ms.L ucky Pegu Entrepreneur Mr. R Agarwala (CA)

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1.	Sensitization on Entrepreneurship among newly enrolled students of USTM	Entrepreneurial discussion led to promote projects directed towards prototype development
2.	Brainstorming of Project development	Project Idea generated
3.	Initializing of projects	30 project groups shortlisted

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
	Industry Visits Conducted Speakers invited for talks, from Industry & Financial Instittutions	Speakers involved during EAC to sensitize students on Entrepreneurship and motivate

2. Deviation (shortfall) from the proposed action plan (with reasons), if any: Nil

3. Other important highlights (new initiatives), if any:

Student project identified for next academic year 2020-21

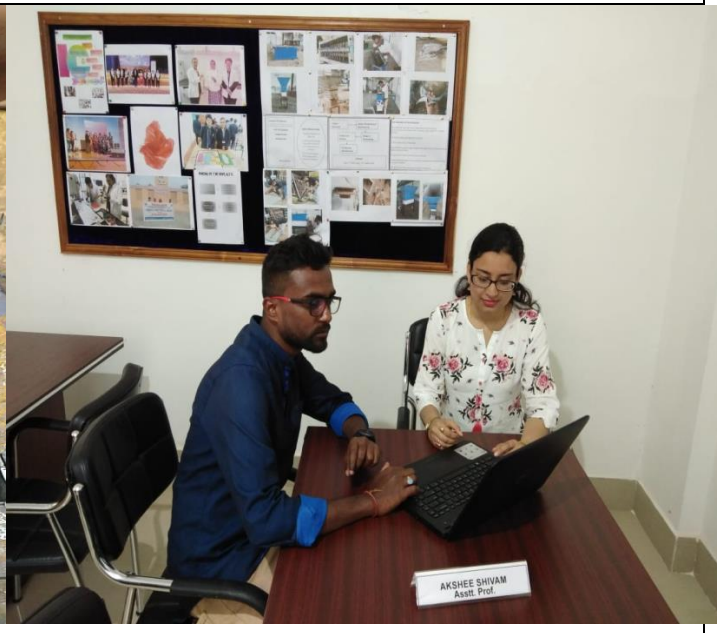
S.No	Project Title	Mentor's Name with phn no & email	Students name
1	Development and standardization of "fruit cheese" from locally available variety of Pineapple and Banana in NER	Dr. Saiyyad Alamdar Husain 7983430492 alamdar.amu@gmail.com	1. Tajreen Ahmed 2. Jubilee Rani Brahma 3. Madhu Ray 4. Alzinas Mukaria 5. Rajib Deka
2	"Developing and implementing the sustainable Hybrid Electrical Charging Stations"	Akshee Shivan 6002472628 Akshee02@gmail.com	1.Ananya Bora 2. Priti Rani Roy 3. Suheli B Barbhuiya 4. Amarjyoti Thakuria 5. Shamshad Kausar
3	Development of bioplastic based organic sanitary napkin - AlKlin	Dr. Deboja Sharma 8753969941 debu1000@gmail.com	1. Saanya chaturvedi 2. Tapashya Chetri 3. JillimoniNath 4. Pooja Roy 5.SrijanaJalshi
4	Spawn growth and Fructification of Specialty Mushrooms - an Initiative to value Added Products	Dr Madhusmita Borthakur 9435424038 mborthakur58@gmail.com	1. Bhabana Garg 2. Rajshree Das 3. Indrani Laskar 4. Minakshi Devi 5. Mr. Sanjay Chanda
5	Anti viral organic hand wash and hand sanitizer with timer circuit dispenser gadget.	DR. Mautushi Das 8638203276 8876297014 moushg@gmail.com	1. Pankaj Chitrakar 2. Subrata Roy 3. Jakia Wahid 4. Manash Kumar 5. Jyotish Hafila
6	Development of natural cut flower preservatives: The Phoolmantra	Dr. Milu Rani Das 8486399172 miluranidas_2007@rediffmail.com	1. SaficulIslam 2. Sarika Parbeen 3. Abu Lahel 4. Nitu Roy 5. Mizink Basumotary
7	Development of herbal baking powder	Pallavi Gogoi 9101207994 pallavigogoi153@gmail.com	1. Anushmita Baruah 2. Ankita Dass 3.Abinash Deka 4.Kabyashree Kalita 5.Ashimaa Verma
8	Patient Monitoring System	Parimita Saikia parimitasaikia6@gmail.com 9577783399	1. Mrinmoy Haloi 2. Hasan Safrid Shah 3. Nirupam ingha 4. Rashmi Barma
9	Anticeliac supplement as an adjunct therapy for management for celiac disease	Dr. Priyanka Kashyap 9957694135 kashyappriyanka99@gmail.com	1. K. Leengthoingambi Singha 2. Sibani Bhowal 3. Tazrifa Sultana Ahmed 4. Nitu Basumatary 5. Shilpishika Borgohain

S.No	Project Title	Mentor's Name/ phn no & email	Students name
10	Automatic Text Summarizer: Creation of Computerized Summaries	Rajesh Chutia 8638591860 raj4u411@gmail.com	1. Namrata Devi 2. Likvi Aye 3. Toni Koyu 4. Momi Devi 5. Kalom Saroh
11	Herbal Yogurt	Samson Rosly Sangma 7085220873 samsons63@gmail.com	1.Sagarika Sarma 2.Chayanika Kalita. 3.Leeza Kalita. 4.Bhaktima Goswami. 5.Md. Ashish.
12	Intelligent Emergency Alert System	Sangeeta Borkakorty 9435284039 s.borkakoty06@gmail.com	1. Pinku mani Das 2. Pramod Chetri 3. Mustaque Hussain Laskar
13	Web Application for testing Credit Worthiness to Credit Utilization of the Underprivileged clients of Financial Institutions	Ms. Santa Kar 8638404465 Kar.santa5@gmail.com	1. Priyangshu Borah 2. Saurav Nandi 3. Kiran M. Sangma 4. Anju D. Sangma 5. Saranga Saikia
14	Production and distillation of laboratory grade alcohol (70%) from Jackfruit collected from Assam	Satyakam Agarwala 9954320228/ 8638128766 satya2006ag@gmail.com	1.Manowarul Islam 2. Dikshita Gohain 3. Ruchika Saikia 4. Sumee kalita 5. Saurabh Mahanta
15	**Natural Dye** (Dyeing clothes with plant pigments)	Dr. Sony kumari 9706782348 sonykumari_15@yahoo.com	1. Animesh Sharma 2. Rajesh Adhikary 3.Muhammad S Ahmed Khan 4. Margam Bam 5.Shrutashini Hazarika
16	Development of novel bio-weedicide, as an approach to sustainable agriculture	Dr. Bedabati Chowdhury 7002656603 Bedabati_dg@yahoo.co.uk	1. Madhumita Roy 2. Mitu Roy 3. Abu Lahel Baki 4. Mijink Basumatary 5. Prianka Saha
17	Low cost housing solution	Dipankar Thakuria 7798268897 Deepankar.thakuria@gmail.com Lizmol Antony Peechattukudy 9096760792 Lizmol.antony@gmail.com	1. Donboklang Sokhia 2. Gyati Mamung 3. Ramjan Ali 4. Premadona Marak 5. Digantamoy SIngha 6. Shakeel A Mazumdar
18	App mapping supply chain of agro produce in Ri-Bhoi	Salma Sabhnam 9957452587 Soonam417@gmail.com	1. Moksham J Nath 2. Md. Ali Shams 3. Pramod Chetry 4. Sendong J Namo 5. Jyotishman Kashyap
19	"Developing and implementing the sustainable Hybrid Electrical Charging Stations". SOLAR STERLING ENGINE GENERATOR	Matiur Rahman 8399901840 Parmanand Pathak 7575928621 Parmanand.pathak.ceng@gmail.com	1. Abu Bakar laskar 2. Hifzur Rahman 3. Ritik Ranjan Bhuyan 4. Hussain M Kusum 5. Arnab P das 6. Alexius Tariang
20	Low Cost Hygiene & Sanitation Solutions	Rachel Sarkar 7896120380 sarkarrashel@gmail.com	1. Saksham Saxena 2. Saeed Taj 3. Subhrajyoti Dhar 4. Rashanara Ahmed

4. Student Projects (Please provide the following details for each student project)

Project # 1

Project Title Mentor Name Student Name	Project Status At The Beginning Of The Year	Interventions Made	Current Status
Project Titlr: Compact Ctc Machine Mentor's Name: Ms. Akshee Shivam Asst.Prof Mechanical Department Student Name: Sudipta Kumar Donkupar Nongrum Nitesh Kanu Subham Das	Brainstorming Various Ideas Developing A Proper Plan To Execute The Project	Developing A Model In Catia Making The Basic Components Like Rotor Vane, Conveyor System	Assembling The Various Components Applying Various Marketing Strategies Participating In Various Events



Project # 2

Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
Development of broad-spectrum antimicrobial gel incorporated with biosynthesized silver nanoparticles **Mentor Name:** Dr. Seram Anil Singh **Student Name:** 1. Pranjal Kalita 2. Chingakham Raina Devi 3. Arnika Devi 4. Ragini das 5. Ashish Pratim Mahanta	• Survey for raw material collection • Collection of Raw material • Purchase of chemicals and glassware and other consumables	• Sample collection and drying • Preliminary pytochemical analysis of the sample • Plant solvent extract preparation • Synthesis and characterization of silver nanoparticles • Study of the antimicrobial activity • Preparation of antimicrobial gel incorporated with silver nanoparticles	Product prototype ready; required few other test and; proper packaging and labeling

TEAM MEMBERS WITH THE MENTOR IN OFFICE SPAGE

TEAM MEMBERS

GRINDING STAGE

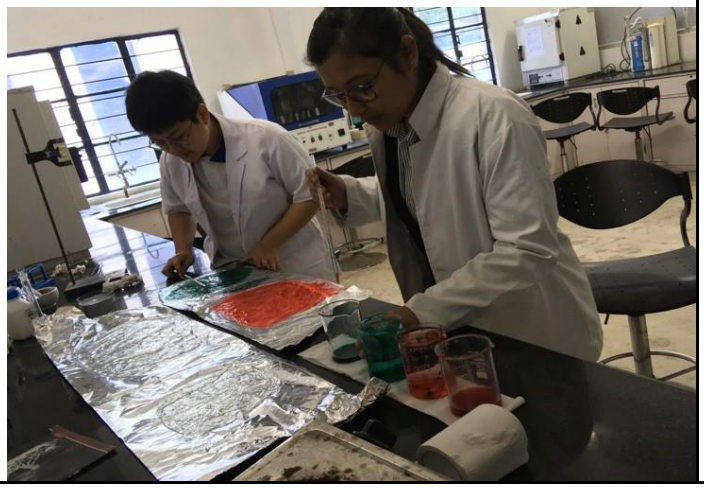
SOLVENT PREPARATION

Project # 3

Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
Project title: Development of noble herbal antifungal formulation from selected medicinal plants of North East India **Mentor name:** Dr. Bedabati Chowdhury **Student Name:** ARIFUL ISLAM REJUWAN AHMED SIMI RABHA HAFIZ NEKIBUR RAHMAN AHMED UMME HABIBA SIDDIKA	Students started survey and collection of the samples	Travelling to different areas for collection of samples Experimentation & Testing Product Formulation	Product Prototype Ready Clinical Testing Awaited Commercialization to be initiated

Project # 4

Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
TITLE; Development of biodegradable and bioresorbable plastic from organic waste **MENTOR**; Deboja Sharma **STUDENTS**; TahminaMazumderKaveryMohelaSaanya Chaturvedi PragyaDas MedhaBasumatary	1)Marketing research. 2)Analysis of data relevant to aspects of marketing. 3) Analysis of nature of competition, and Fieldvisitwas completed.	1)Analysis of availability of raw materials. 2)Assembly and buying ofraw materials. 3)Product development 4)Lab works 5)Trial moulding 6)Technical analysis Product testing and scrutiny. 7)Risk assessment 8) Error correction	Packaging, Marketing and commercialization yet to be done.



Project # 5

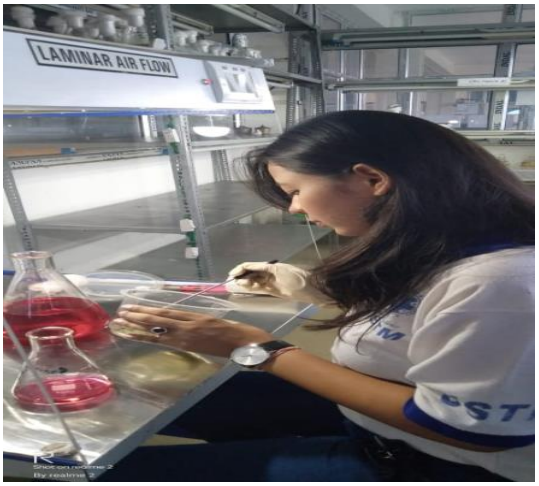
Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
Project Title:SOLAR POWERED E-RICKSHAW(CAMPUS MOBILITY) **Mentor :** Mr. Jahidul Islam Asst. Prof., Dept. of ME. **Students -** 1. Barik Khan 2. Arnab Pratim Das 3. Ruhul Amin 4. Hussain M Kusum 5. Asique Hussain 6. Abdul Jabbar	1. Brainstorming the ideas 2. Finalizing the idea 3. Process of works to be done 4. Collecting information about the components	1. Purchasing of the basic components required 2. Assembling of the components for testing 3. Test run of the Vehicle	Fine tuning the power drive Test run Certification Market liaising

Project # 6

Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
Title: Development of leaf manure for organic cultivation **Mentor: Dr. Milu Rani Das** **Student Name:** **1.** Sohidur Islam **2.** Farhana Yasmin **3.** Maminul Ahmed **4.** Mijanur Rahman **5.** Imdadul Islam Mondal	1. **Collection of leaf samples** 2. **Start extraction of manure**	1. Preparation of manure formulations 2. Start the field experiment for testing the manure. 3. Experimentation	Prototype ready Liaisioning with markets

Project # 7

Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
Algal bio fertilizer can accelerate sustainable agriculture: A remedy for Eutrophication Mentor: Dr.Mautushi Das Students name: 1.Pushpanjali sharma 2.Moharshi Mohan Borah 3. Marpe Bam 4. MinotiRahang 5. SushmitaBhattacharjee	1. Initial survey of field has been done 2. screening of alga fit for fertilizer production was done. 3. Initial Lab testing of sample	1. Started the field survey 2. Collection of sample 3. Setting up of experimental plot Second grant 4. Cultivation of crops 5. Product development Third grant 6. Analysis of sample 7. Analysis of crops	1. Product developed and marketing strategies initiated through participation in different Hackathon, E-summit(NGIEDC) etc



Project # 8

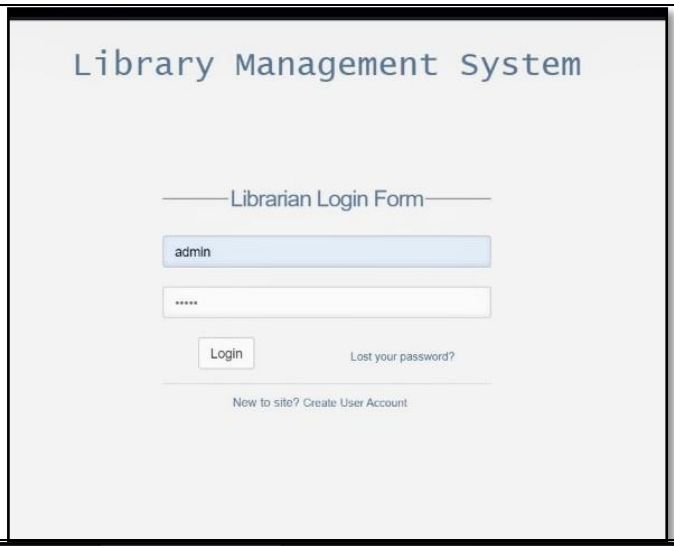
Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
PROJECT TITLE **EXTRUDED PRODUCTS FROM DIFFERENT INDEGENOUS RICE VARIETY** **MENTOR NAME** PALLAVI GOGOI **STUDENT NAME** 1. ANUSHMITA BARUAH 2. ASHIMMA VERMA 3. ANKITA DASS 4. KABYASHREE KALITA 5. ABHINASH DEKA	Research Field search for appropriate rice variety	Raw Material Collection Testing Food Value Experimentation Blending Product Preparation	Prototype in Noodle and Pasta Form made ready FSSAI Certification awaited Commercialization o be initiated

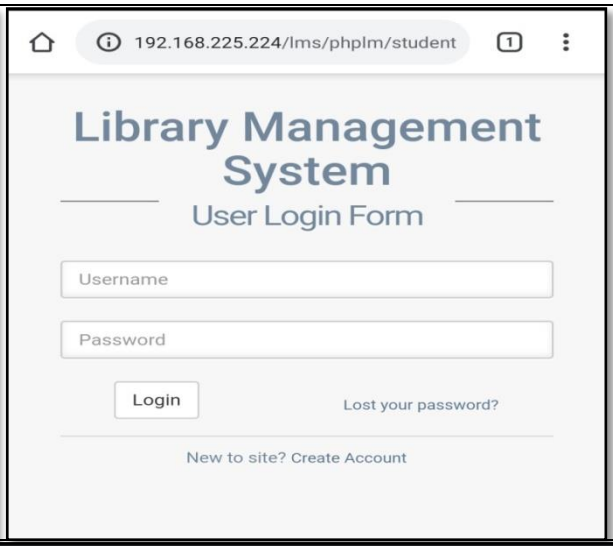
Project # 9

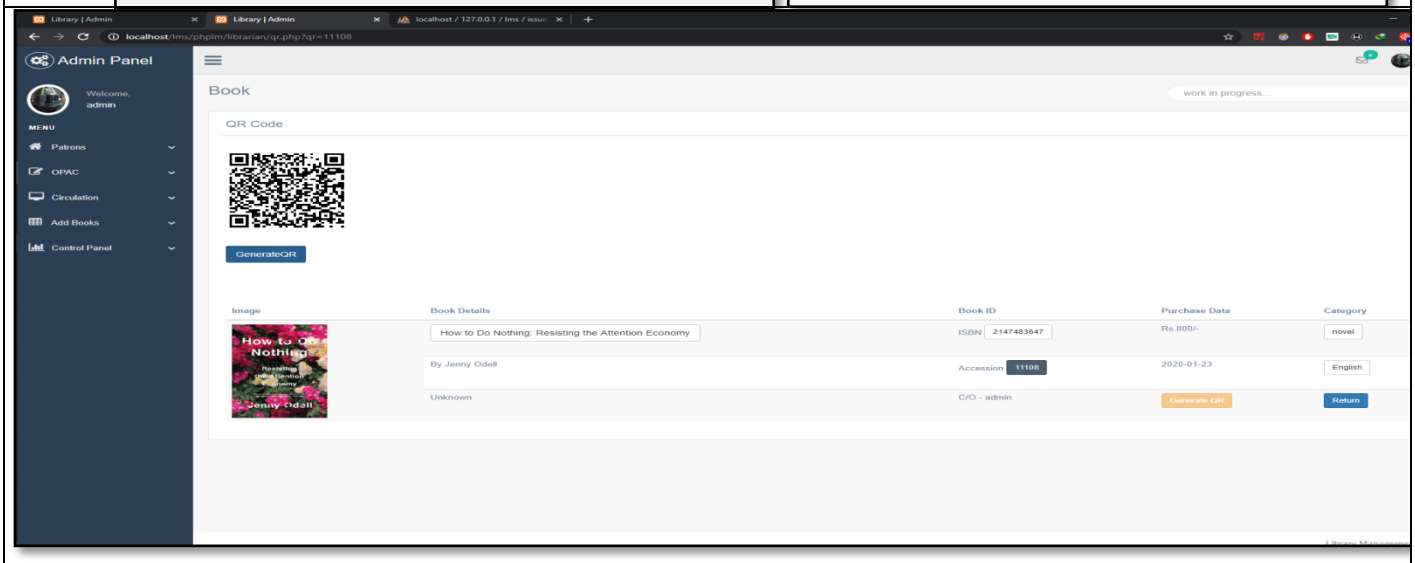
Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
SMART BLIND STICK FOR VISUALLY IMPAIRED PERSON **MENTOR:** PARIMITA SAIKIA **STUDENT LIST:** • RIJONSTAR RANEE • SAMIR DEBBARMA • MD IKBAL MAMUD RAHMAN • WONDERFUL NONGSIEJ • DALIMEE BARO	• Literature review on presently available product • List of components were made • A part of software simulations were completed	• Components collected • One sample was made • Targeted to make 10 samples for which few part of the sample were ordered	• Simple bind stick sample is ready • Sophisticated sample components ordered • 10 samples we have to make for testing

Project # 10

Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
Project Title: Self- Check in and Check out by the Library Users Applying QR Code **Mentor Name:** Rajesh Chutia **Students Name:** 1. BhaigyashreeBoro 2. BedantaKalita 3. Sk Mehdi Hasan 4. David Ray 5. JitulNath	Research Library requirement & Process Description	Programming Trial Establishing QR Coding QR Code Generator Hosting Domain Registration	URL qlibrary.online Liaisioning with Libraries and end users

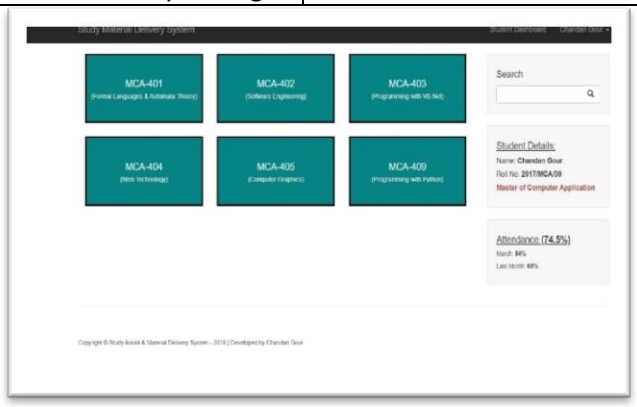


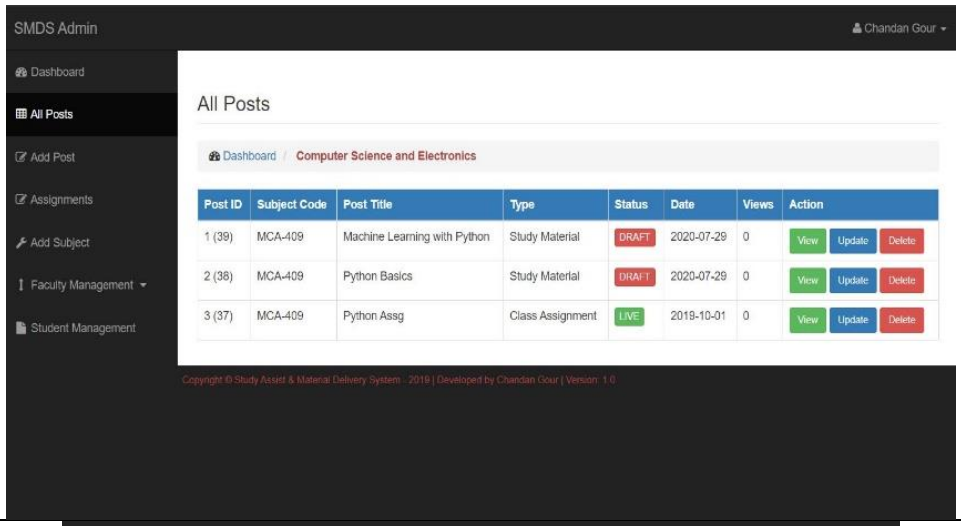


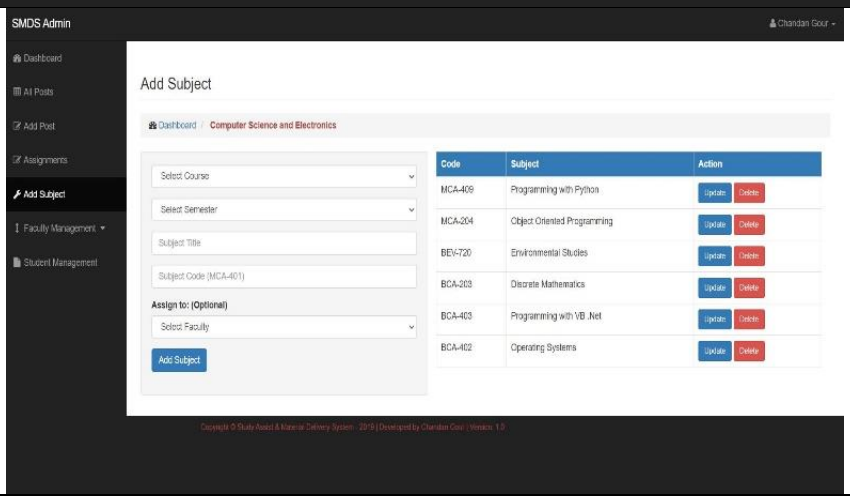


Project # 11

Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
Project Title: Study Assist & Material Delivery System **Mentor Name:** Sangeeta Borkakoty **Student Name:** 1. Chandan Gour 2. Nipon Barman 3. Abdul Aziz 4. Akash Nath 5. Bhaskar Jyoti Gogoi	Layout design Architecture Coding	Software development Code Testing Programming Linking to Department Database	Development of the software completed Security testing Awaited Market Linkages





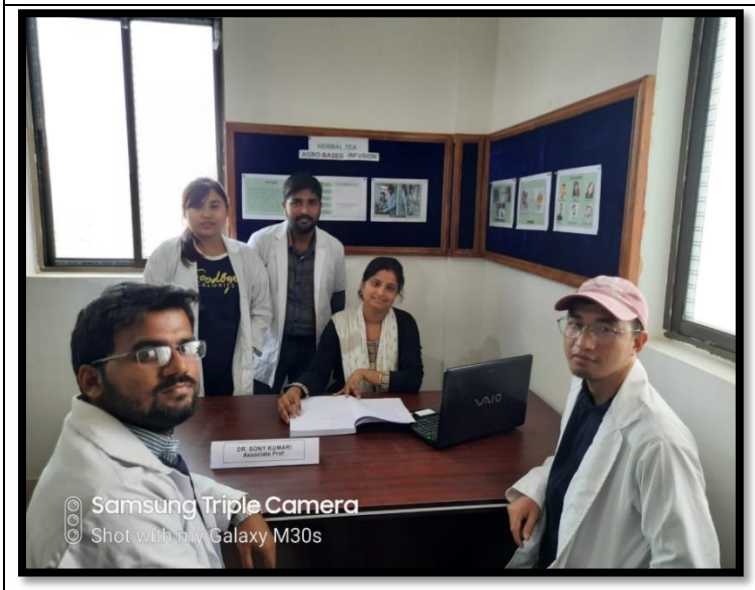


Project # 12

Project Title Mentor Name Student Name	Project Status At The Beginning Of The Year	Interventions Made	Current Status
"Development Of Prebiotic Supplement And Pre-Probiotic Food Product Form Seasonal Fruits And Vegetables, And Herbs From North East India" **Mentor Name** – Satyakam Agarwala **Student's Names** – Ankita Kalita Anushmita Ghosh Animesh Hatibaruah Jyotirmoy Haloi Nabanit Goswami	Research Raw Material Source Identification Region Wide Collection Of Raw Materials; Purchase Of Aplliances And Glasswares	Drying Of Raw Materials, Processing, Formulation, Experimentation & Laboratory Testing	Finished Combination Of Product Testing Awaited Fssai Certification Awaited Packaging & Market Liaising
			
			
			

Project # 13

Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
Project Title: HERBAL TEA AGRO BASED INFUSION **Mentor Name:** Dr. Sony Kumari **Student Name**: 1. Shahbaaz Ahmed 2. ArunJerang 3. AditiSinha 4. Rony Bhowal 5. Mortaza Ahmed	Research Identification of Locally available Herbs Collection of Herbs	Sample Collection Testing Experimentation Product Formulation Prototype Development Testing	Prototype developed FSSAI Certification Awaited Packaging and Market liaising

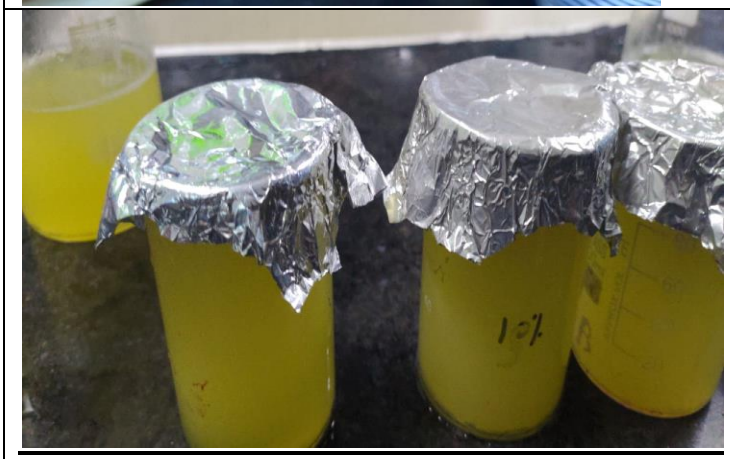


Project # 14

Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
Preparation of nutritious pasta enriched with leaf protein concentrate of *Amaranthus viridis* Mentor: Dr Jayabrata Students: Rajesh Adhikary, Mohammed Ashish, Madhurjya Baruah, Shrutrasrini Hazarika, Sumi Kalita	Identification of leaf Sourcing Raw material Collection & Testing	Sample material Analysis Experimentation Extraction Product Formulation Product Development Testing	Certifications Awaited FSSAI Registration Awaited Packaging & Market Liaising

Project # 15

Project Title Mentor Name Student Name	Project Status at the beginning of the Year	Interventions made	Current Status
Development and standardization of "RTS DRINK" from locally available pineapple varieties. Mentor Name 1. Dr. S Alamdar Husain 2. Pinky Deka Student Name 1. PRASENJIT REANG 2. MANIKA CHOUDHURY 3. SHREYA SINGHA 4. KANCHAN GUPTA 5. VICKY N MANAR	Research Concept formation Identification of sources in and around Ri Bhoi Sample collection	Raw Material Procurement Appliances & equipments Purchase Sample testing Product Formulation Product Development Testing	Prototype ready Process standardized FSSAI Regd awaited Packaging & Market liaising



5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Caselet-1

TITLE;
Development of biodegradable and Bioresorbable Plastic from Organic Waste
MENTOR;
Deboja Sharma

STUDENTS;
Tahmina Mazumder
Kavery Mohela
Saanya Chaturvedi
PragyaDas
Medha Basumatary

Students Start up and start up entrepreneurial journey from ideation to prototype or commercialization

The term "bioplastic" represents a plastic substance that is based (wholly or in part) on organic biomass rather than petroleum. Biobased plastics are distinguished from much more common petroleum based polymer. However, compostable plastic are capable of undergoing biological decomposition in a compost site as a part of an available program, such that the plastic is not visually distinguishable and breaks down to carbon dioxide, water, inorganic compounds and biomass at a rate consistent with known compostable materials leaving no toxic residues.It is an easily degrading low maintenance plastic with increased rate of microbial action degrading the plastic at the fastest rate. Leaving no toxic residues on degradation, the development of this plastic will prove to be beneficial for the upcoming generations safeguarding the environment from the toxic effects of regular commercially available plastic. Substituting harmful single use plastics, this great initiative, produced from organic source can be widely used in the fields of medicine, food, cosmetic and mostly packaging industries. The usage of single use plastics in packaging industries and the generation of plastics waste, has been increasing drastically.

The idea of the present work is to develop a biobased plastic or bioplastic from organic waste which can be used in various purposes in the field of medicine, food and cosmetic industry as well as household purposes. Broader usage of biodegradable plastics in packaging and disposable products as a solution to environmental problems would heavily depend on further reduction of costs and the discovery of novel biodegradable plastics with improved properties. Scalability is quite challenging. After extensive laboratory works, a quality controlled bioplastic or biobased plastic will be obtained and applied for patent. Thus the patented product with developed technology will be shared with the different plastic industries for marketing.

Role of NewGenIEDC -

The NewGen IEDC at USTM took up this project seriously due to the local appeal and scope that it carried. NGIEDC helped the group set up necessary infrastructure required within the existing workshop facilities and facilitated meaningful interaction with design teams and consultants in the field of solar energy. Further, NGIEDC introduced the conceptual design in different forums, wherein, the group PARTICIPATED in Hackathon organized by NGIEDC IIIT Allahabad and bagged te 3rd Best Project Award.

Further scope:

To explore variants and develop packing material especially for Pharmaceutical and Food Processing Sector.

Achievements

1. Won Awards at IIIT Alahabad Hackathon
2. Shortlisted by Chitkara Univ's Hackathon for final idea pitching
3. Identified by BIRAC as promising project

Future Plans

- To explore possibilities of initiating start-up
- To liaise with investors who had shown interests on the same during several Hackathon participation.
- To explore export market

Caselet-2

Algal bio fertilizer can accelerate sustainable agriculture: A remedy for Eutrophication

Mentor: Dr.Mautushi Das

Students name:

1.Pushpanjali sharma

2.Moharshi Mohan Borah

3. Marpe Bam

4. MinotiRahang

5. SushmitaBhattacharjee

Students Start up and start up entrepreneurial journey from ideation to prototype or commercialization

The Research attempts to develop an organic fertilizer from green algae which forms bloom in different water bodies making the Depletion of DO level in many water bodies.The algae was collected from such streams and water bodies, screened, mass cultured and dried to prepare the fertilizer. Further, the different elements including NPK were tested to know the nutrient content in the fertilizer. The product was then applied to different vegetable crops to know the efficiency in comparison with other inorganic and organic fertilizers available in the market. The fertilizer which was by now tested on different crops like tomato, chillies, capsicum, brinjal, beans, peas, raddish, potato etc and has given faster and better yield than any other inorganic and organic fertilizers available in the market. Different parameters like height , leaf size, fruit size, no. of fruits, flowers, branches, root length etc were considered and biochemical tests like protein, carbohydrate, lipid content, vitamins and minerals were also tested for different vegetables .Maximum parameters described above has shown positive and significant result on the algal biofertilizer. The product with its dual benefit (1. Faster and better yield 2.a remedy for eutrophication) can accelerate sustainable agriculture in North East regions of India. Additionally the product will be available in different quantities for kitchen garden and farmers.It is a very cost effective product.Our product requirement is very low. As per our study, 2gm/L of water is required for ten plants at 14 days interval.Easy to use and can be prepared by farmers in minimum training.

UNIQUENESS OF OUR PRODUCT

Environmental friendly

Fast growth than any other organic fertilizer in the market(scientifically proven)

Long lasting

High yield

Innovative concept

A remedy for eutrophication.

Easily available at doorstep, market and particularly to farmers

Minimum requirement

Future plan

To capture the market

To further strengthen the research

Mass production of the algal biofertilizer

Role of NewGenIEDC -

The NewGen IEDC at USTM took up this project seriously due to the local appeal and scope that it carried. NGIEDC helped the group set up necessary infrastructure required within the existing Laboratory facility of Dept. of Botany, USTM and supported the team all throughout from ideation to test production to test marketing.

Objectives of the Proposed work:

The broader objective of this project was to harness the abundance of Algal availability and to make use of the same in different perspective for sustainable development. Apart from Fertiliser, it was also viable option for water purification.

Future Scope

• Registration of "Start Up"

• Collaboration with local industries.

• To explore export market

• To diversify into other organic product development.

NewGen IEDC

(Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi)

Progress Report

(upto 31st Mar 2020)

COLLEGE OF TECHNOLOGY AND ENGINEERING
Maharana Pratap University of Agriculture and Technolgy
UDAIPUR 313001

NewGen IEDC [2018-19]

Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

<table>
<tr><td>Name of the College/Institution with complete Address including Phone numbers</td><td colspan="3">College of Technology and Engineering,
Maharana Pratap University of Agriculture and Technology, University Campus, Udaipur- 313001
+91-294-2470378; +91-294-2471056;
deanctae@gmail.com,
sjindals@gmail.com</td></tr>
<tr><td>Year of starting of project</td><td colspan="3">2017</td></tr>
<tr><td>Name of the Head/Principal of the Institution/College</td><td colspan="3">Prof. (Dr.) Ajay kumar Sharma
Dean, College of Technology and Engineering, Maharana Pratap University of Agriculture and Technology, Udaipur,
+91-294-2470378; +91-294-2471056</td></tr>
<tr><td>Name of IEDC Coordinator</td><td colspan="3">1. Dr. Sudhakar Jindal
2. Dr. Sunil Joshi</td></tr>
<tr><td>Contact Details of IEDC Coordinator including phone numbers</td><td colspan="3">1. Prof. Deptt of Mechanical Engineering and , Administrative Coordinator NewGen IEDC, CTAE, Udaipur, Mobile: 9414164420.
Email: sjindals@gmail.com
2. Professor Deptt. of Electronics & Communication Engineering & Coordinator NewGen IEDC , Mobile: 09414279222, Email: suniljoshi7@gmail.com</td></tr>
<tr><td>Mobile Number</td><td colspan="3">9414164420
9414279222</td></tr>
<tr><td>e-Mail ID</td><td colspan="3">sjindals@gmail.com
suniljoshi7@gmail.com</td></tr>
<tr><td>Financial Details</td><td colspan="3"></td></tr>
<tr><td rowspan="4">Previous Sanction Orders details</td><td rowspan="2">Sanction Order No.</td><td colspan="2">Sanction Order Date with Amount</td></tr>
<tr><td colspan="2">Dated 28-2-2019</td></tr>
<tr><td rowspan="2">EDII/DST-NewGen IEDC/17-18/RLS-II/08</td><td></td><td>Rs.10 lakh –Op Exp</td></tr>
<tr><td></td><td>Rs.37.50 lakh –Stu Proj(15)</td></tr>
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</table>

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC	:	NewGen IEDC, College of Technology and Engineering, Maharana Pratap University of Agriculture and Technology, Udaipur- 313001
Name of Chief Coordinator	:	Dr. S. Jindal
Period under Review	:	Mar 2019- Mar 2020

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	Sensitization workshop in various Departments of CTAE, Udaipur.	The workshops have resulted in developing an eco-system in the institute and large number of student innovators has submitted innovative projects.
2	Creating awareness about opportunities.	Creating awareness among the young engineering students by presenting the opportunities to newly admitted students in Induction Program Organising awareness workshops
3	City level Boot Camp	Mobilizing S&T youth of the city for preparing and presenting their innovative ideas. Analysis of various ideas and helping the students to develop their ideas by experts from the field.
4	Impact Talks	Challenges on enabling Agriculture in rural/semi urban India (Stories of Initiatives in Agriculture and other Social Impact sectors across India & Challenges in Enabling Agriculture in Rural/Semi Urban India)
5	Participation in Hackthon-2018 & 2019 and other national events	19 teams (around 100 students) participated in Smart India Hackethon-2018 and 4 of these cleared first round. In SIH 2019, 22 teams participated with 34 ideas (17 Software+17 Hardware). Two teams reached upto final round.
6	Participation in Smart India Hackthon-2020	Internal Hackethon was organised at CTAE where 10 teams presented their ideas. Finalist 7 teams (5 software+ 2 hardware) filed their ideas for national event. 3 software teams qualified for grand finale.
7	Participation of students team in 'Innopreneur' regional event organized by Lemon Ideas in association with UCCI, TiE and iStart at UCCI, Udaipur on 3-11-2019	Five teams pitched their ideas in the event organised by Lemon Ideas for short listing of ideas for further support. One team was shortlisted for next round

Sr. No.	Activities	Outcome/Achievements
8	Participation in RISE 2019, organised at VLTC, MNIT on 19th December 2019	RISE 2019, organised by iStart Rajasthan at MNIT on 19th December 2019 an open platform for discussions involving stakeholders of the startup and youth ecosystems.
9	Participation in "Launch n Zoom 2.0" event by IIM Udaipur	IIM Udaipur Incubation Center organised the second edition of accelerator program, Launch-n-Zoom 2.0 for changing the way start-ups rollout their ideas. Through 12 weeks of learning, mentoring and networking, to make ready for the Demo Day where investors will be looking to fund them who will become the next pillars of the emerging industries. One team 'Stumaze' got selected in the program and attended accelerator program from 10th to 21st Jan 2020.
10	Entrepreneurship & Innovation Club	An Entrepreneurship and Innovation Club started in the college with more than 100 students as members. Various activities on awareness and innovative challenges are being organised by students.

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	Organizing innovative idea competition- The Centre organized a two days Boot Camp during 30-31st Aug 2019 at CTAE. The event is a part of the idea competition THE GENESIS – BOOT CAMP	Created awareness and enthusiasm among students about out of box thinking
2	Awareness workshop on Entrepreneurship and Innovation held in Mech Deptt. Dr. SM Mathur and Dr. S. Jindal addressed the participants regarding opportunities, govt. schemes, etc.	Created awareness on how to write business Proposals
3	Interactive talk on 'Digital Marketing' by Mr. Sharad Lodha and Mr. Varun Surana, promoters of 'one2all'	Creating awareness about newer marketing channels.
4	A talk on "Why startups fail?" by Shri Umamaheshwaram, CEO of Incubation Centre, IIM Udaipur	Check points and common pitfalls to avoid failure of budding entrepreneurs
5	Ms. Sangeeta Patni, Software Entrepreneur, Currently Founder CEO, VernIQ, Bengaluru Delivered lecture on Entrepreneurship in current scenerio	Boosting the morale and sharing experiences as an entrepreneur.
6	Presentation of shortlisted ideas to experts	Opportunity to present concept in front of experts, who can identify innovative and commercial potential of idea

Sr. No.	Activities	Outcome/Achievements
7	Mentoring the students with potential ideas	• Selected students were assigned Mentors who could help the student throughout during conversion of idea into prototype resulting into successful product ready for commercialisation. • One of the team- 'StuMaze' selected by IIM Udaipur in their 'Launch-n-Zoom 2.0' for two weeks training on development of business model
8	Support in development of business plans	Team EF Polymer continuing with their entrepreneurial journey and winning laurels internationally.

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1	Linkages established with Institutions in the regions: • Udaipur Chamber of Commerce and Industries (UCCI) • Indian Institute of Management, Udaipur • Indian Society of Agricultural Engineers, India • Institution of Engineers, India • Small Scale Industries Association, Udaipur • MSME, Udaipur • The Creative Centre for Rural Development, New Delhi • Rajasthan State Innovation Council, Jaipur • Indian Council of Medical Research, Udaipur • National Innovation Foundation, Ahmadabad • Various Technical colleges/ Universities (25 Nos.) of Rajasthan • Start-up Oasis Jaipur • Regular interaction with entrepreneurs	Create opportunity for student to attend local and national workshops, trainings, seminars and other technical events. These institutions represent large set of small to medium industry. Interaction with them leads to identification of input resources needed by these, which can be converted into start-up idea or a regular enterprise by student entrepreneur
2	An Industry Institute Interaction Cell (IIIC) has been established in college	Regular interactions are being organised. Also teams of students are deputed to various industry of area for working out innovative solutions to the recurring problems faced by the industry.
3	Talks of entrepreneurs: Success stories	• Understanding organisation processes • Strategies for tackling day to day problems • Sources of finance and other resources

Sr. No.	Activities	Outcome/Achievements
4	Expert Lectures, Workshops, & Industrial Visit under MoU with Secure Meters Pvt Ltd Udaipur	Skill Improvement with innovative approach, and exposure to latest industrial problems
5	Expert Lectures, Workshops, & Industrial Visit under MoU with Hindustan Zinc Pvt ltd Udaipur.	Improvement in Critical thinking and Employability enhancement

*Date-wise activity list is attached as an Annexxure-II

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Most of the proposed action plan activities were organized / conducted during the year without deviations.

3. Other important highlights (new initiatives), if any:

Four of the teams out of ten teams were shortlisted for Regional Convention AICTE Chhatra Vishwakarma Awards 2019 (Annexxure-IV)

Mr. Narayan lal Gujar & Team, NewGen IEDC Innovators received the award of Euro 5000 in Carbon Tech Winner Climate Launchpad Global Grand Final on Nov 15th 2019 at Amsterdam, Netherlands

Ankit Jain and Shashi Pratap represented India in the South East Asea's biggest innovation event 'Innovfest Unbound" conference at National University of Singapore, Singapore

A boot Camp- 'The Genesis' was organised by the centre to boost the innovators to present ideas in front of jury and supported/mentored for developing the idea into reality on 30-31 Aug 2019

Student from Centre participating a conclave for innovators with Chief Minister of Rajasthan Shri Ashok Gehlot and Chief Secretary of State Shri D.B. Gupta

4. Students Projects

Sl. No.	Team/Project Description	Project status at beginning of the Year	Interventions	Current Status
1	***Title***: Abrasive flow machining system ***Team leader***: Mr. Dashrath Sharma ***Mentor*:** Dr. S. Jindal	Concept paper was ready	• Mentored for product development and its processes; • Fabrication of system • Testing in lab and field; • Motivation and assistance for participation in various competitions and events	• Prototype designed and tested • Ready for commercial use and technology transfer
2	***Title***: Fruit harvester Laser. ***Team leader***: Ms. Abha Gupta ***Mentor***: Dr. Navneet Agarwal & Dr. S.S. Meena	Concept paper was ready	• Mentored for product development, design and selection of equipment, • Procurement of raw materials; • Assembly and testing in lab; • Motivation and assistance for participation in various competitions and events	• Prototype completed • Further refining is being done for use in harvesting of fruits
3	***Title***: Nature Friendly Corrugates. ***Team leader***: Ms. Krati Tak ***Mentor***: Ms Kalpana Jain & Dr. Sudhir Jain	Concept paper was ready.	• Mentored for product development • Helping in selection of technology • Supervising trials with different mixes • Lab testing of developed technology; • Motivation and assistance for participation in various competitions and events	• A Prototype corrugated paper has been developed • Further refining is being done for use in packaging • Pilot plant is being designed for faster production rates for commercial use
4	***Title***: Blind Stick with audio feedback and SOS button. ***Team leader***: Mr. Subham Suthar ***Mentor***: Mr. Deep Manwar	Concept paper was ready	• Mentored for product development, design and selection of equipment, • Procurement of raw materials; • Assembly and testing in lab; • Motivation and assistance for participation in various competitions and events	• Prototype completed. • Ready for technology transfer • Commercial designing undergoing
5	***Title***: ISwadhyay (StuMaze). ***Team leader***: Mr. Jayneet Porwal ***Mentor***: Ms. Diksha Goyal	Concept paper was ready	• Mentored for product (Software) development, • Initial trials with finite test data;	• Software development completed. • Being used for interaction

Sl. No.	Team/Project Description	Project status at beginning of the Year	Interventions	Current Status
			• Refining for incorporating extra features • Field testing of developed software and preparing for obtaining Copyrights; • Motivation and assistance for participation in various competitions and events	between student community on the basis of interest groups in skill sets • Copyrights obtained
6	***Title:*** Recyclable Fused sand filter capsule for domestic water purification. ***Team leader:*** Jayesh Kothari ***Mentor:*** Mr. R S Shekhawat	Concept paper was ready	• Mentored for product development, design and selection of equipment, • Hiring fabricator and procurement of raw materials; • Field testing of developed technology; • Motivation and assistance for participation in various competitions and events	• A Prototype cartridges has been developed • Further refining is being done for use in custom filtration • Pilot plant is being designed for faster production rates for commercial use
7	***Title***: Design of an IoT based real time soil moisture & fertilizer monitoring prototype**.** ***Team leader***: Ms. Priyanka Patidar ***Mentor***: Dr. Suni Joshi	Concept paper was ready	• Mentored for product development, design and selection of equipment, • Procurement of raw materials; • Assembly and testing in lab; • Motivation and assistance for participation in various competitions and events	• Prototype completed. • Ready for technology transfer
8	***Title***: Design of a Multi-Sensor Cloud IoMT based Secured Health Monitoring System for Coma Patient**.** ***Team leader***: Surabhi Joshi ***Mentor*:** Dr. Sunil Joshi	Concept paper was ready	• Mentored for product development, design and selection of equipment, • Procurement of raw materials; • Assembly and testing in lab; • Motivation and assistance for participation in various competitions and events	• Prototype completed. • Ready for technology transfer
9	***Title***: Multifunction Hammer Kit. ***Team leader***: Mr. Hardik Longakshi ***Mentor***: Dr. B L Salvi	Concept paper was ready	• Mentored for product development, design and selection of equipment, • Hiring fabricator and procurement of raw materials;	• Prototype completed. • Ready for commercialization • Filed application for

Sl. No.	Team/Project Description	Project status at beginning of the Year	Interventions	Current Status
			• Lab and Field testing of developed technology; • Motivation and assistance for participation in various competitions and events	Patent of the product
10	***Title***: Smart Dustbin. ***Team leader:*** Mr. Vishwajeet Singh Jhala ***Mentor***: Mr. Vishwapriya	Concept paper was ready	• Prototype completed. • Ready for commercialization • Filed application for Patent of the product	• Prototype completed. • Ready for technology transfer
11	***Title***: Plant irrigation and Nutrients Supply Sensing Device. ***Team leader***: Ms. Nikita Akhawat ***Mentor***: Dr. S. R. Bhakar	Concept paper was ready	• Mentored for product development, design and selection of equipment, • Procurement of raw materials; • Assembly and testing in lab; • Motivation and assistance for participation in various competitions and events	• Prototype completed. • Ready for technology transfer
12	***Title***: Energy Efficient Street Lamp Post. ***Team leader***: Ms. Anusha Mundra ***Mentor:*** Dr. Navneet Agarwal	Concept paper was ready	• Mentored for product development, design and selection of equipment, • Procurement of raw materials; • Assembly and testing in lab; • Motivation and assistance for participation in various competitions and events	• Prototype completed. • Ready for technology transfer
13	***Title***: All inclusive Tourism platform ***Team leader***: Anchal Nandwana ***Mentor***: Ms Kalpana Jain	Concept paper was ready	• Mentored for product (Software) development, • Initial trials with finite test data; • Refining for incorporating extra features • Field testing of developed software; • Motivation and assistance for participation in various competitions and events	• Prototype completed. • Ready for technology transfer

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list.

Attached (Annexure I(a) and I(b))

Annexure-I(a)

Multifunction Hammer Kit

2) **Name & address of the students**

A.	Name	:	**Hardik Longakshi**	**Pulkit Thakuriya**
B.	Degree	:	B. Tech. (Mech.)	B. Tech. (Mech.)
C.	Nationality	:	Indian	Indian
D.	Address	:	L-5/110 Jai Shree Colony	Thakuriya Sadan, Khati Colony, Hospital Road
(i)	City	:	Udaipur	Baran
(ii)	Pin Code	:	313001	325205
(iii)	State	:	Rajasthan	Rajasthan
E.	Email	:	hardiklongakshi@gmail.com	pulkit.thakuriya08@gmail.com
F.	Contact No.	:	8302710785	9462718789
G.	Aadhaar No.		9861 3095 3164	5702 1590 5137

3) **Sponsoring/collaborating agency** – *NewGen IEDC*

4) **Brief Summary of the project**:

Traditional hammers have a head with two functional ends, such as a strike face for striking and a claw/ball-peen/cross-peen/straight peen end used for distinctive tasks, and the head is attached to a handle.

For performing a distinctive task a required head is used, i.e. to pull nails claw hammer is required, to change shape or to produce an indentation in a work piece, cross peen/ball-peen/straight peen hammer is required.

For a task, if all the hammers are required then individual hammer for each task needs to be present/purchased. To overcome the mentioned problem a New Hammer design is required so that a single Hammer can fulfil the Tasks of Multiple Hammers. Thus, a hammer with interchangeable/replaceable Head is the proposed solution.

Instead of using different hammers for distinctive tasks, we can use a single hammer with multiple/replaceable heads. A hammer which can be fitted with:

- Straight Peen Attachment
- Ball Peen Attachment
- Flatter Attachment
- Framing / Tack / Chipping Hammer Attachment
- Claw Attachment
- Cross Peen Attachment
- Axe Attachment
- Soft Face / Rubber Attachment
- Ice Breaker Attachment

T he interchangeable heads of the hammer can be replaced by a key that is pushed into the slot cut in the accessory, holding the accessory in the correct place. When

the key is pulled out the spring compresses and the slot of the accessory is emptied, thus allowing easy removal of accessory. When the key is released the spring forces the key back to the slot allowing it to hold a different accessory. Thus, allowing interchangeability of the nine heads in the hammer. An adaptor is used to hold the whole key and spring mechanism. The adaptor has a threaded portion with which it can be tightened on the head, allowing easy replacement. A nut is also attached to the key to providing a firm grip.

5. Photographs of Innovation:

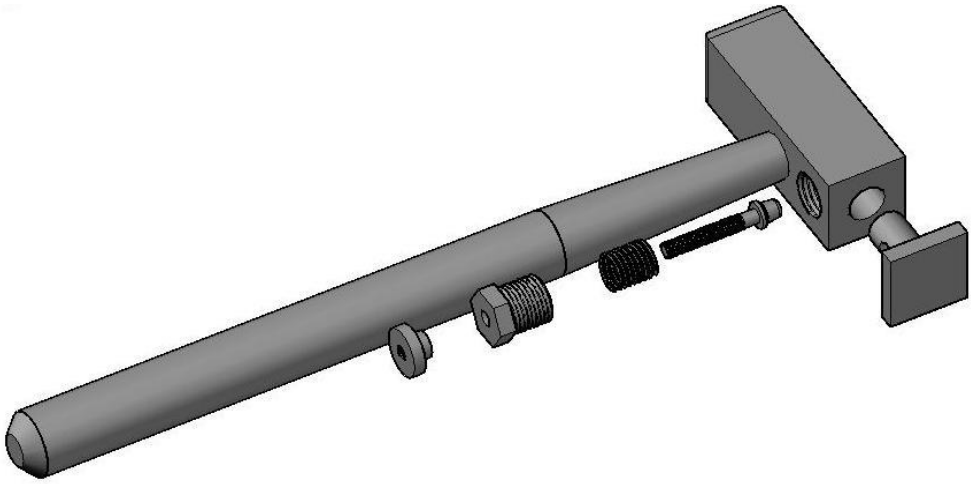


Figure 1: CAD Model of Hammer.

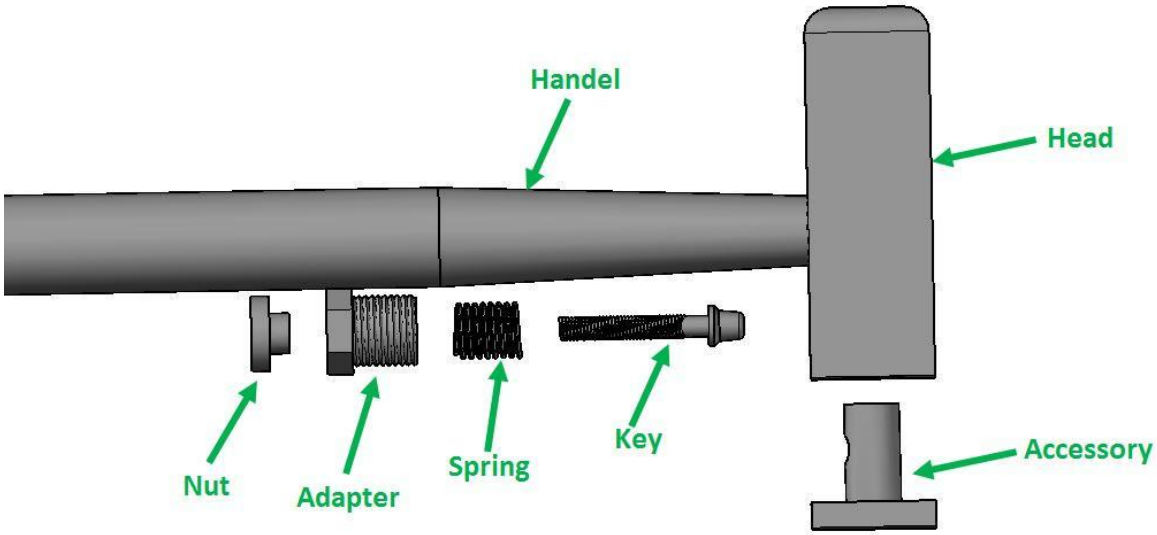


Figure 2: Description of Parts of Hammer.

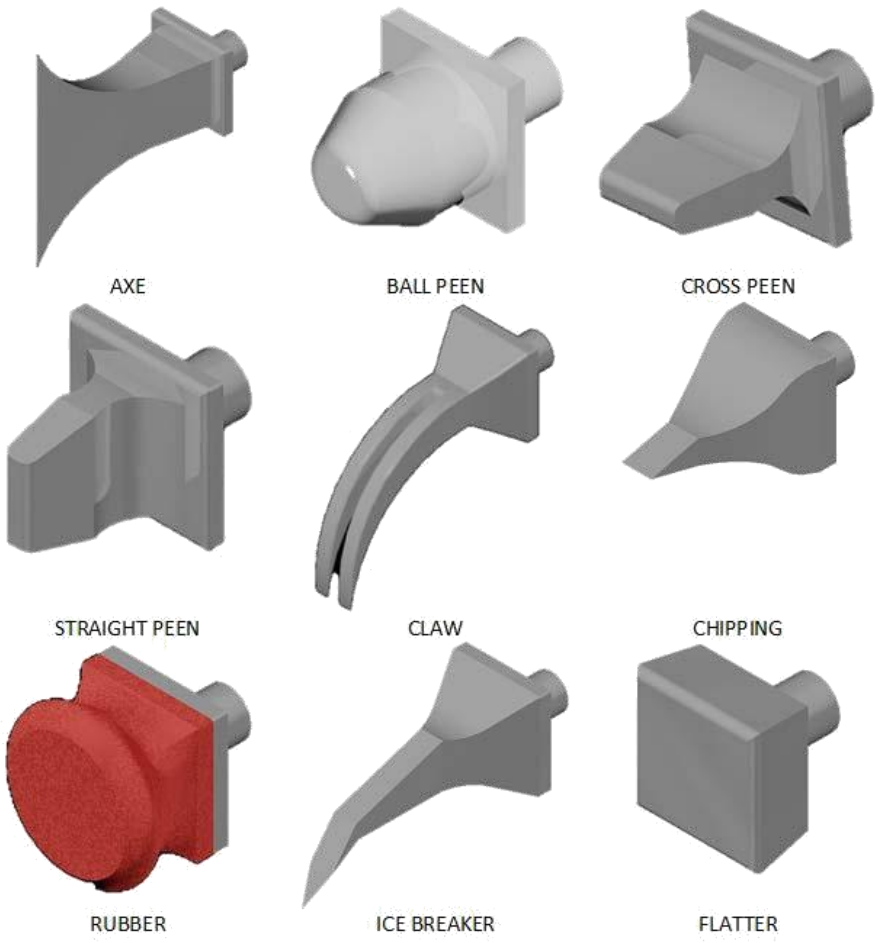


Figure 3: Accessories of Hammer.

6. **Conclusions**:

The existing conventional hammer was modified and a multi-purpose hammer was designed and developed, known as '**Multifunction hammer kit**'. The Multifunction hammer kit has wide usability and is convenient to carry at the workplace. The effective cost of the tooling also reduces as different functions are carried out by the same tool by changing the accessories. Ease of utility is improved as most of the functions related to hammers are available and may be used individually.

It also has a wide scope of usages, i.e., the kit can be modified based on customer segment, portable & requires less space, reduced material usage, and reduced overall hammer cost.

7. **Details of the Awards received and Publications if any**:

मल्टी फंक्शन हैमर : जेवर के काम से लेकर पत्थर तोड़ने तक में कारगर

मेकेनिकल इंजीनियरिंग के छात्र हार्दिक लोंगांक्षी और पुल्कित ठाकुरिया ने मल्टी फंक्शन हैमर तैयार किया है। इसमें कॉमन हथौड़े, बॉल पीन हथौड़ा, क्लॉ हथौड़ा, क्लब हैमर, डेड ब्लो हैमर, फ्रेमिंग हैमर, स्लेज हैमर सभी का अटैचमेंट एक साथ है। अलग-अलग कामों में अलग अलग हथौड़े लाने से यह मुक्ति दिलाएगा। शीट मेटल वर्किंग, कारपेंटिंग, सुनार और लुहार के कामों में इस्तेमाल आने वाले सभी हथौड़े इसमें शामिल हैं।

Figure 4: News clip published in Dainik Bhaskar, dated: 11-09-2019.

8. **Workshop/Seminar Participated:**

S. No.	Event	Organizer	Place	Date
1.	Entrepreneurship Awareness Drive (EAD)	IIT Kharagpur	Udaipur	13-10-2018
2.	Innocity Booster Event	Startup Oasis	Udaipur	11-04-2019
3.	Innocity Connect	Startup Oasis	Udaipur	31-05-2019
4.	Highway to a 100 Unicorns	Microsoft	Jaipur	17-10-2019

9. **Details of Testing and Demonstration with Photographs**

Figure 6: Tool Box.

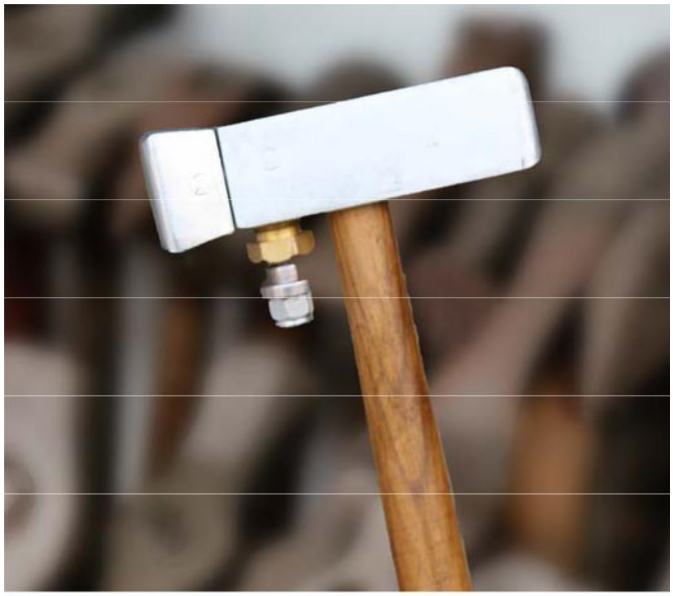
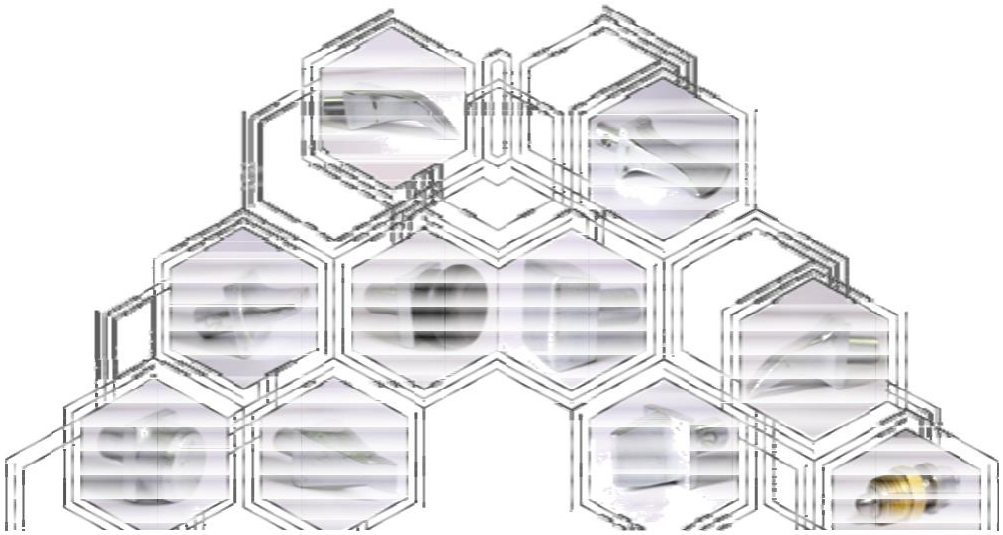


Figure 5-The Multifunction Hammer.



igure 7–Accessories of Hammer.

10. **Patenting- Provisional Patent Filled** [Annexure – 1(a)-i]

11. **Equipmen t installed for the proje ct**: *NIL*

12. **Product/technology d etails devel oped throug h the proje ct**:

A hammer design with 9 interchangeable Hea ds is developed. The at achments are fitted on the head with the help of a Spring lock Mechanism . The Spring Mechanism is attached at the lower end of the h ead.

13. **End prod uct/Prototy pe/Process developed along with specification and target ach ieved**:

Sp ecifications of develope d product:

Length: 260 m

Material of hea d and attach ments: Mild Steel

Han dle material : Wood

Weight of ham er without accessories: 0.375 kg

Weight of accessories:

Accessories	Axe	Ball	Cross	Straight	Chipping	Flatter	Ice Breaker	law	Rubber
Weight (gram)	110	85	0	60	100	95	135	9 5	50

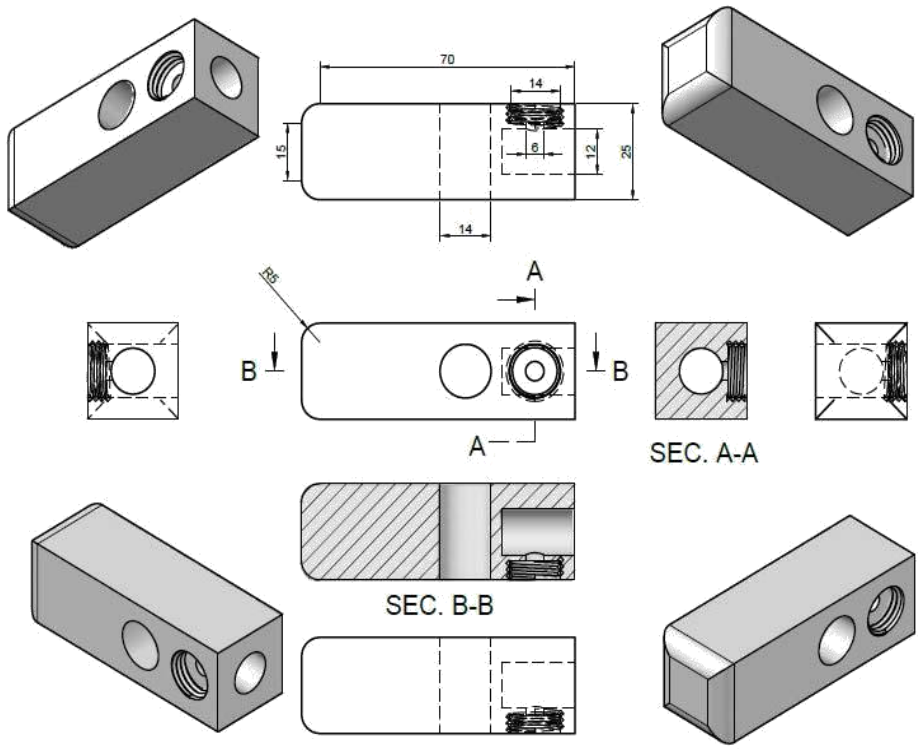


Figure 8: Specification of Hammer Head.

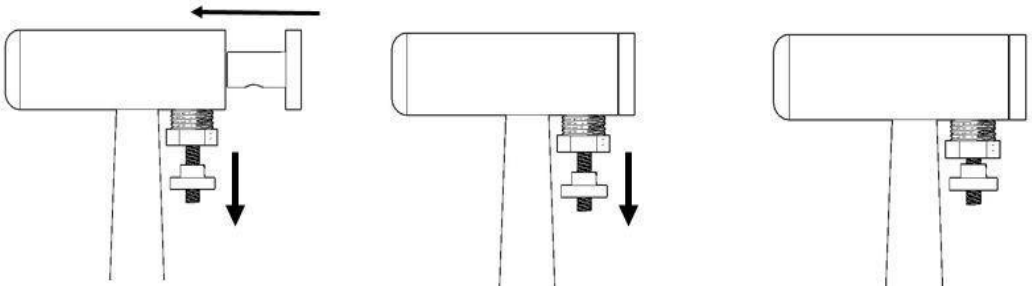


Figure 9: Mechanism of Hammer.

14. **Studies on techno-economic viability undertaken for the commercialization of the result of the project & plans for commercialization**:

The present Multifunction Hammer Kit was prepared at the laboratory level, mass production of Multifunction Hammer Kit will reduce the overall cost of production. For mass manufacturing the hammer, drop forging process may be employed. For drop forging a dedicated die will be prepared for hammer head and accessory. After consultation with local manufacturers and tool sellers, the cost of manufacturing of hammer including the toolbox will be Rs.1000/- per piece when the minimum quantity is 300.

For a user, who requires 6 – 7 different hammers for performing a task, and one hammer cost around Rs. 250.00/-. For 7 hammers the cost would come around 250X7=1750. So, present Multifunction hammer kit will prove to be a better choice.

15. **Name of Perspective Buyer of the technology/product**:

(a) Potential buyers of the product: Small scale carpenters, Handicrafts maker, sheet metal worker & DIY Creators/Inventors.
The kit can be modified based on the customer segment.
(b) Potential buyers of Technology: Manufacturer of industrial tools and household hardware.

16. **Export potential of the product/process developed**:

The Product can be sold online for being able to export/ship to foreign countries. The kit can be used in countries where workers are not capable enough of buying several hammers. The kit can be exported to countries like Bhutan, Nepal, etc.

17. **Employment generation potential, if any**:

Manufacturing, marketing, advertisement and selling of hammer can generate employment.

18. **Whether technology developed holds promise for development at Pilot Plant/Commercial level**.-

Yes, the product can be developed at a commercial level. Development/Machining of the above product can be outsourced to other industries or a dedicated unit/Plant can be developed for the production of Multifunction hammer kit.

19. **Date of presentations of Results in the form of Seminar etc in the department**
20. Dates of review meetings:

Office of NewGen IEDC, CTAE	06-09-2019
Department of ECE, CTAE	8-04-2019
Dean Office	11-01-2019

21. **Suggested scope for future work, if any**:

To explore more attachment/accessory/ergonomic assessment & improvement of the developed hammer.

20. **Final output**:

A hammer with 9 interchangeable accessories operated by hand. It uses a spring to hold the accessories at the place.

- Reduced Material Usage.
- Reduced overall hammer cost.
- Broad usage capability
- Portable
- Customizable

Annexure-I(b)

Smart Stick with Audio Feedback and SOS Button For Visually Impaired Person

1. Name & address of the student/students along with e-mail, telephone no. etc.

Name	Chirayu Purohit
Degree	B.Tech
Nationality	Indian
Address	T-3/34, Shripati Nagar, UCWL, Dabok City: Udaipur Pin Code: 313022 State: Rajasthan
Email	chirayupurohit23072000@gmail.com
Contact No	9784899403

Name	Anurag Singh
Degree	B.Tech
Nationality	Indian
Address	D – 104, Ambuja Township, Rabriyawas City: Beawar Pin Code:306709 State: Rajasthan
Email	agangwar908@gmail.com
Contact No	7357506206

Name	Hemant Vaishnav
Degree	B.Tech
Nationality	Indian
Address	Azad Mahulla, Village: Kurabad Pin Code: 313703 State: Rajasthan
Email	hv88882@gmail.com
Contact No	8769777733

Name	Subham Suthar
Degree	B.Tech
Nationality	Indian
sAddress	D – 104, Ambuja Township, Rabriyawas City: Beawar Pin Code: 306709 State: Rajasthan
Email	Shubhamnagal@gmail.com
Contact No	7357506206

Name	Vishal Methi
Degree	B.Tech
Nationality	Indian
Address	D – 104, Ambuja Township, Rabriyawas City: Beawar Pin Code: 306709 State: Rajasthan
Email	hv88882@gmail.com
Contact No	8769777733
Aadhaar No	5620-0638-1527

2. Sponsoring/collaborating agency, (if any other then NewGen IEDC): NewGen IEDC

3. Brief Summary of the project :

Developed Smart Stick detects obstacle using Ultrasonic sensor and provide feedback to visually impaired person in the form of Audio Using Text to Speech Conversion provides location of the one of its caretaker on pressing Save of Soul (SOS) Button . Available sticks for visually impaired person provides response either by vibration or using buzzer but in our project we are using text to speech technology (android) which converts ultra-sonic sensors data (distance from an obstacle) into an audio file and play sit. We are using an additional SOS feature which is enhancement of already present technologies. SOS (Save our soul) button provides emergency help and sends user location to relatives using GPS. India Is Home to the world's largest number of visually impaired people. Of the 37 Million people across the globe who are blind, over 15 Million are from India. Our customers will be visually impaired people. We are providing an advancement of audio feedback; therefore our innovation will indeed neutralize their disability at low cost. Our approximated estimated cost of the stick will be around 3000 on mass production.

With the help of this smart stick person will able to detect any stationary or slowly moving object or obstacle via ultrasonic sensor at a distance of 45 cm from stick and provides beeps and audio messages as output. It also increases a frequency of beep with the decrease in distance of obstacle and sticks. It also has an SOS button. On clicking those buttons a message will send to the guardian of the person his/her live location with the help of a Wi-Fi and GPS modules and servers.

4. Photographs of Innovation: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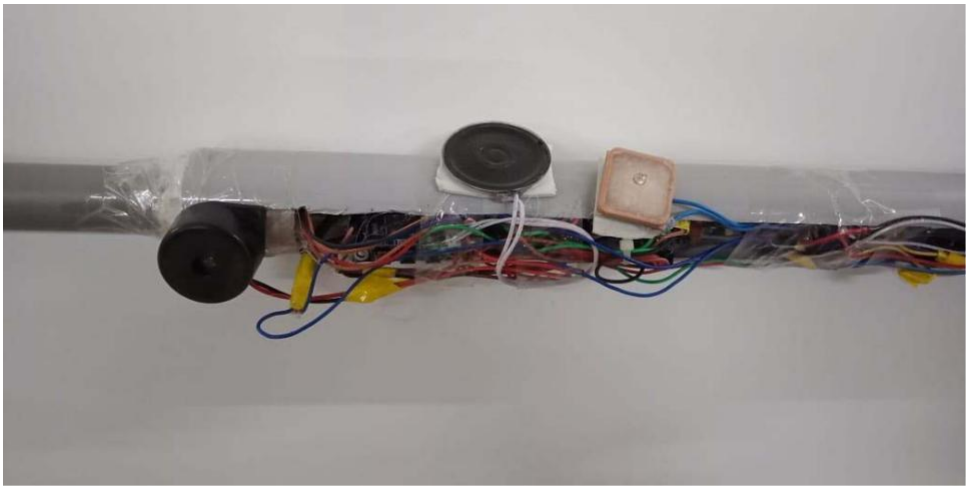
Ultrasonic Sensor

SOS Button

Buzzer, Speaker and GPS Locator



5. Conclusions:

Developed Smart stick is able to perform following tasks

Detect obstacle at a distance of 45 cm and indicate it by beeps and audio messages.

It sends location of user with the help of a Wi-Fi and GPS modules and servers to Caretaker on pressing of SOS button.

Sends message within 15 seconds to the caretaker.

6. Details of the Awards received and Publications if any: No

7. Workshop/Seminar Participated if any

Digital Technologies for Smart Agriculture on October 16-17, 2019 at Seminar Hall, Department of Electronics and Communication, CTAE Udaipur.

8. Details of Testing and Demonstration with Photographs:

Testing of Charging of the stick

Testing for functionality of the Smart stick

Testing and optimization of the time delay for messaging after SOS button press.

9. Patenting if done: No

10. Equipment installed for the project:

NIL , Only existing equipment in the laboratories of the college were used. The components were purchased and design and assembly done by team members.

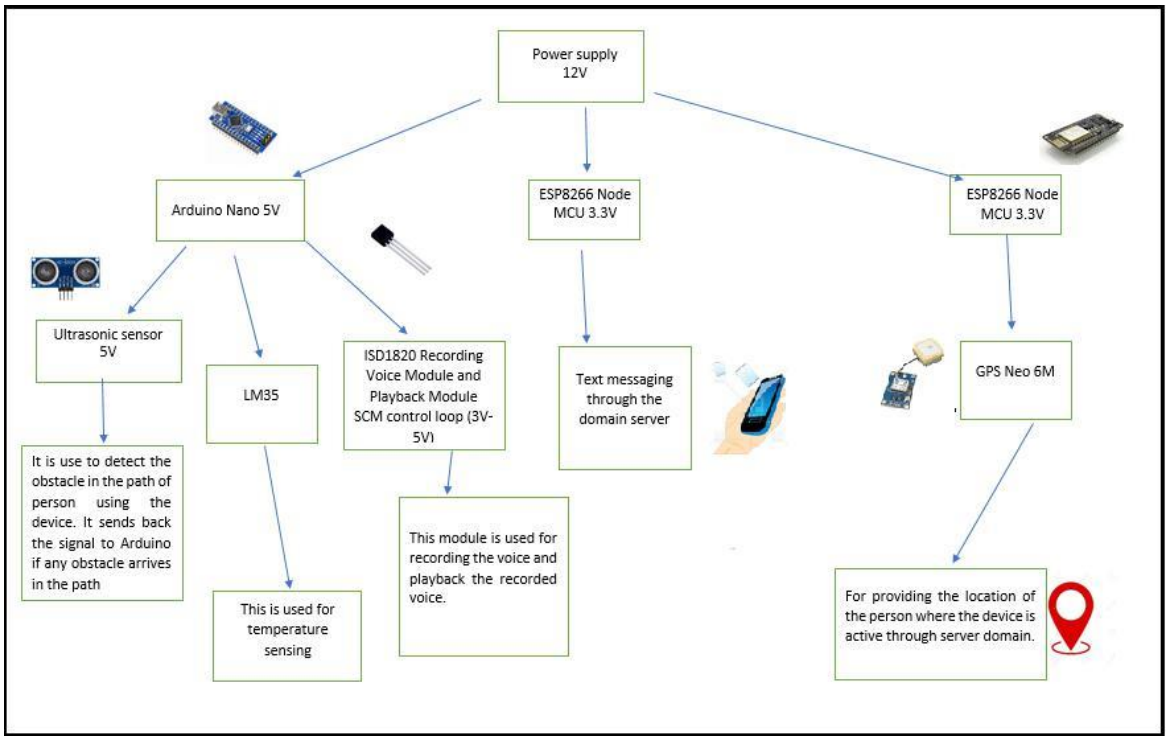
11. Product/technology details developed through the project:

With the help of this smart stick person will able to detect any stationary or slowly moving object or obstacle via ultrasonic sensor at a distance of 45 cm from stick and also increase a frequency of buzzer when distance of obstacle and stick decreases. When ultrasonic sensor measures the distance less than45 cm sensor transmit signal to the audio module which starts buzzing sound with increasing frequency of buzzing when distance transmitted by ultrasonic sensor decreases.

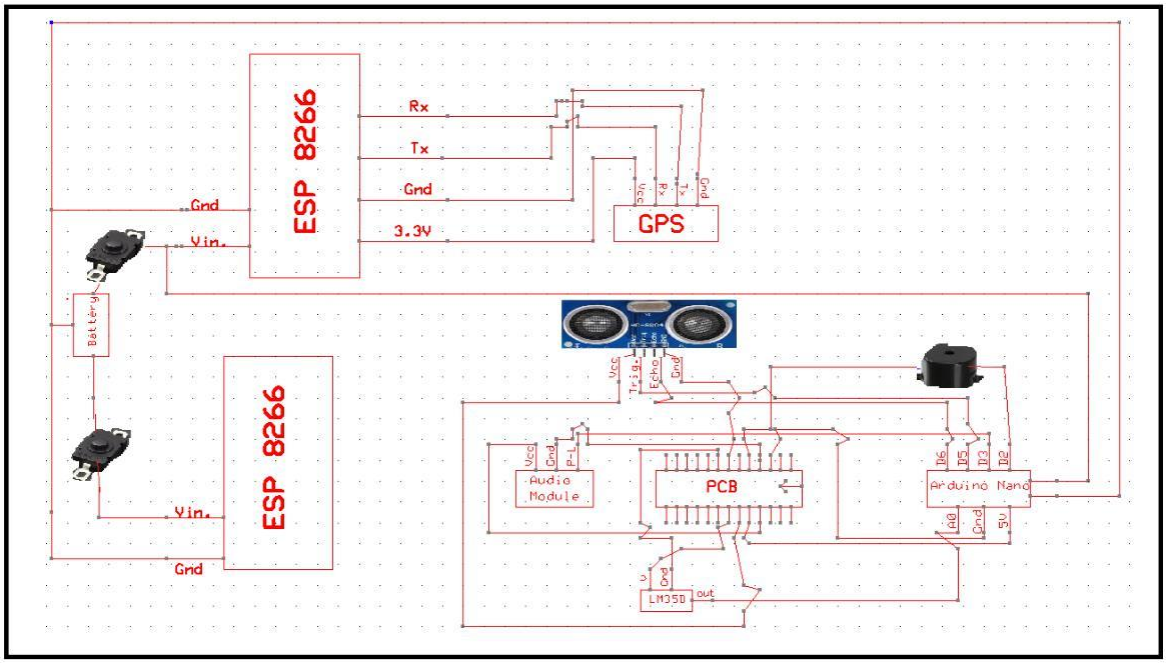
It also has an SOS button. On clicking that button a message will send to the guardian of the person using the stick with his/her live location with the help of a Wi-Fi and GPS modules and servers. GPS module gives live location to the Wi-Fi module which sends the position and to the servers which in turn sends the location in the form link in the message.

12. End product/Prototype/Process developed along with specification and target achieved:

BLOCK DIAGRAM



Circuit Diagram



Target Specifications

- Obstacle detection From 45 cm onwards (can be varied)
- SOS button for sending live location within 15 seconds to the care taker
- Battery Backup up to 12 hours
- Easy USB Charging port.

13. Studies on techno-economic viability undertaken for the commercialization of result of the project & plans for commercialization, if any:

- Identified the key growth areas matching our products.
- Evaluation of market opportunity and developing suitable business plan.
- Registration of a company and finding suitable Angel investor for the seed money.
- Building a team with members having dedication, determination, discipline, skills and integrity.
- Making initial (about 50) products and selling them at reasonable price to local markets and donating some sticks to users directly.
- Collecting constant feedback from the users and improvising on the product to make it easy to use, effective, add more functionality and economic.
- After suitable numbers of iteration and achieving the required customer satisfaction. Registering the product on online shopping platform like Amazon, flip kart, etc. to reach the masses.
- Marketing tactics like sending our product to you tuber that does unboxing of new technology, etc.

14. Name of Perspective Buyer of the technology/product:

- Visually impaired person will be the main beneficiary of the product.
- NGOs can purchase the bulk material for donating and helping poor visually impaired persons.
- Various organizations and institutions of blind person can get benefit from the product.

15. Export potential of the product/process developed:

- Our product is associated with healthcare and mankind so company has great opportunity to serve society worldwide.
- As manufacturing cost in India is expected to be less compared to other developed nation, company can provide product with best quality in affordable price.

16. Employment generation potential, if any:

- Present team working on the project will strive to be self-employed and will be motivated towards becoming successful entrepreneurs.
- With the success of company and its products there will be need of employees with various skills and talents for designing, managing marketing, accounts, etc.

17. Whether technology developed holds promise for development at Pilot Plant/Commercial level

- Smart stick is very useful in helping visually impaired person in smooth movement and reduces time to travel.
- Developed prototypes after certain iterations of refinement holds great promise at commercial level.

18. Suggested scope for future work, if any:

- Making initial (about 50) products and selling them at reasonable price to local markets and donating some sticks to users directly. Collecting constant feedback from the users and improvising on the product to make it easy to use, effective, add more functionality and economic.
- After suitable numbers of iteration and achieving the required customer satisfaction. Registering the product on online shopping platform like Amazon, flip kart, etc. to reach the masses.

19. Final output:

- A prototype of Smart Stick for visually impaired person with following functionality
    - Obstacle detection From 45 cm onwards (can be varied).
    - SOS button for sending live location within 15 seconds to the care taker.
    - Battery Backup up to 12 hours.
    - Easy USB Charging Port

- A poster depicting highlights of the product developed in the project.
- Good quality photos video with complete usage details of the product.
- Power point presentation about motivation, target user, description, future plan etc.

Annexxure –II

ACTIVITIES AND EVENTS ORGANISED DURING PERIOD

SN	DATE	ACTIVITY / EVENT	REMARKS	Photo
1	8-1-19	First Leadership Talk by Mr. Anand Mahendra	MIC Platform	
2	9-1-19	Lecture delivered by Dr. S. Jindal on 'Innovation and Entrepreneurship' in 2-week winter school at Elect. Engg. Deptt., CTAE	25 participants and faculty attended the lecture	
3	10-1-19	Live session on IPR	MIC Platform	
4	11-1-19	Advisory Board Meeting of NewGen IEDC	Prof Naveen Vasistha from NSTEDB New Delhi and Prof. S.B. Sareen of EDII Ahmedabad attended the meeting	
5	12-1-19	Laghu Udhyog Bharati and CTAE organised 'Laghu Udhyog Sammelan' at CTAE, Udaipur	Attended by 200 people from Industry and Academia	
6	19-1-19	'Entrepreneurship and Innovation Club' launched for UG and PG students of college	Dr. S. Jindal; Dr. M.S. Khidia	
7	23-1-19	22 teams uploaded smart solutions in SIH-2019		

8	24-1-19	First Leadership Talk by Dr. Anand Despande, Founder, CMD- Persistant Systems Ltd on Planning for career, future industry trends and startup	MIC Platform	
9	29-1-19	Live session by PM Mr. Modi on 'Pariksha pe Charcha 2.0'	MIC Platform	
10	30-1-19	ARIIA-2019 application final submission	For ranking	
11	11-2-19	Bootcamp on 'ESP8266 Nodemcu' organised by Electronics & Robotics Club	50 student participants	
12	14-2-19	Lecture delivered by Dr. S. Jindal on 'Problem Identification and Formulation' in 1-week short term course at Mech. Engg. Deptt., CTAE	50 participants (students of every discipline) attended the lecture	
13	15-2-19	Farm Machinery Fair organised to demonstrate new and innovative technologies	FMPE deptt by Dr. S.M. Mathur	
14	19-3-19	First Leadership Talk by Shri Ajit Dobhal, NSA, GoI	MIC Platform	
15	8-4-19	Review meeting of NewGen Projects 2018-19	17 projects presented status of their projects	

16	3,4-5-19	Two days workshop on "Intellectual Property Creation, Development and Management", with speakers Mr. Sameer Swaroop, Deputy Controller of Patent and Design, GOI, New Delhi; Dr. K.S. Kardam, Sr. Joint Controller of Patent and Design, GOI, New Delhi, Shri Govind Sharma, Ex. Chief, NRDC, New Delhi; and IP Attorneys -Sh. Ashish Sharma and Mr. Ranjan Ailavadi from New Delhi	Programme organised at DOR, MPUAT with support from IDP. About 40 faculty from MPUAT participated in the event.	
17	15-5-19	Awareness workshop on Entrepreneurship and Innovation held in Mech Deptt. Dr. SM Mathur and Dr. S. Jindal addressed the participants regarding opportunites, govt schemes, etc.	Students of Entrepreneurship & Innovation Club and other-total 35	
18	16-7-19	Delivered a talk on 'Skill and Innovation' in the two days short course 'Skill Development and Continuous Improvement' organised by SWCE department with support under IDP, MPUAT.	65 students of PG and UG of CTAE attended the talk.	
19	17-7-19	A talk on 'Getting serious about global green goals' by Ms. Ann Phua, Environmentalist, Serial Social Entrepreneur; President and Founder – Hemisphere Foundation; Immediate past chairman and founder- International Women's and Industry, Singapore	About 200 students from all disciplines attended the talk at Placement Cell, CTAE at 10.30 am. Ms. Ann invited students to submit their ideas for Global Youth Summit 2020 to be organised at Sydney.	
20	17-7-19	Launch of Idea Competition 'The Genesis' for students of Udaipur city and around. The Poster was released by Dean-CTAE	The competition is open for all the students of engineering colleges of Udaipur city and around and	

		Dr. Ajay Sharma, Ms. Ann Phua of Hemisphere Foundation, Singapore and Dr. S. Jindal	is organised in association with start up Architectica	
21	7-8-19	Talk on "Innovation and entrepreneurship; the role of NewGen IEDC" delivered by Dr. S. Jindal in the Induction Program 2019 for First Year students of B.Tech.	About 150 students attended the session and many of them shown interest in joining innovation club of the college.	
22	9-8-19	Interactive talk on 'Digital Marketing' by Mr. Sharad Lodha and Mr. Varun Surana, promoters of 'one2all'	About 50 students of NewGen IEDC and Innovation club attended the talk.	
23	30/31-8-19	The Centre organized a two days Boot Camp during 30-31st Aug 2019 at CTAE. The event is a part of the idea competition THE GENESIS – BOOT CAMP	Genesis is a startup competition where one can pitch his ideas, get mentoring and support. Genesis team (23 members) organized a 2-day bootcamp on 30-31 August, 2019. More than 120 students from 8 different colleges attended the bootcamp. The Genesis – Bootcamp was organized by NewGen IEDC and Architectica Startup Solutions.	
24	13-9-19	An application for IPR filed for an innovation supported by centre (app No. 201911036881)	Provisional Patent application filed by NewGen IEDC for innovation done by Dr. BL Salvi, Hardik Longakshi and Pulkit Thakuriya- Multi-function Hammer with nine replaceable heads	
25	5-10-19	Two Copyrights applications filed	Copyright applications filed for software applications STUMAZE by Jayneet Porwal and ARCHECTICASTARTUPS by Ashish Aryan	
26	31-10-19	ARIIA-2020 application final submission	For ranking	

27	3-11-19	Participation of students team in 'Innopreneur' regional event organised by Lemon Ideas in association with UCCI, TiE and iStart at UCCI, Udaipur on 3-11-2019	Five teams pitched their ideas in the event organised by Lemon Ideas for short listing of ideas for further support. One team was shortlisted for next round.	
28	18-11-19	The centre organised final pitching event of 'The Genesis'.	In the event 13 shortlisted teams pitched their ideas in front of jury- Mr. Chetan Pandey, Dr. SM Mathur, Mr. Shubham Soni & Mr. Pulkit Khatri. The ideas were judged in three categories- Idea, Product and Business Proposal. In each category, a cash prize of Rs.1100/- was given to the winner. A special prize of Rs.500/- was given to a 7th standard innovator from Rajsamand District by coordinator Dr. S. Jindal.	
29	19-12-19	Participation in RISE 2019, organised at VLTC, MNIT on 19th December 2019	RISE 2019, organised by iStart Rajasthan at MNIT on 19th December 2019 an open platform for discussions involving stakeholders of the startup and youth ecosystems.	
30	21-12-19	A talk on "Why startups fail?" by Shri Umamaheshwaram, CEO of Incubation Centre, IIM Udaipur		
31	10-1-20	Participation in "Launch n Zoom 2.0" event by IIM Udaipur	IIM Udaipur Incubation Center organised the second edition of accelerator program, Launch-n-Zoom 2.0 for changing the way start-ups rollout their ideas. Through 12 weeks of learning, mentoring and networking, to make ready for the Demo Day where investors will be looking to fund them who will	

			become the next pillars of the emerging industries. One team 'Stumaze' got selected in the program and attended accelerator program from 10th to 21st Jan 2020.	
32	17-1-20	Pitching of proposals for NewGen support	New teams seeking support from NewGen IEDC pitched ideas in front of jury. 20 ideas selected by experts and another 5 kept in waiting.	
33	17-1-20	Ms. Sangeeta Patni, Software Entrepreneur, Currently Founder & CEO, VernIQ, Bengaluru Delivered lecture on Entrepreneurship in current scenerio	Shared her experiences as entrepreneur	

34	1-2-20	SIH 2020	Internal Hackethon was organised at CTAE where 10 teams presented their ideas. Finalist 7 teams (5 software+ 2 hardware) filed their ideas for national event. 3 software teams qualified for grand finale.	
35	2-2-20	Participation in “Innopreneur” event at Nagpur	One team was shortlisted in the 5th edition of Innopreneurs idea competition organised by Lemon Ideas and reached to finals held at Nagpur on 2nd Feb 20	
36	22-2-20	One day workshop on “ Industry Institute Communion for fostering research and Innovation culture” organized on 22nd Feb under the aegis of TOCIC, DSIR	One day workshop organised by TOCIC for faculty and research scholars, innovators. Deliberations were made by scientists from DSIR, New Delhi	
37	26-2-20	A Tehnical Talk on ‘Cyber Security and Ethical Hacking’	A Technical Talk on ‘Cyber Security and Ethical Hacking’ by Mr. Krishna Kant Soni organized for the students of CTAE and other engineering colleges of the city.	

LIST OF THE PROJECTS SELECTED FOR 2018-19

Sr. No	Student Team/ Project Description*	Mentor	Aadhaar Number of Each Student
1	Abrasive Flow Machining System	Dr. S. Jindal	Mr. Dashrath Sharma-938935697847 Mr. Shourya Pratap-999891644106
2	PNEUMO-Electric Vehicle on Single Wheel	Dr. Sunil Joshi	Mr. Yogesh Sharma-931514959333 Abhishek Lohar-768002760993
3	Fruit Harvesting Laser	Dr. Navneet Agrawal & S.S. Meena	Ms Abha Gupta-508053844700 Ms Charul Lalvani-862487914489
4	Nature Friendly Corrugates	Ms. Kalpana Jain & Dr. Sudhir Jain	Mr. Burhanuddin Sanwar Wala-865472966506 Mr. Divyanshu Gurjar-681795754406
5	Nitrate Detector	Mr. Himanshu Mohan	Ms Riya murdia-578918966594 Mr. Narayan lal Gurjar-931668593100 Rishika Mehta- 317944745020 Sajat Badiwal -600652421484
6	Blind Stick-Smart stick with audio feedback and SOS button	Mr. Manwar Deep	Mr. Vishal Methi-562006381527 Mr. Subham Suthar-443578019567
7	Iswadhyay	Ms. Diksha Goyal	Ms Jayneet Porwal-589012159371 Mr Lucky Soni-798120033193 Mr Anush Jain-896748810706 Naman Jain
8	Soil Salinity and pH Detector	Mr. Vishwapriya	Mr. Rahul Laxkar-526774177514
9	Recyclable Fused sand filter capsule for domestic water purification	Me. R.S. Shekhawat	Mr. Harshita Saini-364077297431 Mr. Jayesh Kothari- 610609379502 Mr. Mayank Bhatnagar-910195201264 Mr. Tushar Solanki-541915011409
10	Design of an IOT based real time soil moisture & fertilizer monitoring prototype.	Dr. Sunil Joshi	Ms. Priyanka Patidar-981924806693 Ms. Diksha Paliwal-931352622326
11	Design of a multi-sensor cloud IoMT based Secured Health Monitoring System for coma Patient.	Dr. Sunil Joshi	Ms. Surabhi Joshi-368429178880 Ms. Shiwani Mahawar-901487489692
12	The Green Bricks	Mr. R.S. Shekhawat	Ms Chhavi Shaktawat-662257174724 Ms Mahima Chouhan-225867128072
13	Multifunctional Hammer Kit	Dr. B.L. Salvi	Mr. Hardik Longakshi-986130953164 Mr. Pulkit Thakuriya-570215905137
14	MOBET	Ms. Prerna Dhull	Mr. Ashish Khandelwal-638022647515 Mr. Bhavesh Saini-763604615632 Ms Riya Sankhla-392702312300
15	All Inclusive Tourism Platform	Ms. Kalpana Jain	Ms Anchal Nandwana-658455238309 Ms Samridhi Jain
	Waitlisted Projects		
16	Smart Dustbin	Mr. Vishwapriya	Mr. Vishwajeet Singh Jhala-507287081826 Mr. Manoj Sahu-847593162445 Kritika Tyagi-664768457864 Ms. Himanshi Tanwar-429565714762
17	Technology for Commercial Hydroponic farm	Ms. Kalpana Jain	Ms AdhishiAhari-838152280765 Mr Mansi Nangawat-582261200562
18	Plant Irrigation and Nutrients Supply Sensing Device	Dr. S. R. Bhakar	Ms Nikita Akhawat-744242171665 Ms Chanchal Dangayach -693819677170 Ms Kripali Purbia-402571257651
19	Energy Efficient Street Lamp Post	Dr. Navneet Agrawal	Ms AnushaMundra-799811822760 Ms Krati Maheshwari-274512346882
20	Railway Track Surveying with Sensors, Controlled by Wireless Communication	Mr. Deep Manwar	Mr. Shiv DuttBarhat-525080822428 Mr. Parth jai-694558738506 Ms Noopur Sharma-598558390046
21	KHETIBOT (Automated weed machine)	Brijesh Mehta	Preety Purohit-787589902382 Chhavi Gupta-762818994360 Ayush Choubey-724807317070 Neha Meena-921612936887

Annexure-IV

AICTE Chhatra Vishwakarma Awards 2019

Shortlisted Teams for Regional Convention

S.N.	APPLICATION ID	TEAM NAME	PROJECT NAME	SUB CATEGORY	INSTITUTE NAME	INSTITUTE STATE	REGION
35	VISH2019675	ECO GREEN GANG	ECO FRIENDLY AND ECONOMIC CORRUGATES	WASTE MANAGEMENT	COLLEGE OF TECHNOLOGY AND ENGINEERING	RAJASTHAN	NORTH-WEST
36	VISH2019689	AGRO-VIKRAM	MICROCONTROLLER AND ELECTRONICS SENSORS BASED CROP FRIENDLY MICRO NUTRIENTS DETECTION SYSTEMS FOR FARMERS	WATER	COLLEGE OF TECHNOLOGY AND ENGINEERING	RAJASTHAN	NORTH-WEST
62	VISH2019942	PRAGYAN	CROP MANAGEMENT SYSTEM BASED ON IOT AND ML	VALUE ADDITION OF RURAL HANDICRAFT AND AGRO INDUSTRY	COLLEGE OF TECHNOLOGY AND ENGINEERING	RAJASTHAN	NORTH-WEST
1400	VISH20196868	AGRI-VALUE	DEVELOPMENT OF QUINOA POLISHER	VALUE ADDITION OF RURAL HANDICRAFT AND AGRO INDUSTRY	COLLEGE OF TECHNOLOGY AND ENGINEERING	RAJASTHAN	NORTH-WEST

NewGen IEDC
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

PROGRESS REPORT

(For the period Nov 2018 – Oct 2019)

Name of the College/Institution hosting NewGen IEDC	**Dr. MGR Educational and Research Institute**		
Year of starting NewGen IEDC	**2017**		
Name of the Head/Principal of the Institution/College	**Dr. C.B. Palanivelu** Registrar		
Name of NewGen IEDC Coordinator	**Dr. Rama Vaidyanathan** Director (R & D)		
Contact Details of NewGen IEDC Coordinator Mobile Number E-Mail ID	**Director Dr.** **APJ Abdul kalam Center of Excellence in Innovation and Entrepreneurship** Mob: 9841002846 Email : ramavaidyanathan@drmgrdu.ac.in		
Financial Details	Sanction Order No./ Date		Amount Sanctioned
Previous Sanction Order Details	**1**	**EDII/DST-NewGen IEDC/17-18/RLS-I/09, dated 19/07/2017**	**Rs. 60,00,000/-**
	2	**EDII/DST-NewGen IEDC/17-18/RLS II/09 dated 28/02/2019**	**Rs. 47,50,000/-**

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sl. No.	Activities	Outcome/Achievements
1.	DISRUPT – 3rd October 2018	The first year students of batch 2018-22 were able to produce random but thoughtful ideas on the objects given. The Jugad form of innovation was very effective on them
2.	Jugaad Activity – 10th October 2018	About 110 students of JGGV, Choolaimedu girls were the audience and the amount of excitement and the energy created was extremely good. The students had better and unique ideas of using a regular thing for better purpose
3	6 Hats thinking activity – 17th October	About 130 students of JGGV were taught the 6 hats thinking activity. THe students were able to analyse a solution and how it can benefit or affect the target consumers

Sl. No.	Activities	Outcome/Achievements
4	Thirst 4 technology – 30th – 31st October	The students were first trained for Arduino programming and using different components. Later they were given a problem for which they came up with the solution using the components given and the programming taught
5	Leadership Talk Series by Mr. Anand Mahindra – 8th January 2019	The experience on his entrepreneurial journey was Enlightening
6	IPR Workshop by MIC- 10th January 2019	The speaker had spoken about the patent data search and various types of patent. And what all innovations can be patented.
7	Leadership Talk Series by Mr. Anand Deshpande 24th January 2019	His experience in IIT Kharagpur and at Indiana University which he shared was a spark for many students who feared failures
8	Pitch Practice 2019 – 15th February 2019	Students were fascinated to reduce their speech content to one-minute elevator pitch and 3-minute pitch
9	Leadership Talk on Art of Decision Making by Ajit Duval organized by MIC	He had spoken on how the decisions taken have an influence over the span. He had given a clear view on critical thinking and decision making capabilities and its importance.
10	We Power 2019 – 4th April 2019	Motivate the spirit of women entrepreneurship among girls.
11	Future of technical Innovation and Education in India by Dr. Anil Sahasrabude organized by MIC – 22nd April 2019	The opportunities provided by the government in the field of Innovation and Entrepreneurship was motivating.
12	Orientation to Entrepreneurship - September 2019	Orientation towards the entrepreneurial activities in the campus and the activity to induce the innovations and jugaad for improvising with the engineering subjects for the new batch of students 2019-13.
13	DISRUPT Activity - September 2019	The targeted first years were given the essence of importance of entrepreneurship in the engineering curriculum and innovative project making in terms of customer needs to the new batch of students 2019-23
14	NewGen Lab Visit by Maduravoyal Corporation School - 30th October 2019	Gave a sense of innovation and its importance to the school students

[B] To identify, develop & commercialize students' innovative ideas

Sl. No.	Activities	Outcome/Achievements
1	Pitching session by the NewGen Students - 10th -11th December 2018	The students were given key points for intervening for the next round of pitching session.
2	Meet the Market Expert – Mr. Indrajit – 5th February 2019	One on One session helps all the batch students about the importance of market research about their prototyping idea
3	Innovation Fest 2K19 10th - 15th Oct', 2020	Entrepreneurial events to create awareness and appreciation of student and mentor innovations in the campus
4	I-Week - 26th Feb','19	An essence to hard core skills and a taste to a real life scenario of running a business.
5	Core team meet with VelTech TBI	Analyzed and discussed about current difficulties and execution of a prototype to market

[C] To enhance Industry-Academia interaction

Sl. No.	Activities	Outcome/Achievements
1	A brief on patent search and patentability – 8th November	The audiences were about 40 and they were given a brief on the various sources available to do the patent search. And they were given key factors as how to frame the patent information.
2	Mentor leadership workshop – July 2019	The mentors were given a brief on how the problem statements have to be chosen and how to properly correlate the needs, wants with what kind of solution can be given based on the technology, adaptability, ease and
3	Interaction with Vel Tech TBI Manager Dr P Chandrakumar – August 2019	Current market trends for student startups and Strategies for Finishing Prototype
4	Mentor Meeting with Mr. Vivek – August 2019	Learnt a lot about nondestructive testing
5	Meeting with Mr. Girish Madhavan – Quadcel – September 2019	Clarified project market status
6	Mentor Meet with APA Engineering Director Mr. Vaidyanathan on 21st December 2018	Clarified project market status and current industrial problems

2. **Deviation (shortfall) from the proposed action plan (with reasons), if any:**

   We have identified all 15 student groups for the prototype funding. Due to the late receival of grants in Feb 2019, the project funding disbursal has been delayed. However, projects are being conducted as per schedule.

3. **Other important highlights (new initiatives), if any:**

   An important lesson learnt from the year 1 has been to conduct patent search at the start of the project. We have also ensured that we get more students to participate in Smart india Hackathon and other events.

External Participation by NewGen IEDC batch

Sl. No.	Activities	Outcome/Achievements
1	Google Hackfest 2018 - October 2018	3 of the students along with the Incubator manager participated and got few contacts for application development and learnt the various ways to showcase the idea through the web or app
2	iCamp Participation – 19th – 24th December 2018	The students were trained to choose a problem statement and work on the solution. And they were trained to build a prototype with proper mentoring sessions at Forge Factory
3	Participation in IIC PoC workshop at Veltech - 31st July 19	The students were trained to work in teams for preparing various canvases and pitch for the solution
4	Southern Regional Entrepreneur Awards 2018 – 14th February 2019	The students were taken for networking with the industrial and entrepreneurs for mentoring anD funding opportunities
5	School Visit - 28th June 2019	Gave a sense of innovation and its importance to the school students.
6	IOT Congress – 9th – 10th December 2018	It gave platform for networking, leaning the core of IOT and Hands on session triggered the students to learn interdisciplinary skills
7	Theerkathon – 21st – 22nd March 2019	Students participated in Theerkathon fascinated about importance of quick decisions and execution
8	SIH – Smart India Hackathon Grand Finale – 8th July – 12th July	Our team participated in SIH grand Finale and got exposure to world class hackathon experience and came as runner up. They have learnt about interdisciplinary skills, decision making and discussion with various industrial experts
9	One day workshop on testing and calibration of medical devices – Vizag on July 2019	The NewGen Batch and mentor were gained more knowledge about the technology and current practices related to their project
10	HIMALAYAN Start up Trek – 17th September 2019	Students and mentors gained immersive amount of knowledge through the sessions and got expert opinion from juries about their project
11	MHRD POC Exhibition September 2019	One of the Newgen batch student presented among the top 26 finalist and got comments for top officials from India. This made few changes in the prototype and executing it
12	Hackware 2019 – October	Students learnt about the importance of time and execution
13	PSG STEP Manager Leadership workshop – 10 days training Coimbatore - 3 days Bangalore – 2 days Kerala – 3 days Chennai – 2 days 11th October	Southern regional managers of different incubators were trained on the policy making and the fund utilizing techniques. Incubators in Coimbatore, Kerala, Bangalore and Chennai were visited and the facilities and the methods of running an incubator both the technical and business incubators were explained.
14	Visit to IIT Madras on 2nd November, 2019	The various innovative projects were displayed and the students got 3 to 4 leads for mentoring and testing.

4. Student Projects (Please provide the following details for each student project)

Sl. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
1	**Priya Ganesan, B.Ds., Adithya Nair, B.Ds.** ***Auto Brush*** An Automated Jaw shaped Toothbrush with rotatory Mechanism for specially abled patients	IDEATION Rotational movement for brushing with segmental arch lego pattern	Lego patterns without segmenting of arch were carried out since segmenting were not being practical.	The PoC has been made with the customized bristle
2	**Bharath Kumar,BPT Spaina Sweety, BPT Adhi Bhaawathy, BPT** ***Foot Dynamometer*** World's first instrument to measure and treat foot muscle	IDEATION stage	The outcome result Can be integrated with the cloud services for further reference	PoC is made Patent has been filed The prototype with the customized board has been prepared.
3	**Nithish Kumar,B.Tech., Biotechnoloy Yogesh R, B.Tech., Biotechnology** ***Multisols*** A replacement to traditional farming using Hydroponics	IDEATION stage and visiting industry to identify possible solutions for better hydroponics.	Compact design is possible for home and completely automated design is possible	The final design for the hydroponic system has been prepared. The business model for the team has been prepared and they have already approached couple of investors
4	**S Sabariswaran, BPT, Dhinesh Kumar, BPT** ***Ergonomic Wheelchair*** Targeting the handicapped, a specialized wheel chair cum stretcher for climbing stairs	IDEATION Triwheel mechanism Wheelchair cum stretcher for climbing stairs was conceptualized	The wheelchair has been updated with a standing frame and a braking system for applying automatic brakes when climbing stairs if the attendant loses control.	The first prototype is ready. The testing has been done. The business model has been prepared and the team has already identified their early adopters. Patent has been filed. The team is now trying to make a lighter version of their prototype with the interventions mentioned.
5	**Dhivya Dharshini, B.D.S.** ***Holdsen*** A sensor holder for digital X-Ray printing	IDEATION-in discussion with mentor the problem in dental x-ray was identified and a solution design was conceptualized	The design need be more handy and light weight	The design and PoC is ready. The final prototype is being fabricated. The patent application is being processed

Sl. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
6	**Rakesh, B.Tech., CSE** **Sai Chaitanya, B. Tech. CSE** **Brute Agnizer** Artificial Intelligence based crop protection from animals	IDEATION-the problem faced in farm lands due to wild pig etc. was identified. A mechanism to ward off the animas was conceptualized.	The design need to be more handy and light weight	Algorithm for detecting animals completed for birds and animals
7	**Nirmala Gururaj, Computer Applications** ***Farm2Plate*** An Application to detect ripening of fruits	IDEATION The initial idea included only to check if the fruit has ripened. The analysis was started with mango	After interviewing the mango suppliers, the incubate found out that more than knowing whether a mango is ripened, it was necessary for Artificially them to know if the fruit is naturally ripened or artificially ripened. Hence after preparing the PoC as given in the initial ideation, the incubate is now trying to check the different contents in the fruit so that it could be identified if the fruit has been ripened artificially or naturally.	The prototype has been prepared with the application. The final business model has been prepared. The application for patent is being prepared for filing. The project has already been pitched to the investors.
8	**Dinesh SP, B.Tech. ECE** ***No Data*** A USB port to prevent data theft in the name of charging	The PoC was made	No data theft at all possible trials. Good to go for the production process	The Prototype is ready. The final product has been tested to find the required result to set up charging without connecting for the data change to ensure no data theft
9	**Harsha Vardhan, B. Tech., Biotechnology** **Syed Arafath, B. Tech., Biotechnology** ***Dengue Detection Kit*** One step rapid diagnostic test for dengue detection	IDEATION	Has to minimize the false positive results	The prototype nearing completion

Sl. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
10	**Logeswaran R, B.Tech., Mechanical** **Prabakaran S, B.Tech., Mechanical** **Varshitha Reddy, B.Sc., Biotechnology** ***Zero Wastage Water Purifier*** Zero Wastage RO Water purifier using steam and condensation	IDEATION Zero wastage water purifier using vacuum distillation.	The dimensions of the chambers have been changed. The materials for chamber preparation and the casing have been altered for better results. The no. of turns of the copper tubes have been increased.	The PoC has been Prepared. Further interventions to be made in the dimensions of the chamber to make it compact. The PoC is under testing. After the testing, the final Prototype will be designed and fabricated accordingly. The patent search is being processed for filing the patent
11	**Sruthi Lakshmi, B.Tech., Biotechnology** **Babu R, B.Tech., Biotechnology** **A Nithin Kumar, B.Tech., Biotechnology** ***Thermal Management System for EV Batteries*** A method to reduce heat discharge in e-vehicles	IDEATION EV Battery Cooling system using nano-porous membrane made from chitosan flakes displayed on OLED	The membranes made from different materials were prepared and at the end the nano porous membrane was made out of polysulfone Now the team is trying to prepare a membrane made of copper powder to check if the results are better than the other membranes	The membrane has been prepared after trying with different materials. The rough mould of the membrane has been used for preparing PoC. The Patent has been filed successfully. The team will be contacting an expert's assistance for preparing their business model for pitching to the investors.
12	**Kayalvizhi, B.Pharm** **Hema Malini, B.Pharm** ***Anti Acne Cream*** Herb based acne reduction cream	PoC was made in the lab	Hundred percent organic cream.	The Anti-Acne Cream has been made For clinical trials, the team is processing the certification forms. The business model is being prepared. They are now contacting pharma companies for further testing.

Sl. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
13	**Srirathi M, B. Tech., Biotechnology** ***Traditional Food Processing and Preservation*** An advancement in millet food preservation	IDEATION	Fermented millet has more digestibility than the raw millet drink	Fermented millet drink were prepared and tested for calorific value and shelf life. Lyophilized product were packed as a ready to eat drink
14	**Prem Venkatesh G P, B.Sc., Physics** **Sai Kumar, B.Sc. Physics** ***Drone for aircraft dent detection*** Replacement to manual investigation for dent on aircrafts using drone technology	IDEATION Using servomotor, the angles of the drone were supposed inclined for running in narrow spaces. Using single motor for each arm, dual propeller to be rotated for better and stable flight	The application chosen for detecting dents in the planes, didn't require inclined arms. For using 2 propellers for each arm, energy consumption was more and the battery life has to be developed. Wingless drones are being designed and are being tested for the efficiency and practical feasibility	The algorithm for dent detection is ready and drones assembly with custom products is completed. The team is now trying to extend the use case to various applications.
15	**K E Brightlin, Civil** ***Eco Friendly Construction Material*** Replacing coarse aggregate and cement with geo-polymer and thermal ash aggregates	IDEATION	Apart from the river sand for construction purpose	Procured materials and nearing completion

5. Write – up on 2 best prototypes and their start-up journey

TEAM 1 – Erogonomic wheelchair

Student team Details

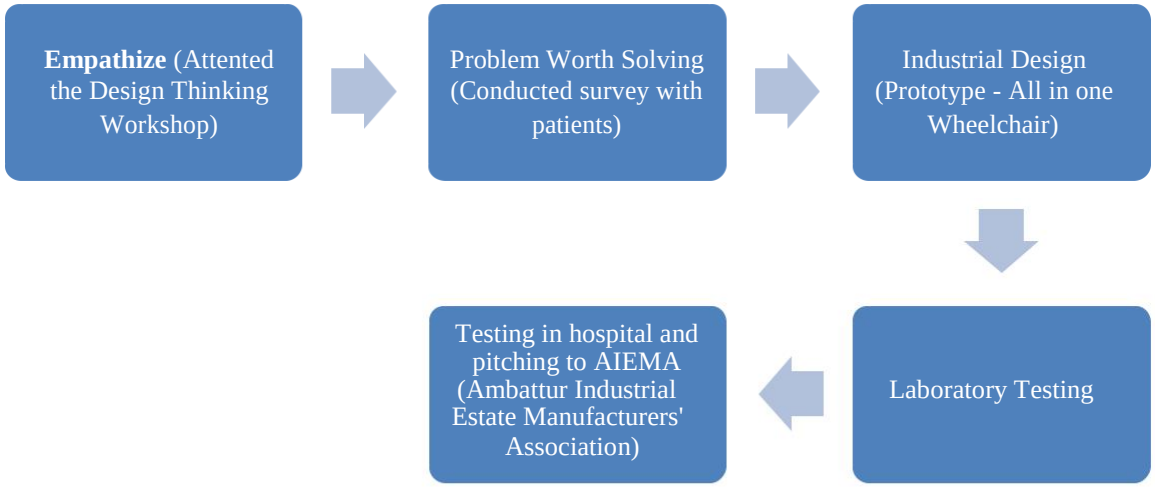
Name	Department	Aadhar Number	Mobile Number	E – Mail ID
S. Sabariswaran	BPT	7329 7635 4144	8667222483	ssabariswaran0@gmail.com
Dinesh T	BPT	4215 0014 1803	7448315190	deena097dinesh@gmail.com
Mentor Details				
Dr. Bernard Ebenezer Cyrus	BPT	7338912729		bernard_cyrus@yahoo.com

Brief description

Problem Statement: One of the major problems faced in the healthcare field is shifting the patient from bed to wheelchair and vice versa is difficult. In addition to this, in the residential area, the handicapped patients face trouble in climbing the stairs where not all the apartments have the elevator facility. And the homes having stairs, they find it difficult to climb and the attendants find it difficult to lift them the stairs. The previously proposed methods are either with the provision of shifting the patients or aid to climb the stairs but there was no system with all the three solutions being served and in all the available systems, there is any proper mechanism that completely empathizes with the problem. Hence, the proposed system includes a new mechanism to help the handicapped to operate a wheelchair as a stretcher and also to climb the stairs using adjustable locomotive parts. The solution is ideal for making a wheelchair into a stretcher and also to climb the staircase up and down the stairs.

Solution Provided: The patients depend on the attenders to transfer them from the bed to wheelchair, wheelchair to commode, commode to the chair, and chair to bed. These transfers are done the financial constrains revolving around it. Moreover, these patients due to their prolonged bed-ridden and psychologically are affected. It contains a couple of lockable gas spring or actuator that is attached at both backrest and leg support. The wheelchair users can stand with these supports. It helps them physically, mentally and socially in the above scenario, the need of the hour for patients and geriatric population is as modification in the conventional and gives them a better environment for survival.

Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs



The Above Picture represents the Locowiz team explaining the functions of prototype to marketing experts on DEMO Day

The Above Picture represents the Locowiz team explaining the functions of prototype to Ambattur Industrial Estate Manufacturer's Association (AIEMA)

Contribution of NewGen IEDC in the same

Funding support for prototype (Ergonomic Wheelchair)

Travel support for attending Conferences and training program

Participated in NewGen Awards and Network session at IIIT Allahabad (E Summit)

Awarded 1st in Business model presentation in the E Summit 2020 – IIIT Allahabad Patent filed for the prototype and application published

Future plan

We have patented the product. Started our company Brain Buds Medical equipment's manufactures and selling. In order to the pandemic disease of corona we have started our business and we got customers and selling the essentials products related to safety gears and have generated a reasonable revenue during the lockdown.

Currently working on the possibilities to reduce weight for more feasibility. Based on testing in stairs and comments from external experts we have opted to purchase imported wheels in order to ease smooth operations of wheel.

TEAM 2 – FOOT DYNAMOMETER

Student team Details

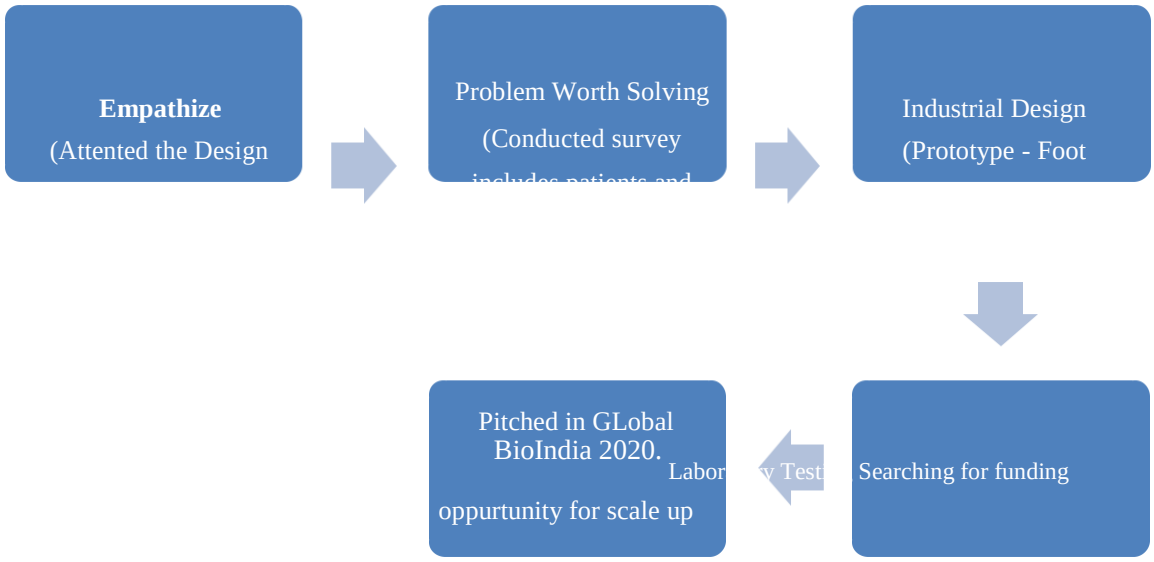
Name	Department	Aaadhar Number	Mobile Number	E – Mail ID
S.Aadhi Bhagavathi	BPT	4538 1353 4741	9442438535	aadhisanjay1121998@gmail.com
P.Spaina Sweety	BPT	6070 7952 8154	8870747357	spainasweety@gmail.com
P.Bharath Kumar	BPT	6324 5255 7053	8220386368	boltakash1@gmail.com
Mentor Details				
Dr. V. Rajalaxmi	BPT		9176123939	rajalaxmi.physio@drmgrdu.ac.in

Brief description

Problem Statement: Foot pain and the foot related problems are increasing day by day resulting from many causes. Some of the causes include, diabetes, uncomfortable footwears, professions involving the use of foot for prolonged period causing weakness of foot . There are various treatment methods available for these foot problems but the problem lying is the available treatment methods does not result in complete recovery and thus enhances weakness in the muscles present in the foot. Also there are no available methods / instruments that measure the accurate level of weakness present in the muscles of the foot.

Solution provided: Foot dynamometer acts as a diagnostic tool to measure the grip of intrinsic muscles. It also acts as a rehabilitative tool and strengthen these muscles. Foot dynamometer uses biofeedback as it provides the visual feedback for the patient about their foot muscle strength. It is easy to use. It is both battery-Operated and rechargeable. As there is no reliable instrument to measure and strengthen the foot muscles, this foot dynamometer acts as an instrument with (tri) role and favour normal foot for those with weakened foot muscles.

Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs



The Above Picture represents the Foot Dynamometer team explaining the functions of prototype to marketing experts on DEMO Day

The Above Picture represents the Foot Dynamometer team explaining the market potential in Global Bio India 2020 – New Delhi

Contribution of NewGen IEDC in the same

Funding support for prototype (Foot Dynamometer)

Travel support for attending Conferences and training program

Participated in NewGen Awards and Network session at IIIT Allahabad (E Summit)

Patent filed for the prototype and application published

Future Plan

The team is trying to take it to the next level i.e., launch the product in the market. The team is trying to apply for further funding for scale up. The team also planning to display their product in medical instruments expo in near future to explain the salient features of the prototype.

List of Students and their mentors (2018-19)

S. No.	Team No	Name	Course	Team Name
1	T1	Priya Ganesan	BDS	Autobrush
		Adithya Nair	BDS	
		M Uzma Quonin	BDS	
	Mentor	Dr. Radhika		
2	T5	Dhivya Dharshini.K	BDS	Holdsen
		Harshini P.	BDS	
	Mentor	Dr. Krithika. C		
3	T2	S.Aadhi Bhagavathi	BPT	Foot Dynamometer
		P.Spaina Sweety	BPT	
		P.Bharath Kumar	BPT	
	Mentor	Dr. V. Rajalaxmi		
4	T4	S. Sabariswaran	BPT	Locowiz
		Dinesh T	BPT	
	Mentor	Dr. Bernard Ebenezer cyrus		
5	T6	Sai Chaithanya Raju	CSE	Brute - Agnize
		Asapanna Rakesh	CSE	
		Syed Rafi Naqvi	CSE	
	Mentor	Suraj Donthi		
6	T7	Nirmala Gururaj	FoCA	Farm to Plate
	Mentor	Dr. Viji Vinodh		
7	T8	DINESH.S.P	ECE	No Data
	Mentor	Godhavari T		
8	T14	Prem Venkatesh G P	Physics	Aircraft Investigation Using Drone
		Sai Kumar	Physics	
	Mentor	H.Mohamed Rizwan		
9	T15	K.E.Brightlin	PhD Civil	Eco Friendly Construction material
	Mentor	Dr. Felixkala		
	T12	S.Kayalvizhi	Pharmacy	Anti-Acne Cream
10		B.Hemamalini.	Pharmacy	
	Mentor	Mrs. Komal. S		

11	T3	YOGESH. R	BIO-TECH	Multi Sols
		NITHISH RAJ.P	BIO-TECH	
		N. Vidhya	BIO-TECH	
	Mentor	L. Madeshwaran		
12	T10	Logeshwaran .R	Mech	Zero Water Wastage
		Prabakaran.S	Mech	
		Varshitha Reddy.D	Bsc Biotech	
	Mentor	H.Mohamed Rizwan		
13	T11	R. Babu	Biotech	Battery Cooling system
		A. Nithinkumar	Biotech	
		S. Sruthi lakshmi	Biotech	
	Mentor	Bhuvaneshwari Nagarajan		
14	T13	Srirathi. M	Biotech	Food Packing and Processing
	Mentor	Dr. J. Arun kumar		
15	T9	HARSHA VARDHANAN	Biotech	D-Check
		SYED ARAFATH	Biotech	
	Mentor	Dr. Prithika. U		

Dr. M.G.R. EDUCATIONAL AND RESEARCH INSTITUTE

MAGIC

Intra Faculty/Departmental Event - Participants Attendance Form – F13

Event Name	Demo Day-2020		28.02.2020
	Collaborate, Dr.APJRCoE, Adayalampattu Campus	Faculty/Dept.	APJRC

SN	Name	External Experts	E-Maild	Contact no	Signature
1	R. ARAVINTH				
2					
3	CRAIG MORGAN				
4					
5					
6	S NATESH SHANKAR				
7					
8					
9					

Event Co-ordinator | Event Manager/ Association Convener | Faculty / Dept. Head

Details on patent filed

S.No.	Title	Applicant	Application No.	Date of filing/Publication
1	Apparatus and method of measuring the muscle strength	Dr. MGR Educational and Research Institute V. Rajalaxmi P. Bharath Kumar	201941023462	13/06/2019 02/08/2019
2	Ergonomic wheelchair for geriatric care	S. Sabariswaran	202041004364	31/01/2020 07/02/2020
3	Thermal Management System using the polysulfone nano porous membrane for batteries	Logeswaran R	202041004809	04/02/2020 14/02/2020

(12) PATENT APPLICATION PUBLICATION

(21) Application No.201941023462 A

(19) INDIA

(22) Date of filing of Application :13/06/2019

(43) Publication Date : 02/08/2019

(54) Title of the invention : AN APPARATUS AND METHOD OF MEASURING THE MUSCLE STRENGTH

(51) International classification	:A61B5/22	(71)**Name of Applicant :**
(31) Priority Document No	:NA	**1)DR. MGR EDUCATIONAL AND RESEARCH INSTITUTE**
(32) Priority Date	:NA	Address of Applicant :MADURAVOYAL, CHENNAI - 600 095, TAMIL NADU, INDIA Tamil Nadu India
(33) Name of priority country	:NA	(72)**Name of Inventor :**
(86) International Application No	:NA	**1)V.RAJALAXMI**
Filing Date	:NA	**2)P.BHARATH KUMAR**
(87) International Publication No	: NA	
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

An apparatus and method of increasing the strength of intrinsic muscles {toes), plantar flexors, dorsiflexors, invertors and evertorsoffootasawhole. An intrinsic foot muscles can also be strengthened using the apparatus based on the movements performed by the patients. The biomedical apparatus has a dial (105) embedded in it which provides visual feedback of the strength measured. (Fig.1)

No. of Pages : 14 No. of Claims : 9

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :31/01/2020

(21) Application No.202041004364 A

(43) Publication Date : 07/02/2020

(54) Title of the invention : ERGONOMIC WHEELCHAIR FOR GERIATRIC CARE

(51) International classification :A61G0005100000,A61G0005020000,A61G0007057000,A61G0005060000,A61G00050400 00

(31) Priority Document No :NA

(32) Priority Date :NA

(33) Name of priority country :NA

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA

Filing Date :NA

(62) Divisional to Application Number :NA

Filing Date :NA

(71)**Name of Applicant :**
1)SABARISWARANS
Address of Applicant :NO: 167/36 JAWAHAR COLONY, SHANTHI COLONY ROAD, ANNA NAGAR, NEAR NICM, CHENNAI,TAMILNADU, INDIA-600040. Tamil Nadu India

(72)**Name of Inventor :**
1)SABARISWARANS
2)DR.BERNARD EBENEZER CYRUS
3)DINESH T

(57) Abstract :
The wheelchair mechanism enables the patients to climb stairs without anyones help. Aids in easy access by the attender to handle the patients effortlessly, this mechanism also provides mobilization for the disabled population. This ensures reducing.the probability of bed sores owing the locomotion by themselves. The wheel can be stopped at any step in climbing at any point the wheel and wheelchair get hold freely rotation of the wheel. The six-wheeled wheelchair gives more stability to the wheelchair. As a whole which provides complete comfort and stability to the wheelchair.

No. of Pages : 12 No. of Claims : 7

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :04/02/2020

(21) Application No.202041004809 A

(43) Publication Date : 14/02/2020

(54) Title of the invention : THERMAL MANAGEMENT SYSTEM USING THE POLYSULFONE NANO POROUS MEMBRANE FOR BATTERIES

(51) International classification :H01M0010625000,H05K0007200000,H02K0009060000,H01M0010615000,H01M0010658000

(31) Priority Document No :NA

(32) Priority Date :NA

(33) Name of priority country :NA

(86) International Application No :NA

Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA

Filing Date :NA

(62) Divisional to Application Number :NA

Filing Date :NA

(71)Name of Applicant :
1)LOGESWARAN.R
Address of Applicant :NO. 1/1, 9TH B CROSS STREET, LENIN NAGAR, AMBATTUR, CHENNAI Tamil Nadu India

(72)Name of Inventor :
1)LOGESWARAN.R
2)SRUTHI LAKSHMI S
3)BABU R
4)PRABAKARAN S
5)VARSHITHA REDDY D
6)A. NITHIN KUMAR
7)H. MOHAMED RIZWAN
8)BHUVANESHWARI NAGARAJAN

(57) Abstract :
The thermal management system comprises of, the external aluminium casirig frame (Ij, the battery cell (2), the, nano-meso porous membrane (3) in pluralrty, a battery (4) and a' tube pathway. for heated coolant (5), wherein, the external aluminium casing frame (1) which is thermally attached to the battery cell (2), inside the casing the cubo¯dal space is divided.into three chambers. Th&top and bottom chambers comprises of the nanb-meso.porous membrane (3) inside with a spac¯ between th membrane and the external aluminium 'casing frame (1). wherein, the valves support of coolant t' flow on the right direction and time a tube pathway for heated coolant (5).and the vapour to.passthrough the tube. The overaHoperatioh of cooling . and heating of a battery (4) takes place throughout the operations as on wheri it is req¼ired.

No. of Pages : 9 No. of Claims : 5

Details on Start-ups

S.No.	Team No and name of student	Name of Company	Registered with	Ref No.
1	Madheswaran and Dhilip	Fenice Technical Solutions LLP	Ministry of Corporate Affairs	AAO-0603
2	Mithil Solanki and Pankaj Jangid	PPM Design Solution	Ministry of Corporate Affairs	AAO-3806
1	Team 3 – Nithish Raj Prasad	Multisols	MSME	uAM No. TN08D0073472
2	Team 5 – Dhivyadharshini Krishnamoorthy	Nervodent	MSME	UAM No. TN04D0014568
3	Team 4 – Sabariswaran S	Brain Buds	MSME	UAM No. TN02A0190680

NewGen IEDC
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT
(for the period of 2018-19)

Name of the College/Institution hosting NewGen IEDC	National Engineering College		
Year of starting NewGen IEDC	2017-18		
Name of the Head/Principal of the Institution/College	Dr.K.Kalidasa Murugavel		
Name of NewGen IEDC Coordinator	Dr.I.Sankar		
Contact Details of NewGen IEDC Coordinator • Mobile Number • E-Mail ID	Mobile: +91 9894697322, +91 9443257441 E-Mail ID: edcell@nec.edu.in		
Financial Details	Sanction Order No./ Date		Amount Sanctioned
Previous Sanction Order Details	1.	EDII / DST-NewGen IEDC/17-18/RLS-I/10 dated 31.07.2017	₹60,00,000/-
	2.	EDII / DST-NewGen IEDC/17-18/RLS-II/10 dated 28.02.2019	₹47,50,000/-

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr.No.	Activities	Outcome/Achievements
1	***DST-NSTEDB-EDI sponsored Entrepreneurship Awareness camp I (2018-19)*** 21st, 23rd and 24th August 2018 Experts from entrepreneurship-related institutions, including host institution, District Industrial Centre, financial institutions and successful alumni entrepreneurs handled the sessions in addition to the industrial (MSME) visit.	✓ Aspiring Entrepreneurship students (80 + 79+81+75 Nos.) obtained awareness about the business, and now they will be able to • Distinguish the type of business • Conduct the technical, financial and market analysis for their business • Analyse and overcome the threats and challenges in the business to earn profit • Contact the business-related people with project details • Few students submitted the project proposal to NewGen IEDC for funding.
2	***DST-NSTEDB-EDI sponsored Entrepreneurship Awareness***	

	camp II (2018-19) 24th to 26th September 2018 -Do -	
3	***DST-NSTEDB-EDI sponsored Entrepreneurship Awareness camp I (2019-20)*** 17th to 19th November 2019 -Do -	
4	***DST-NSTEDB-EDI sponsored Entrepreneurship Awareness camp II (2019-20)*** 25th to 27th February 2020 -Do -	
5	***Orientation Programme on new product development and entrepreneurship*** - *1st year students* 4th November 2019- Mechanical 5th November 2019- CSE & IT 6th November 2019- ECE 7th November 2019- EEE & Civil Senior faculties handled the programme	✓ All the 1st year (511 Nos.) students participated in the orientation programme, and now they will be able to understand and describe the following. • Activities of ED cell, start-up policy. • Role of NSTEDB-DST, Govt. of India, New Delhi and EDII, Ahmedabad, in initiating the Entrepreneurial activities among science and technology background students to establish a start-up/technology-driven business in near future and in providing the financial support for the same.
6	***Orientation Programme*** - *2nd year students* 10th December 2019 NewGen IEDC coordinators conducted the programme	✓ Interested 2nd year Students (23 Nos.) participated in the orientation programme, and now they will be able to understand and describe the following. • NewGen IEDC's responsibilities on implementing innovative student projects, ED cell's start-up policy and IPR policy of our Institute. ✓ Role of NSTEDB-DST, Govt. of India, New Delhi and EDII, Ahmedabad, in initiating the Entrepreneurial activities among science and technology background students to establish a start-up / technology-driven business in near future and in providing the financial support for the same.

7	***Entrepreneurship Lecture Series (ELS) – A Success Story*** 10th December 2019 Success story delivered by Ms.Shylaja Chetlur, Founder and Managing Trustee, CINEMA RENDEZVOUS Film Club, Chennai	✓ Female students of 20 Nos. from all Engineering disciplines of our institute actively participated, interacted with the guest, got motivated and received all know how's. Now, they will be able to • Distinguish the Dos and Don'ts in business. • Choose the right business at the right place and at the right time.
8	***DST-NSTEDB-EDII sponsored Faculty Development Programme on Entrepreneurship*** 03rd - 15th December 2018	✓ Trained the trainers on "Entrepreneurship." • 23+18 faculty members of various engineering colleges, polytechnic and art & science colleges from Tamil Nadu and other state participated. • Impart knowledge and skill on Entrepreneurship for the faculty and in turn, transform the same to their students • Inculcate entrepreneurial culture among the students in and around our college inside Tamilnadu.
9	***DST-NSTEDB-EDII sponsored Faculty Development Programme on Entrepreneurship*** 02nd - 14th December 2019	
10	***"Bazaar"*** 28th February & 1st March 2019 To encourage the students of our institute towards entrepreneurship by conducting a real entrepreneurial event in our campus.	✓ About 150 students of host institution put 43 stalls in this event. ✓ Provided opportunities to sell the products of both technical and non-technical ideas. ✓ The participants of this event will be able to • Feel the spirit of innovation and entrepreneurship. • Market / commercialize their products to the customers
11	***"Shoppers Corner"***	✓ 03 shops have been made ready, and students are encouraged to utilize the facility to feel the taste of being an entrepreneur.

[B] To identify, develop & commercialize students' innovative ideas

Sr.No.	Activities	Outcome/Achievements
1	*Second **Advisory Board meeting** - Approval of Projects and action plan of NewGen IEDC - 2018-19* 7th December 2018	✓ **RESOLVED TO APPROVE** the activities of NewGen IEDC for the year 2018 – 2019 ✓ **RESOLVED TO APPROVE** the students' project of NewGen IEDC to be implemented for the year 2018 – 2019 • Salient points were discussed, and suggestions were given by the members regarding the action plan and students' projects of NewGen IEDC
2	***Potential Project for Product Competition (P3C)*** – II and III-year students - inviting the innovative business viable ideas 26th July 2019	• Innovative and commercially viable projects were submitted by the II & III-year students to Newgen IEDC for funding in the year 2019-2020
3	***Put your Idea Get our Approval (PIGA)*** - selecting the right projects – 2019-2020 1st level screening: 27th & 30th September 2019 2nd level screening: 21st to 24th October 2019 3rd level screening: 14th to 16th November 2019	✓ The selection process is over ✓ 20 projects were identified by conducting 3 level of screening processes with experts
4	***Periodical review meetings*** - to monitor the progress of the 2018-19 batch projects 1st review: 3rd March 2019 2nd review: 25th June 2019, 3rd review: 14th September 2019, 4th review: 11th November 2019 5th review: 13th December 2019	✓ Quality and status of the projects were improved after fruitful discussions made in the meetings. ✓ The students' teams were appropriately given suggestions to complete the prototype model for commercialization. ✓ The students' teams were educated to procure the components/devices of different specifications/configurations for necessities related to the development of different versions of products.
5	***A review on patentability of the 2018-19 batch products*** 18th March 2019	✓ The students and mentors of the various project batches are got many useful suggestions to enhance the patentability of the products under developments

	Mr.P.Ramesh Kannan, Intellectual Property Consultant, Vidarzana, Chennai, was invited as a review member to analyse the patentability of the 2018-19 batch products under development	
6	***Patent application filling –*** the students' teams of 2018-2019 were educated through their respective mentors about IPR (Need, Significance and "How to?") on different occasions.	✓ The mentors and the students were able to • Know the significance of being an inventor of the product • Draft the patent application form for their inventions ✓ Patents filed for the 14 products developed through the NEC NewGen IEDC project teams of 2018-2019 academic year
7	***Product Expo- Showcasing the NewGen IEDC funded products developed in the year 2017-18*** 21st and 22nd September 2019 Dr.Sunil Shukla, Director, EDII, Ahmedabad was the Chief Guest and inaugurated the Product Expo	✓ The event **"Product Expo"** is represented as a great platform for disclosing the various products developed through the NEC-NewGen IEDC during 2017-18 to the academicians, industrialists, and investors around the country. ✓ This programme facilitated the inventors to identify appropriate investors and industrialists to commercialize their inventions

[C] To enhance Industry-Academia interaction

Sr.No.	Activities	Outcome/Achievements
1	***One day seminar on "Techno Entrepreneurs: Opportunities and Challenges" for the students*** 8th January 2020 Resource person: Dr.K.Shankar, Assistant Professor Grade-II, Department of Electronics and Instrumentation Engineering, National Institute of Technology Silchar, Assam	✓ Interested Students of 20 Nos. of our institute actively participated. They will be able to • Identify the opportunities for techno entrepreneurship in the society • Manage the hurdles during their entrepreneurial journey

2	***Start-up Pitching Programme*** 20th September 2019 a one-day Illuminate (Pre-Eureka!) Workshop on Entrepreneurship in association with E-Cell, IIT Bombay Resource person: SHYAM SEKAR S Chief Mentor and Strategist, Startup Xperts Business Consulting Pvt. Ltd.	✓ 80 students participated and got certificates ✓ The participants will be able to ✓ generate new ideas and validate the same to check its feasibility ✓ start making own business model using lean start-up canvas. ✓ effectively pitch product/idea in front of investors
3	***One day Workshop / Seminar – faculty members: A talk on "Idea – Product – Patent – Income"*** 18th March 2019 Expert lecture on "Developing new products with patentability" delivered by Mr.P.Ramesh Kannan, Intellectual Property Consultant, Vidarzana, Chennai	✓ This programme is an eye-opener to the faculty participants who are willing to get the real revenue benefits from their innovative product ideas
4	***One day Workshop / Seminar – faculty members*** 18th May 2019 Training program on "Product Development" for the faculty members Resource person: Dr.I.Sankar Chief Coordinator/NEC NewGen IEDC	✓ Around 150 faculties participated ✓ The participants were able to ✓ Understand the various stages in the new product development process ✓ Implement the new product development process through student projects in systematic manner
5	***Meet the Mentors*** *(academicians, industrialists, financial experts, relevant Government officials and successful entrepreneurs) for development and commercialization* 1st & 2nd February 2020 **E-Summit 20**	✓ Students obtained new insights into their projects. ✓ A group of students participated in "E-summit 20", the Flagship event of E-Cell IIT Bombay on 1st & 2nd February 2020. The students (individual and team) participated in many events, and they have learned to ✓ Explore the opportunities to commercialize their ideas/products.

6	***Participation of the students – Exhibit*** *the students' products/ideas - buyers-sellers meet organized by MSME and Trade Associations in Tamilnadu* 26th February 2020 **PALS 2019-20 innoWAH! Innovation Challenge Competition**	✓ Students of the project "Biometric based water dispenser" funded by NEC-NewGen IEDC (2018-19 batch) participated in "PALS 2019-20 innoWAH! Innovation Challenge Competition" at IIT Madras research park, Chennai on 26th February 2020. ✓ The students exhibited the developed product and got suggestions and advices from the expert visitors to commercialize their product

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

The scheduled dates of few activities conducted have been slightly changed depending upon the availability of the participating students, resource persons and experts.

3. Other important highlights (new initiatives), if any:

 This time, as a new initiative, a national level event "Product Expo" was conducted for disclosing the various products developed through the NEC-NewGen IEDC project batches 2017-18 and other innovative products developed through various students' projects from the institute. Academicians, industrialists, investors, and general public around the country were visited the expo which facilitated the inventors to get exposed to the appropriate investors and industrialists to commercialize their inventions. Dr.Sunil Shukla, Director, EDII, Ahmedabad was the Chief Guest and inaugurated the Product Expo.

4. Student Projects - (2018-2019)

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
1	**PROJECT TITLE:** SMART TROLLEY BAG **STUDENTS' DETAILS:** Ms.Saranya S Ms.Priyadarshini A **MENTORS' DETAILS:** Dr.N.B.Praksh Mr.F.Antony Jeffrey Vaz **DESCRIPTION:** The aim of our project SMART TROLLEY BAG is to	Existing Product and literature survey have been carried out. Identification of the design gap Concept design and prototype model design is achieved as CAD model.	During the initial stages of development and integration of the product, the problems such choosing actuators, Trolley bag size have been noticed and the corresponding design was carried out.	The product is accomplished with fully automated Fingerprint lock system. The product "Smart Trolley Bag" is tested in real-time and demonstrated. Patent filed for the product and the

	inherit security features in travel bag to sophisticate the human needs during traveling. Wherever people travel, they used to carry luggage primarily through airports all of them dragging out their heavy backpacks. In this 21st century digitalized world, all the products adopt electronics and engineering technologies to support humans. In this proposed product, the travel bag inherits a high-security feature. The trolley opens or closes only by the authenticated users only after scanning the user's fingerprint. It also provides other features such that it can be monitored and tracked via an android application specially designed for this trolley. The android application allows only the authenticated user to keep an eye on the bag remotely. In case of theft, the user can track the bag in real-time and can prevent the theft. Once, the trolley bag has tampered, the user gets an email notification in the registered email-ID. At the same time, an alarm will be heard in the trolley to threaten the thief, parallelly the photo of the thief image will be captured and		Faced issues on implementing google drive as user server database handling system. Since the GPS is inside the bag and when the bag is in under cover of concrete buildings, problem arises when Signal is being received from GPS satellites under such conditions.	same is published in patent office journal website. Patent application number: 202041006563 Dated: 14-02-2020 Activities for Commercializing the product are going on.

	send to the authenticated android application. An authenticated user can locate the trolley bag by opening the mobile application to check the status of the bag and the history of the GPS latitude and longitude location where it travels, and the image of the thief captured by the inbuilt camera in the bag. Smart Trolley Bag also has a main advantage of saving all the information to the Google Drive of the authenticated user, and no data is stored locally, and so if the unauthorized person destroys the electronic equipment, it will not tamper the data. Data from the Trolley Bag synced through WiFi or inbuild 3G Modem and within a small platform, all the facilities implemented together.			
2	**PROJECT TITLE** WASTAGE PAY SMART BIN **STUDENTS' DETAILS** Mr. K.Logeswarabalan Mr.M.Mafin Rijoe Mr. V.Nalla Selva Prakash Mr.A.Ravikumar **MENTORS' DETAILS** Dr.S.Senthilkumar Mr.B.Venkatasamy, **DESCRIPTION:** Though the various	Existing Product and literature survey have been carried out. Identification of sensors and corresponding technology to separate different types of wastes Concept design and different prototype model	The mechanical design of outer cover the product bin gets complicated while doing. Two models are tried and one of that is taken for final fabrication. Usage of long cables lead the generation of EMI radiation is and is	The product "Wastage pay smart bin" is constructed and with large number of experiments and rectification process. The product tested in real-time, and now the product is capable of segregating wastes

	technologies have been adopted for waste separation, most of the processes follow the manual method, and hence the dust bins are not probably used by the public. In this proposed product, we planned to motivate the public to use wastage bins by giving them credit points. Also, in this proposed work, some techniques have been followed to separate the wastes like paper, plastic, and metal individually. For identifying the different types of wastes, various sensors like inductive, IR proximity have been interfaced with the microcontroller. Credit points will be given to the users, based on the wastes put into the bin by them. The mobile number of the user can be entered into the bin using the keypad, and the information about the waste dumped into the bin by the user and credit point earned by them is notified via SMS to their mobile phone. In the product, we interlink the technologies along with social responsibilities, which encourage the public to use the bin for wastes. Also, separate the wastes which make way for easy	design is achieved by using CAD Tool.	disturbed the IO signals as well as actuators. Proper cables are chosen to rectify the problem. Took much effort on Sensor calibrations for segregating the wastes. Also, several types of sensors as experimental are being tested and finalized for final prototype.	paper, plastic and metals. Credit point sent to the user according to the types of wastes used by the user. Patent filed for the product and the same is published in patent office journal website. Patent application number: 202041006564 Dated: 14-02-2020 Activities for Commercializing the product are going on.

	recycling of wastes, and thereby this product also plays an important role in a clean and healthy environment.			
3	**PROJECT TITLE** Biometric based water Dispenser **STUDENTS' DETAILS** Mr.J. Junehar Kevin Mr.H.Isaimuhil Mr.S.Thanga Selvam Mr.S.A.Asfaaq Mohamed Mr.P.Abdul Rahim **MENTORS' DETAILS** Dr. R.V. Maheswari Mrs. J.Babitha Thangamalar **DESCRIPTION:** The objective of our product is to "save the water" for reducing the water scarcity and water crisis in major water consuming public places such as hostels / colony / hotels / Lodges / Flats. The water scarcity is the major problem across the world, mainly due to mismanagement of water. To consume the water in an efficient way, this product provides a balance supply of water for the people in	The prototype was made and tested for the different user without a database. The registered user can alone utilize after biometric authentication.	When the product was developed and tested for multiple users, multitasking was a great concern. This intervention had been greatly pronounced when it was implemented in a wing of 4 bathrooms	The product was completed in three versions Biometric water dispenser in wash basin faucet for hand wash Biometric drinking water dispenser with a proposed daily limit Biometric water dispenser with a proposed daily limit in a four-bathroom setup with automated room allocation option Patent filed for the product and the same is published in patent office journal website. Patent application number: 202041007309 Dated: 20-02-2020 Activities for Commercializing the product are going on.

	the hostels / colony /hotels /Lodges / Flats etc., We proposed a product which supplies the water to the intend users within a planned limit. The key idea is to create a database for the users with their names and fingerprint. Then the user can register their fingerprint to using the water up to the proposed limit and by this method, equal amount of water is distributed to all the places and unnecessary usage of water is prevented. This product is enabled with water managing technology that will let the user about water consuming details from any place by the user or controlling authority.			
4	**PROJECT TITLE** Intelligent Hover Board for Visually Impaired **STUDENTS' DETAILS** Mr.S. Arjune Mr.A. Jefferson John **MENTORS' DETAILS** Dr. V. Suresh **DESCRIPTION:** The objective of this project is to help unsighted people to commute in a	The prototype structure for the hover board was designed and tested with individually fitted IR sensors. The power electronics were tested, and problems were identified.	When the product was developed and tested the time taken to reach stability to align with the guideline was the biggest concern. This intervention had been greatly marked and a new design for the hover board and stick was designed	The product was successfully completed and tested for stability in three different paths. • Straight Line • Curved path • Curved path with stops along the way. As for the stick, it is designed to give

	new place without the help of another in a faster pace with comfort. The World Health Organization (WHO) reported that there are 285 million visually impaired people worldwide. Among these individuals, there are 39 million who are totally blind. The ability to commute in an unknown environment is a drawback for blind people in professional and educational societies. There are several systems designed to support visually impaired people and to improve the quality of their lives. Unfortunately, most of these systems are limited in their capabilities. The purpose of the devices is to help the visually impaired people to have a safe and comfortable travel in a closed environment. Even the autonomous vehicles have gained popularity in other countries, the cost of those vehicles is tremendously high. Moreover, there is need for a vehicle to give the driving satisfaction to the blind. Hence our product will have an intelligent hover board which composed of a smart stick and it is perfect for people with visual disabilities to travel more safely. Our model consists		and tested to various specifications. A new control algorithm was developed and implemented in the hover board.	proper haptic feedback through two vibration motors and the connectivity of the stick and hover board was tested and implemented. Patent filed for the product and the same is published in patent office journal website. Patent application number: 202041007308 Dated: 21-02-2020 Activities for Commercializing the product are going on.

	of various sensors and techniques to detect the obstacles. Thus, the person with visual disability can move freely without others help.			
5	**PROJECT TITLE** Design and Fabrication of Tractor Rear Loader for Farm Application **STUDENTS' DETAILS** Mr. S. Rajakumar Mr. L. Karthikeyan Mr. J.David Prasannaraj **MENTORS' DETAILS** Dr.D.Vignesh Kumar **DESCRIPTION:** Indian agriculture and farm sector are facing acute manpower shortage owing to migration of persons towards industrial areas located in urban zones. However, the available labours in rural areas are aged or unskilled in agricultural works. At this juncture, the farmers are left with the use of mechanized devices for their agricultural related works. Now a day, the small and medium level farmers have started using tractors and its attachments widely. Even though many tractor attachments are present in the market, handling of agricultural	Design and Finite Element Analysis Stage – December 2018. Prototype Development. Jan– Feb 2019. Testing of the product. March – April 2019. Product failure Report and analysis. May-June 2019. Design Correction. July – 2019. Testing of Product. August – 2019. Design Correction. September – 2019. Testing of product. Oct – Nov 2019. Final Product and Report Preparation.	The proposed device is used with effective improved mechanism. Improves the stability of the tractor by bringing down the Centre of Gravity (CG) closer to the CG of tractor. Thus minimizing the counter weight needed for the tractor. The capacity of system to lift the weight is increased with lesser effort. The height of the stock lift is also increased. It is very easy to operate and semiskilled labours can operate the device. The overall cost of the device is brought down as affordable by small and middle level formers. The easy removal and attachment is possible as only	Product development and testing has Completed Patent filed for the product and the same is published in patent office journal website. Patent application number: 202041007421 Dated: 20-02-2020 Activities for Commercializing the product are going on.

	stock, fertilizers, manures are cumbersome in nature and consumes large human efforts. It paved a path in design and development of stock handling device as a tractor attachment indigenously. A tractor rear loading device has been designed and fabricated to handle any type of agricultural stock to load the tractor trailer or truck. The device is attachable to various models of tractors such as Mahindra Arjun (605), Mahindra (575), Swaraj (744), Sonalika (855) without changing its actual mechanism provided by the manufacturer. The proposed device eliminates the complicated mechanism in existing devices by replacing simple effective mechanism. It is designed to handle the load up to 800 kg. It is having a boom, cross member and bucket connected with linkages that is operated by the existing hydraulic power source present in the tractor. It has the capability to grasp the stock and lift up to 12 feet and deliver it to truck. The loader arm and bucket assemblies are entirely detachable from the tractor in landscaping task. The cross member is fabricated with carbon steel	December 2019.	three pins are used. The hydraulic circuit is attached with quick release coupling to faster attachment and detachment of oil hoses. When the bucket is replaced with hook, the system can be used to lift any type of bag contains grains to load and unload from truck.	

	having square and rectangular cross-section. The device is designed in such a way that even a semiskilled operator can operate and cost effective.			
6	**PROJECT TITLE** Improved Solar Greenhouse Dryer for agricultural value-added products **STUDENTS' DETAILS** Mr.Aravind Prabaharan Mr.P. Periyanayaga nathan Mr.R. Selva Arun Mr.K.P. Siva Sankaran Mr.S. Vishnu **MENTORS' DETAILS** Dr. M. Vivekanandan **DESCRIPTION:** In this product, the best shape of greenhouse dryer is proposed, and it is improved further by providing racks. By using double glazing polycarbonate sheet, the greenhouse effect is obtained inside the dryer. Also forced circulation and sensible and latent heat storage systems are used to enhance the drying process and its efficiency is improved.	Planning of methodology for implementing the improvements one by one. Design of six greenhouse for experimental analysis of best shape for drying. Starting the purchase of equipment for analysis like Thermocouple and hygrometer.	Initially it was planned to construct the igloo shape directly. Then it is proposed to experimentally analyse the efficiency of the igloo shape. Thus, six shapes are made, and the efficiency of igloo is found to be the highest comparing other shapes, experimentally.	Currently the product is checked for natural convection and forced convection and both the results are found to be favourable. Now the heat storage medium is to be implemented and checked for improvement in efficiency. Patent filed for the product and the same is published in patent office journal website. Patent application number: 202041007418 Dated: 21-02-2020 Activities for Commercializing the product are going on.
7	**PROJECT TITLE** Low cost hearing impairment screener **STUDENTS' DETAILS**	The Literature survey was done, and the aim of the project was defined. The requirement for	Equipment for inspecting hearing impairment using the pure tone audiometer especially in	The product has been developed and experimented with various test subjects. Patent filed for the

	Ms.M.Deepa lakshmi, Ms.M.Muthu udhaya, Ms.S.J.Nivedita, Mr.M.Rama subbu, **MENTORS' DETAILS** Dr.V.Vijayarangan, Ms.B.Siva nandini, **DESCRIPTION:** A great proportion of the human population suffers from hearing loss. Hearing loss may be a measure of the shift in the sensory system compared there to a traditional ear for the detection of a tone. It is a problem that affects people of all ages all over the world. An audiometer is feasible only in downtown areas and highly specialized hospitals. In India, 70% of the population is rural and the doctors have to travel long distances for attending to these masses. So, keeping this in mind, a portable low-cost hearing impairment screener is developed. The equipment includes microcontroller, pure tone generator, attenuation control unit and headphones. Function generator IC is used for pure tone generation of different frequencies. It works on the principle of variable voltage input which	developing the project was elucidated.	geographically underlying areas and communities is developed. The equipment generates pure tone of desired frequency and hearing level and it is sent to the headphone placed on the patient. Based on the patient's response an audiogram, which indicates the degree of hearing loss of the test subject is plotted.	product and the same is published in patent office journal website. Patent application number: 202041006562 Dated: 14-02-2020 Activities for Commercializing the product are going on.

	is controlled by digital to analog converter. Attenuation controller has digital volume control and contains an inbuilt power amplifier. The volume is controlled by up-down going pulses which in turn is controlled by the microcontroller. LCD is used for displaying the selected frequency and hearing level. Switches are available in the front panel to vary the frequencies and hearing levels. The generated pure tone of desired frequency and hearing level is sent to the headphone on the patient. The feedback from the patient is obtained and is noted in an audiogram. The audiogram shows the level of hearing impairment of the patient.			
8	**PROJECT TITLE** Neonatal Suite **STUDENTS' DETAILS** Mr.J.Kishore Mr.T.Karthikeyan, Mr.R.Madhav dinesh, **MENTORS' DETAILS** Dr.K.J.Prasanna Venkatesan **DESCRIPTION:** The India New-born Action Plan (INAP) was launched in September 2014 with the aim of ending preventable new-born	Problem was identified through literature survey and objective was defined. Based on the objective the requirement for bringing up the product was decided.	A system for an instinctive monitoring of infants in NICU (Neonatal Intensive Care Unit) and KMC (Kangaroo mother care). The proposed product combines both NICU, KMC with fully automated neonatal intensive care unit without human monitoring is designed. Appropriate	The product has been made work ready. The testing of our product in the real-life environment is the next and the final phase.

	deaths and stillbirths by 2030. The plan aims to attain single-digit neonatal mortality and stillbirth rate by 2030. INAP's main strategy is called Kangaroo Mother Care (KMC). It creates a womb-like environment for the new-born that provides the four basic needs of the baby – Warmth, food, love, and protection. And to provide significant benefits to all the new-borns, especially those who are preterm or suffer from Low Birth Weight (LBW). To achieve these goals of the INAP, our proposed infant jacket project will contribute a significant role, as it combines both Kangaroo Mother Care (KMC) and fully automated neonatal intensive care unit without human monitoring. A system for an instinctive monitoring of infants in NICU (Neonatal Intensive Care Unit) and KMC (Kangaroo mother care) is provided. The system as disclosed is an exploration of utilizing wireless transmission technology for neonatal monitoring at NICU. The system comprises a microcontroller to which all bodily sensors of the neonate (integrated in the Smart Jacket) are		hardware and software for identifying the abnormalities is implemented and if an abnormality is found then an alert signal along with the patient's data is send to the doctor's/nurse's mobile phone through WIFI/GSM.	

	attached i.e., in the transmitter section. In one embodiment, the signals from these sensors are translated into a certain digital value which is then transmitted to a wireless module, which is configured to wirelessly transmit the data in a continuous stream to a central processing unit. The transmitted data is monitored to ensure real-time health monitoring by the medical personnel in the receiver section. The wireless data are collected in the PC using .NET and the sensed parameters are recorded in the data base. If an abnormality is found, then an alert signal along with the patient's data is send to the doctor's/nurse's mobile phone through WIFI/GSM.			
9	**PROJECT TITLE** "Smart Trash Bin Management System using IOT" **STUDENTS' DETAILS** Mr.Sahaya Joe Ralphin.X Mr.Sundar.S, **MENTORS' DETAILS** Ms. J.Naskath Ms. B.Shunmugapriya **DESCRIPTION:** The present invention comprises an	Planning and Designing was made.	The hardware part of the work plan is completed by purchasing and installing various sensors with suitable hardware components. The software part of the product plan is completed by Android App Development and cloud Database	The product design and development are completed. As per the suggestions from the reviewers, two variants of the product are developed and tested. Patent filed for the product and the same is published in patent office

	apparatus for waste management. The said apparatus consisting of a housing, a microprocessor configured for data communication to a cloud server, a level measuring unit fixed inside the house to measure the level of garbage, a fire detection unit attached inside the housing configured to sense of emergencies, an air quality detection unit fixed inside the housing to sense any inappropriate gas inside the system, an orientation measuring unit attached inside the house to detect the orientation level concerning ground level, a display unit to display the real-time data readings to the user through visual means, a power unit to supply power.		establishment.	journal website. Patent application number: 202041007420 Dated: 21-02-2020 Activities for Commercializing the product are going on.
10	**PROJECT TITLE** Automatic Floor Cleaning and Mopping Robot **STUDENTS' DETAILS** Mr.R.Vigneshwaran Mr.V.Jayaraman Mr.T.S.Easwar Mr.M.Ahamed Yaseer **MENTORS' DETAILS** Dr.B.Paramasivan Dr.K.Mohaideen Pitchai Mr.S.Dheenathayalan	We have an initial idea of the design of prototype model of the product.	The structural design of the entire product is completed at first. Appropriate materials are selected to fabricate the various parts of the floor cleaning robot Various electronic actuating devices and sensors are purchased and assembled as per	The product is completed as per the proposed requirements. Patent filed for the product and the same is published in patent office journal website Patent application number: 202041007307 Dated: 20-02-2020 Activities for Commercializing the product are

	Dr.D.Venkatkumar **DESCRIPTION:** The main purpose of this project is to design and develop a floor cleaning robot that cleans the floor with less or no human effort. In present, the market available floor cleaning robots are more expensive. Hence, it is proposed to design and develop a floor cleaning robot with all necessary features with affordable cost. As per the requirements, the product is designed and fabricated. This floor cleaning robot detects the obstacle in the floor using ultrasonic sensor. The robot follows two different paths namely random path and zigzag path which are programmed using Arduino programming. The robot moves with the help of two motor powered wheels. The robot is featured to work in both wet and dry mode. A 12v battery is used to power the whole setup and an Arduino board controls the cleaning and mopping process. The movement and mopping processes are controlled with the help of the program dumped in Arduino.		the requirement to construct the floor cleaning robot. Software programming for the robot movement is completed and incorporated with the hardware parts. Final product is tested successfully	going on.
11	**PROJECT TITLE** Hybrid Network System to	The Literature survey was done,	The hardware components are	The product

	detect wetness in baby diaper **STUDENTS' DETAILS** Mr.Premkumar.S Mr.Vinoth kumar.K Mr.Ramesh.A **MENTORS' DETAILS** Mr.L. Jerart Julus Mr.V. Jackins **DESCRIPTION:** This product mainly focused on developing a solution to monitor the infants' diaper and providing a clean and hygienic environment for babies at the day care centres. Diaper rash happens mostly to babies who are 9 to 12 months old on average, 35% of babies in this age group suffer from diaper rash. Serious diaper rash can cause not merely skin swelling and inflammation and even bacterial infection or life-threatening complications. Every year the numbers of day care or childcare center are having a massive growth. The day care center has multiple infants or children and monitoring everyone is a challenging task. In day care center a passive wireless moisture sensor is placed inside the diaper of each babies or infants. The passive wireless moisture sensor incorporates an integrated RF antenna to harvest energy for the moisture	and the aim of the project was defined. The requirement for developing the project was elucidated.	purchased and assembled as per the requirement. The software coding is developed to incorporate with the hardware components and tested.	development is fully completed. The hybrid network system is developed, and the product is experimented to different postures of babies. Patent filed for the product and the same is published in patent office journal website. Patent application number: 202041006565 Dated: 14-02-2020 Activities for Commercializing the product are going on.

	sensing function, as well as to communicate with the UHF reader. As the diaper gets wet the UHF reader senses the information from the passive wireless sensor and the data is transmitted to the Caretaker through a mobile application. The caretaker easily identifies the baby and change the diaper. The parents through mobile application can monitor their baby status and history of the diaper changes. The product provides a hygienic environment for babies at day-care center.			
12	**PROJECT TITLE** SMART SCHOOL BAG **STUDENTS' DETAILS** Mr. P.MUTHUKUMAR Mr. P.NAVEENKUMAR Mr.M.RAM PRASATH **MENTORS' DETAILS** Mr. G.PANDIYA RAJAN **DESCRIPTION:** In a day-to-day life we see children carrying lots of books to the school even few books are not needed for that day class activity. This over burden affects the student mentality and physical strength. In-order to avoid or overcome this situation, this product is designed and developed. This product overcomes this situation by introducing a timetable checking mechanism in the bag. This	Existing Product and literature survey have been carried out. Perception design and its prototype design were accomplished.	The hardware components are purchased and assembled as a product kit which will be placed in the school bag. An android app is developed to use the product kit. The product is capable for checking timetable mechanism, tracking of the location, and capturing of images.	The product "Smart School bag" is designed after large number of experiments and renovation. The product is tested in real-time. Patent filed for the product and the same is published in patent office journal website. Patent application number: 202041007311 Dated: 20-02-2020 Activities for Commercializing the product are going on.

	mechanism is achieved with the help of Radio Frequency IDentification (RFID). Each book is provided by a unique RFID tag. Here the Purpose of tag to provide unique information of the book. A RFID reader which reads the RFID tag information and send those data to the Microcontroller placed in the product. The information will be checked, and it will be compared with a stored timetable. Based on the matching result, the alert message will be given to avoid taking unnecessary books to the school. The timetable can be modified each year by the user itself through a mobile app prepared for this product exclusively. Provisions for tracking the real time location of the bag is also provided as a secondary feature of the product.			
13	**PROJECT TITLE** PRO GAS STOVE **STUDENTS' DETAILS** Mr.Gandhi Muthu.K, Mr.Arun Gomathi R, Mr.Ajay Karthick J, **MENTORS' DETAILS** Dr.L.Kalaivani, Mr.B.Venkatasamy, **DESCRIPTION:**	Existing Product and literature survey have been carried out. Identified the design gap. Concept design and prototype model design are completed.	During the initial stages of development and integration of the product, the problems such choosing actuators, controlling flame have been noticed and the corresponding design was carried out.	The product is completed as full automatic, with user interface such as key pad input and LCD display. The product "PRO GAS Stove" is tested in real-time and safety measures also

	Liquefied Petroleum Gas (LPG) stove is the master necessitate of a kitchen. In recent days, though the electric stoves have come with advanced features and automation, it cannot replace the place of LPG stove. But the LPG stove needs continuous monitoring on fire control. In some cases, overcooking recipes may lead to poor quality/wastage of food and consumption LPG. In the face of its dwindling reserve, underscores the need for performance improvement of LPG cook stoves. A novel gas stove is developed in this project work which facilitate the user to set flame level and burning time of the gas stoves. When the time ends, the gas stove gets turned off automatically. It also senses the gas leakage during cooking and gives an alarm sound, and the controller itself turns off the stove. As time and temperature are controlled, human intervention for fire control is not necessary, and it ensures food quality. It can be a much more useful implement for homemakers, since the flame level, cooking timing and ignition is fully automatic. It can also be		Faced issues on automatic firing of GAS using electrical actuators. Finally, things were done using voltage multiplier circuit which is not done anywhere else. The working of the product with the actual LPG input is given and the same was tested with reasonable safety aspects.	considered and demonstrated. Patent filed for the product and the same is published in patent office journal website. Patent application number: 202041006561 Dated: 14-02-2020 Activities for Commercializing the product are going on.

	useful for conserving gas and protection against gas leakage.			
14	**PROJECT TITLE** ECO FRIENDLY PEANUT CANDY MAKING MACHINE **STUDENTS' DETAILS** Mr. K.R PRAVEEN KRISHNA Mr.M.PRAVIN Mr.M.SUBRAMANI Mr.A.SAKTHI **MENTORS' DETAILS** Dr.K.MANISEKAR Dr.M.KATHIRESAN Mr.B.GANAPATHY RAM **DESCRIPTION:** In the traditional practice, the peanut candy is prepared manually which involves skilled labours. Also, the manual preparation of peanut candy is a time-consuming process and repeatability in taste is not always achievable. Hence, the manually prepared peanut candy products could not be fitted with the export standards. However, many websites such as www.sweetkadai.com, www.pettikadai.com etc., which export Indian sweets and snacks to foreign countries and the peanut candy went out of stock for up to 3 months since the	Conceptual design for stirrer system, conveyor system, mixing pan & feasibility study are Completed	Various parts of the product are designed and fabricated with suitable materials. The design of some components is changed further based on the issues faced during the trial runs. Finally, framed the whole process of making the peanut candy in an eco-friendly manner After fabrication. The machine is optimised in a manner where the taste repeatability will be 100%.	The Product is completed and tested successfully. Patent filed for the product and the same is published in patent office journal website. Patent application number: 202041007419 Dated: 21-02-2020 Activities for Commercializing the product are going on.

	production scale is not up to the mark to satisfy the local and offshore markets. So, it has very high market potential. Handling peanut candy at high temperature, compact and cutting into shapes is also very difficult. To mechanize this process, a prototype Eco-Friendly Peanut Candy Making Machine is designed and the process of making candy is automated that resulted in less time consumption for making the candy product, minimum wastage, and uniformity in taste. This device consists of two separate units named Peanut candy mixture and Peanut candy compactor cum cutter.			
15	**PROJECT TITLE** Smart Phone-Based Glaucoma Identification Kit **STUDENTS' DETAILS** Mr. P.M.Pon Jeyan Mr. S.Praveen, Mr. S.M.Rejin Sobi, Mr.V.Siva Raman, **MENTORS' DETAILS** Dr.D.Santhi, Mr. A.Geetha, **DESCRIPTION:** Glaucoma is a disease which damages the optic nerve, the part of the eye which carries the images in the form of electrical impulses to the brain and leads to loss of vision. The	Basics about the Glaucoma disease detection methods are analysed by discussing with ophthalmologist. Existing product and patent survey are done.	The various sub-components of the hardware part are purchased and assembled. The algorithm o process the retinal images is developed and tested by incorporated with the hardware part. Based on the corrections noted from multiple trails, the algorithm is fine finished, and the product development is completed.	The product is completed as per the requirement and tested successfully. Patent filed for the product and the same is published in patent office journal website. Patent application number: 202041007419 Dated: 21-02-2020 Activities for Commercializing the product are going on.

	product “Smart Phone-Based Glaucoma Identification Kit” is used to identify the glaucoma disease in the retina. This product consists of both hardware and software setup. In the hardware part fundus images are captured and in the software program that uses an image processing algorithm to analyse the retinal image captured by external device called eye adapter. The captured image is processed by the embedded examination kit which is developed by algorithm. In this proposed method provides an image processing technique used to detect the optic disc center and segments the optic disc and optic cup. The main objective of this work is to automatically detect the optic disc and optic cup ratio to diagnose the glaucoma from the retinal image. The product displays the preliminary diagnose result in smartphone such as normal and progression stage of abnormality. In case of abnormal result is observed, patients should see an ophthalmologist for future diagnostic evaluation and possible treatment as soon as possible.			

High resolution pictures in jpeg format showing the prototype/product along with the students and their mentor are submitted herewith.

1. **Smart Trolley Bag**

Left to Right: Student members: Priyadarshini A, (Mentors: Dr.N.B.Praksh, Mr.F.Antony Jeffrey Vaz), Saranya S

Product Interior Layout

Product Exterior Layout

2. Wastage Pay Smart Bin

From left to right: Student members: V.Nalla Selva Prakash, Dr.S.Senthilkumar, (Mentor), Mr.B.Venkatasamy (Co-mentor) , M.Mafin Rijoe K.Logeswarabalan, A.Ravikumar,

Front View of the product

Top View of the product

3. Biometric water dispenser

From left to right: S. Thanga Selvam J. Junehar Kevin
H. Isaimuhil, , S.A. Asfaaq Mohamed and P. Abdul Rahim

From left to right: Dr. R.V. Maheswari (Mentor) and Mrs. J. Babitha Thangamalar (Co-Mentor)

Product photograph

4. Intelligent hover board

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<tr><td>Dr.V.Suresh (Mentor)</td><td>Product photograph (rear view)</td></tr>
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<tr><td>A. Jefferson John</td><td>S.Arjune</td></tr>
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5. Tractor Rear Loader

From left to right: L. Karthikeyan, S. Rajakumar, Dr. D.Vignesh Kumar (Mentor) and J. David Prasannaraj

Product loaded at the rear of tractor

Product loaded at the rear of tractor

6. Improved Solar Greenhouse dryer for agricultural value-added products

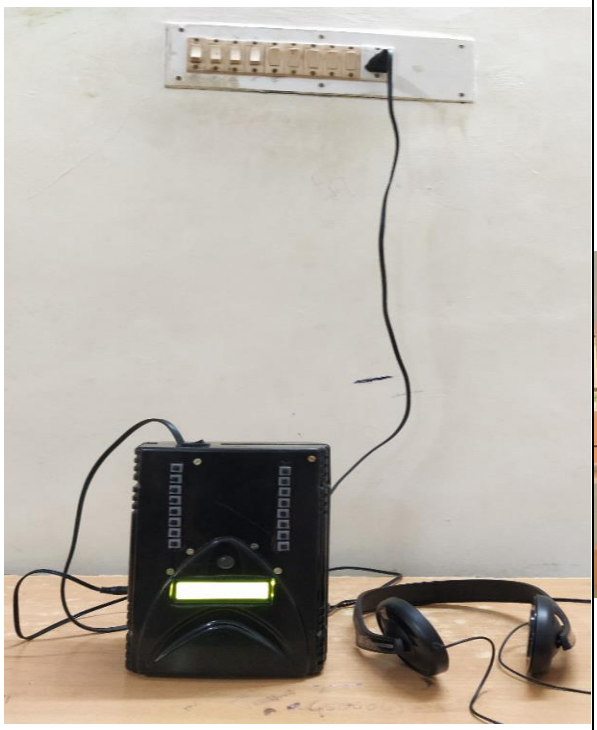
From left to right: R. Selva Arun, Aravind Prabaharan, Mr. M. Vivekanandan (Mentor), P. Periyanayaga Nathan, K.P. Siva Sankaran and S. Vishnu

Outer view of the product

Interior view of the product

7. Low cost Hearing Impairment Screener

From left to right: Mr.M.Rama Subbu, Ms.S.J.Nivedita, Ms.M.Muthu Udhaya, Ms.M.Deepa Lakshmi, Dr.V.Vijayarangan (Mentor), Ms.B.Siva Nandini (Co-Mentor)

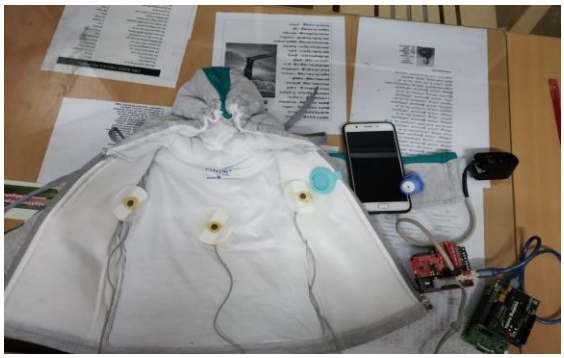


Low Cost Hearing Impairment Screener equipment

From left to right: Mr.M.Rama Subbu, Ms.S.J.Nivedita, Ms.M.Muthu Udhaya, Ms.M.Deepa Lakshmi

8. Neonatual Suit

From left to right: Mr. J Kishore,Dr. K.J.Prasanna Venkatesan (Mentor) Mr.T.Kathikeyan and Mr.R.Madhav Dinesh



Setup Consisting of working model of Neonatal Suit

From left to right: Mr. J Kishore, Mr.T.Kathikeyan and Mr.R.Madhav Dinesh

9. Smart trash bin management system using IOT

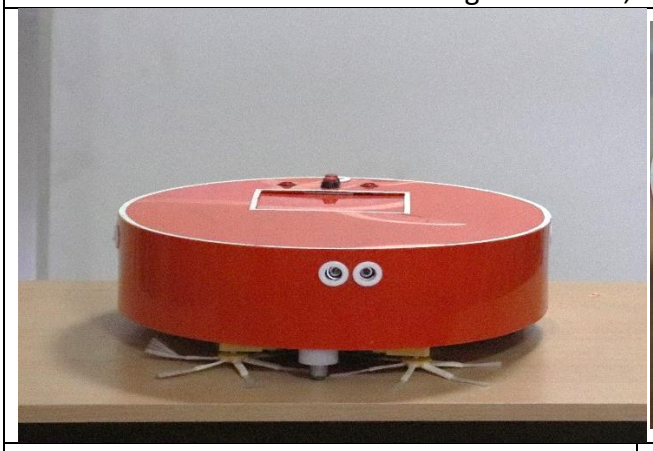
From left to right: Mr.Sundar.S, Ms. B.Shunmugapriya (Co-Mentor), Ms. J.Naskath (Mentor), Mr.Sahaya Joe Ralphin.X

Side view of the product

Top view of the product

10. Automatic floor cleaning and mopping robot

From left to right: Dr.B.Paramasivan (Mentor), S.Dheenathayalan (Co-Mentor), Dr.D.Venkatkumar (Co-Mentor), Dr.K.Mohaideen Pitchai (Co-Mentor), V.Jayaraman, R.Vigneshwaran, T.S.Easwar

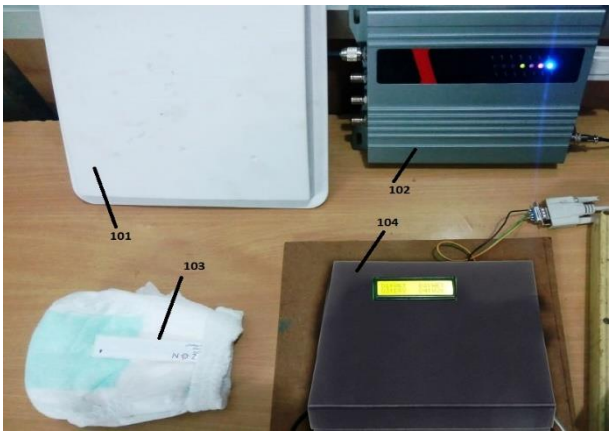


Front view

Top view

11. Hybrid network system to detect wetness in baby diaper

From left to right: Mr. Vinoth kumar.K , Mr.Ramesh.A , Mentors- Mr.L.Jerart Julus , Mr.V. Jackins



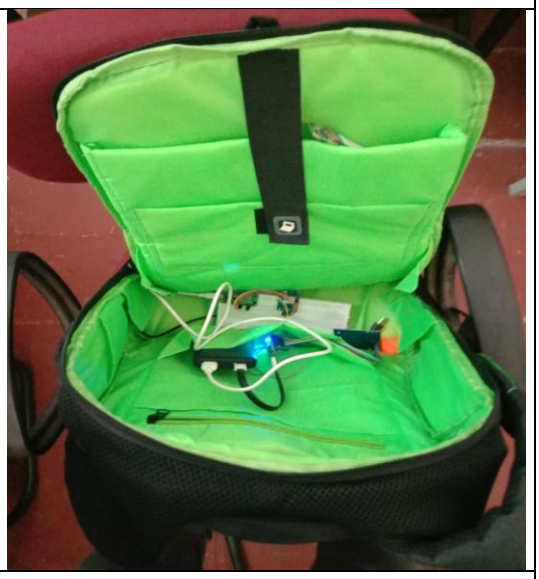
The circular polarization RFID antenna 101, four port UHF RFID reader 102, flexible passive wireless moisture sensor 103, processing unit containing Arduino and wireless module 104.

The internal placement of passive wireless sensor in the diaper

12. Smart Bag for school children

From left to right: P.MUTHUKUMAR, P.NAVEENKUMAR and Mr. G.PANDIYA RAJAN (Mentor)

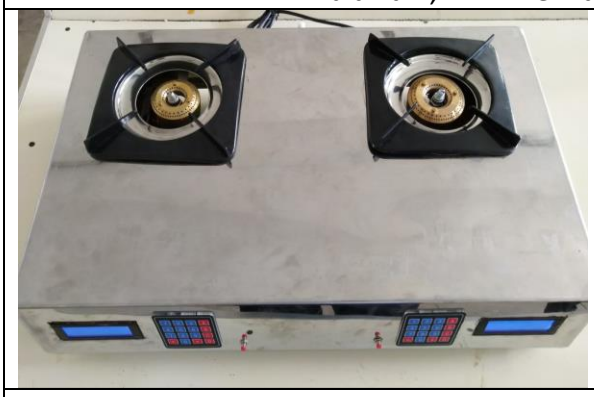
Mr.P.Naveenkumar



Interior view of the product

13. Pro Gas Stove

From left to right: Student members: Ajay Karthick J, Arun Gomathi R, (Mentors: Dr.L.Kalaivani, Mr.B.Venkatasamy), Gandhi Muthu.K



Top View of the Product

Front View of the Product

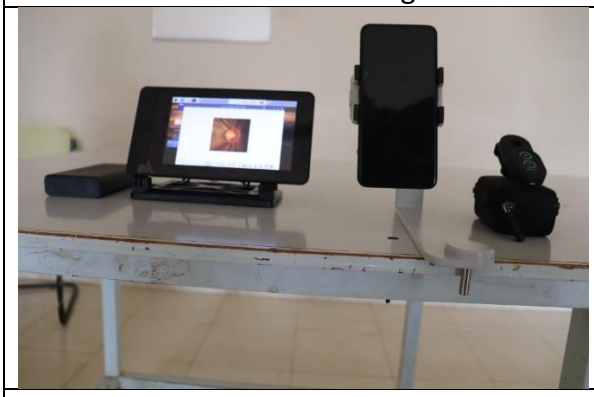
14. Eco friendly peanut candy making machine

From left to right: Dr.K.manisekar (Mentor), K.R Praveen Krishna, M.Pravin, M.Subramani, A.Sakthi, Dr.M.Kathiresan (Co-Mentor), B.Ganapathy ram (Co-Mentor)

Product photograph

15. Smart phone base Glaucoma identification kit

From left to right: Mrs.A.Geetha, Dr.D.Santhi, Mr.Praveen



Product photograph

From left to right: Mr.V.Siva Raman, Mrs A.Geetha, Mr.S.M.Rejin Sobi, Mr.S.Praveen

5. A two-page case-let each on the four best student projects (either prototype developed or commercialized) from the above list is provided.

1. IMPROVED SOLAR GREENHOUSE DRYER FOR AGRICULTURAL VALUE-ADDED PRODUCTS

Student team details (with contact information)

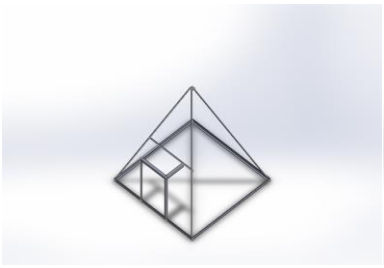
Name	Register Number	Mobile Number	Email	Aadhar Number
Aravind Prabaharan	1610008	8220899719	atavindprabaharan35@gmail.com	2483 9553 8068
P.Periyanayaganathan	1610081	7502871894	sivaganeshp1799@gmail.com	3388 2284 8262
K.P. Siva Sankaran	1610100	7871707734	kpsivasankaran1998@gmail.com	7941 1276 7710
R. Selva Arun	1610096	9003992531	selvaarun3009@gmail.com	4629 1542 3134
S. Vishnu	1610122	9488905442	moorthyvishnukcp@gmail.com	5394 9749 1538

Brief description about the student start-up

In current open sun drying the fruits and vegetables are prone to pest attack and there is a possibility that they can be carried over by the wind, in case of small particles like coriander the chance of being carried over by the wind is high. In the event of sudden rain, it is difficult to protect the product. It is difficult to maintain the quality, aroma.

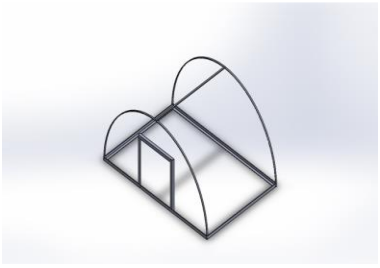
In solar greenhouse dryer because of the closed system the quality and quantity of the product are maintained. The problem of pest attack and cross contamination can be avoided completely.

In this project, different shapes of the greenhouse dryer were compared, and the best shape of the greenhouse is identified and also performance of solar greenhouse dryer is improved by adopting forces circulation and sensible and latent heat storage.

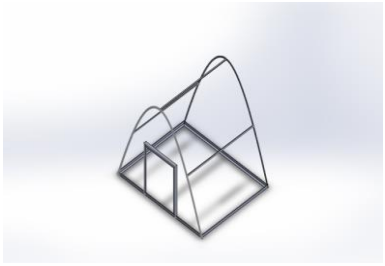


Pyramid

Igloo



Quonset

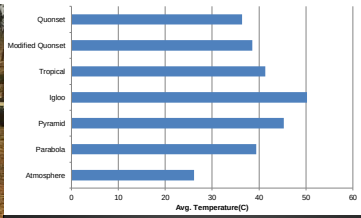


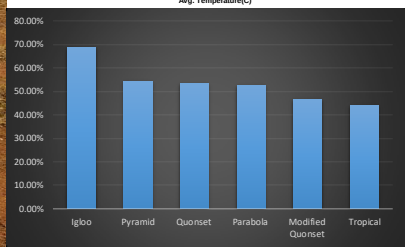
Parabola

Tropical

Modified Quonset

Start-up entrepreneurial journey from ideation to prototype or commercialization





Prototypes of six shapes of greenhouse dryers and its results

- Igloo shape develops a better inside temperature as well as more weight loss in comparison with the other shapes, 30% more weight loss is achieved in Igloo Shape.

- During the Natural Convection in the scaled-up igloo with a load of 30 Kg for 2 days a total of 52% weight loss occurred.
- During Forced convection with 2 exhaust fans on two sides separated by baffles for flow in controlled path a total of 95.825% weight loss occurred.
- It is observed that the heat storage capacity is increased during low radiation times by incorporating sensible heat storage in the dryer.
- Thus, Igloo shaped rack type dryer with double glazing polycarbonate sheet has improved performance comparing other shapes.

Contribution of NewGen IEDC in the same

NEC NewGen IEDC sponsors the entire project

Future plan

- As now we have the improved high-performance full-scale igloo shape solar greenhouse dryer, we will start doing the commercial activities of dryer the food products
- Dried tomatoes can be sold to ketchup manufacturers, dried onions to noodle manufacturer's
- Dried banana can be sold to health drink manufacturers
- This dryer can be sold to fisherman for fish drying
- Mango pulp can be dried to supply it to the mango pulp manufacturers

2. Tractor Rear loader

Student team details (with contact information)

Name	Register Number	Year	Dept.	Mobile Number	Email	Aadhar Number
S.Rajakumar	1510079	IV	Mechanical Engineering	9486332861	Ramjiselvaraj06@gmail.com	359265306181
L.Karthikeyan	1710043	III	Mechanical Engineering	8754858808	Karthik1125keyan@gmail.com	609815345057
J.David Prasannaraj	1710026	III	Mechanical Engineering	7397623073	Psjd.david@gmail.com	682557136621

Brief description about the student start-up

The Micro enterprises "Ramji Agro Implements" (GST Registration number 33CGYPR1975F1ZR, UDYOG AADHAR NO: TN26A0015609) is a registered firm under the sole proprietorship of Mr. S.Rajakumar (Proposer of this project) who is an Engineering graduate from mechanical Engineering completed his degree at National Engineering College, Kovilpatti. He is from an agricultural family and having 40 acres of land and well supported by their parents. He has already taken dealership of selling agricultural machineries of

SARBAN brand and so far, has made 45 lakhs turnover in six months. As he is actively involved in cultivating suitable crops in 40 acres of land using machineries. Further, he proposed to Start-up Company for manufacturing agricultural machineries. The idea of this proposal has been evolved as a result of practical experience faced in real agricultural task by the student entrepreneur.

The Federation of Indian Chambers of Commerce & Industry (FICCI) had published a detailed survey entitled “LABOUR IN INDIAN AGRICULTURE: A GROWING CHALLENGE” and discussed the labour problems in Indian Agriculture. It is pointed out that there exists acute shortage of labour in agriculture and discussed the reasons.

The objective of the project is to fabricate a simple rear loader attachment to minimize the labour work as well as to minimize the material handling time in farm and construction sector. It is simple in construction and can be easily attached with the existing hydraulic mechanism at the rear side of any tractor. Further, need for a new mechanism does not arise for attaching the rear loader with the tractor. This attachment is developed to overcome the limitations in the existing products such as high cost and large lifting capacity requiring more powerful tractor. In the present work, rear loader is designed with components which are easily available in the market, so maintenance and replacement of components is not a problem.

At this juncture, the formers are left with the use of mechanized devices for their agricultural related works. Now a day, the small and medium level formers have started using tractors and its attachments widely. Even though many tractor attachments are present in the market, handling of agricultural stock, fertilizers, manures are cumbersome in nature and consumes large human efforts.

The designed supporting arm is made with square or rectangular cross-section pipe (mild steel), so that the weight of the product gets reduced. An Unskilled person can also operate this arrangement very quickly as it does not require any specialized training. The loader arm and bucket assemblies are entirely detachable from the tractor in landscaping task. This rear loader attachment also allows for a higher load carrying capacity and lift range.

The designed tractor rear loader has the capacity of lifting load up to 500 kg to 800 kg and has enough lift to be able to put loads of mulch, soil, and gravel. Tractors from various manufacturers like Mahindra Arjun (605), Mahindra (575), Swaraj (744), Sonalika (855) can use this rear loader attachment as an accessory without changing its actual mechanism at the rear side. It can lift the weight of 500 to 800 Kg of material up to 10 to 12 feet. Its cost is much lower as compared to other accessories available in the market.

Startup entrepreneurial journey from ideation to prototype or commercialization

Prototype of the “Tractor Rear Loader” and the team members of the project is given in the photograph given below.

Start-up entrepreneurial journey from ideation to prototype or commercialization

The following ideas were implemented in manufacturing the prototype of “Tractor Rear Loader for Farm Application”

- The proposed device is used with effective improved mechanism.
- Improves the stability of the tractor by bringing down the Centre of Gravity (CG) closer to the CG of tractor. Thus, minimizing the counterweight needed for the tractor.
- The capacity of system to lift the weight is increased with lesser effort. The height of the stock lift is also increased.
- It is very easy to operate and semiskilled labours can operate the device.
- The overall cost of the device is brought down as affordable by small and middle level formers.
- The easy removal and attachment are possible as only three pins are used.

- The hydraulic circuit is attached with quick release coupling to faster attachment and detachment of oil hoses.
- When the bucket is replaced with hook, the system can be used to lift any type of bag contains grains to load and unload from truck.

Contribution of NewGen IEDC in the same

NEC NewGen IEDC sponsors the entire project from scratch to end.

Future plan

- The performance and load carrying capacity of the tractor rear loader attachment is good.
- Still, there is a scope to optimize the performance by increasing the lifting load and height without affecting the centre of gravity of the tractor.
- It is possible to reduce the weight of the equipment, thus increasing the lifting capacity.
- It is possible to eliminate the manual labour thus providing solution to labour problem for agriculture such as scarcity of labour and higher wages.

3. Low Cost Hearing Impairment Screener

Student team details (with contact information):

Name	Register Number	Mobile Number	Email	Aadhar Number
M.Deepa Lakshmi	1611019	9566786629	deepamrk1612@gmail.com	571621968902
M.Muthu Udhaya	1611058	9677339149	jrcselvi07@gmail.com	807972548704
S.J.Nivedita	1611066	9442788189	niveditaselvan1998@gmail.com	715011971325
M.Rama Subbu	1611081	8248607120	alexrscosta17@gmail.com	867757596458

Brief description about the student start-up:

A great proportion of the human population suffers from hearing loss. It is a problem that affects people of all ages all over the world. An approach for inspecting hearing impairment using the pure tone audiometer in geographically underlying areas and communities is subtle. An audiometer is feasible only in downtown areas and highly specialized hospitals. In India, 70% of the population is rural and the doctors have to travel long distances for attending to these masses. The high prices of screening/testing equipment limit their availability in rural areas. The cost of audiometer currently available in hospitals is around Rs.30,000. Further, such equipment is currently designed to be used by specialists, who are often unavailable. So, keeping this in mind a portable hearing

impairment screener is designed, which is shown in figure 1. The cost of the equipment will be around Rs.4000, which is affordable than the existing one.

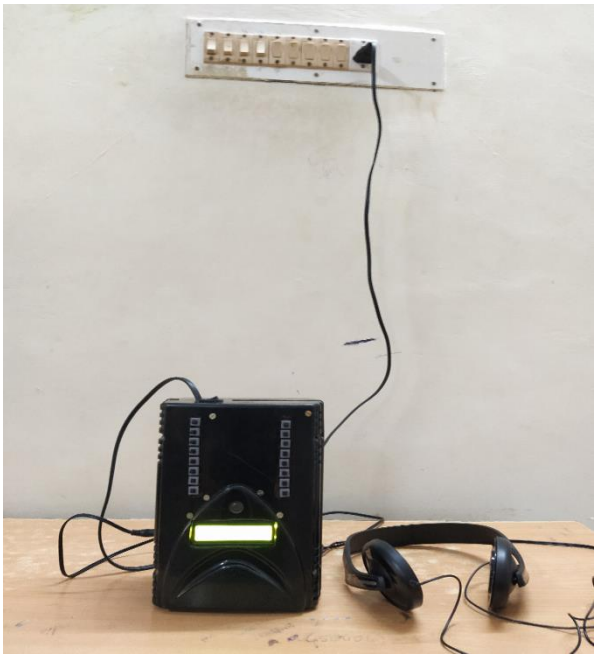


Figure 1: Hearing Impairment Screener equipment

Start-up entrepreneurial journey from ideation to prototype or commercialization:

The equipment operates on the external power supply. It may also be battery operated without external power supply. The normal hearing capacity of the human ear is 20Hz to 20kHz. For the hearing test, a pure tone of variable frequencies: 500Hz, 750Hz, 1kHz, 2KHz, 4KHz,6kHz,8kHz,10kHz are generated. The pure tone is attenuated by the attenuation control unit. The level of attenuation from 0dB to -70dB in 8 steps of 10dB is generated. The varying frequencies and hearing levels are displayed in the LCD provided in the front panel of the equipment. The different frequencies and hearing levels are selected using switches without the guidance of audiologists. The output signal is obtained on a headphone. The feedback from the patient is acquired and is noted in an audiogram as shown in figure 2. From the audiogram, the level of hearing impairment of the patient is identified and is categorized as normal hearing, mild hearing loss, moderate hearing loss, severe hearing loss. The equipment is intended to be utilized in the same way as clinical thermometers and blood pressure monitors are being used today. Due to the low cost, the equipment can be used by general physician also. It makes all measurements quickly, precisely, and with no discomfort to the patient. It is more useful for conducting mass screening in schools or primary health centres. The equipment can be easily taken to remote areas for conducting screening among children or aged persons.

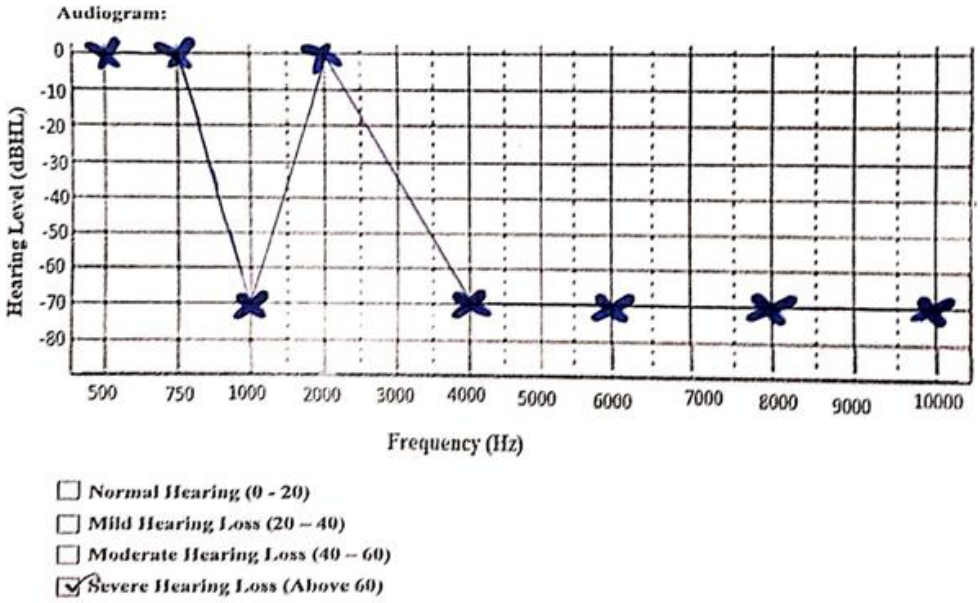


Figure 2: Audiogram with the different levels of hearing impairment

Contribution of NewGen IEDC in the same: Fund sponsored by NewGen IEDC

Future plan:

The level of hearing impairment of the patient can be sent as a text message or voice message to the patient's guardian or audiologist. This will be useful in mass screening conducted in schools or primary health centres for communicating the degree of hearing loss to the children's guardian or school principal, so that necessary medical care can be taken accordingly.

4. WASTAGE PAY SMART BIN

Student team details (with contact information)

Name	Register Number	Mobile Number	Email	Aadhar Number
Logeswarabalan K	1613045	7339091378	logeswarabalan@gmail.com	568703743843
MafinRijoe M	1613047	7397531024	mafinrijoe@gmail.com	704004692013
NallaSelva Prakash V	1613064	7868076394	nallaselvaprakash965@gmail.com	981809986294
Ravikumar A	1613082	9597019432	ravikumaraprs49@gmail.com	757806194313

Brief description about the student start-up:

This proposed idea of the wastage pay smart bin has been developed as a prototype model. The prototype smart bin has been designed up to electronic standards and principles. The prototype has been tested for reliability and accuracy for commercialization. We planned to motivate the public to use dustbins by giving them credit points. Also, in this work, some techniques have been followed to separate the wastes like paper, plastic, and metal individually. This product can be implemented in places where a small amount of garbage is dumped, such as Airport, Super Market, Metro stations, smart cities, etc. We identified the customers for the product, and the product has been demonstrated for the sample of their feedback. We planned to improve our model based on the various feedbacks from the experts and customers and the steps have been taken to commercialize this product and to establish a start-up in the immediate future.

Start-up entrepreneurial journey from ideation to prototype or commercialization:

This team has approached NewGen IEDC of our institution with this product idea, "Wastage Pay Smart Bin," for development funding. Now, with the technical expertise of his mentor and other supports from NewGen IEDC, the team has developed the prototype model of the product with complete specification and reliability. The prototype model has been tested in real-time for separating wastes and giving credits to the users through mobile phones. However, there are few modifications to be made in order to make the product with the fullest efficiency.

In this product, for identifying the different types of wastes, various sensors like inductive, IR proximity have been interfaced with the microcontroller. Certain credit points will be given to the users, based on the wastes put into the bin by them. The mobile number of the user can be entered into the bin using the keypad, and the information about the waste dumped into the bin by the user and credit point earned by them is notified via SMS to their mobile phone. Generally, humans are involved in the waste segregation process, but in the proposed product, the segregation process is being done automatically, such that different kinds of wastes are collected and stored separately. In the product, we interlink the technologies along with social responsibilities, which encourage the public to use the bin for wastes. Also, separate the wastes which make way for easy recycling of wastes, and thereby this product also plays an important role in a clean and healthy environment.

The entire setup has been built with a high-quality steel box with customized design. A power supply provision has been given to operate the electrical drives in the system. The entire product has been developed as stylish in design to attract the user to use the smart bin for the clean and healthy sociality, Now, the steps have been taken for further development towards establishing a start-up in the manufacturing sector.

Photograph of the Product

Contribution of NewGen IEDC in the same:

The NewGen IEDC of our institution has supported this team in bringing up this idea to the level of prototyping / commercialization in addition to funding the project for product development.

- The arrangements have been made to meet the technical experts and business consultants through the mentor, whenever the meeting was required.
- The additional support in confirming the design of prototype models has been provided.

FUTURE PLAN:

The NewGen IEDC will take special measures to commercialize the product in following ways:

- The suitable Industry/Investor will be identified for the manufacturing and marketing of the product.
- The District Industries Centre will be contacted for getting financial assistance to start an Industrial unit to fabricate the product and market the same

NewGen IEDC

Under the Aegis of NSTEDB, DST, Govt. of India,New delhi

SUBMISSION OF PROGRESS REPORT

Name of the College/Institution hosting NewGen IEDC	Velammal Engineering College		
Year of starting NewGen IEDC	2017-2018		
Name of the Head/Principal of the Institution/College	Dr.N.Duraipandian		
Name of NewGen IEDC Coordinator	Dr.Jeevaa Katiravan		
Contact Details of NewGen IEDC Coordinator • Mobile Number • E-Mail ID	Dr.Jeevaa Katiravan 9840659486 hodit@velammal.edu.in		
Financial Details	Sanction Order No./ Date		Amount Sanctioned
Previous Sanction Order Details	1.	EDII/DST-NEWGEN IEDC17-18/RLS-1/11.dt 19/7/17	Rs 6000000
	2.	EDII/DST-NEWGEN IEDC17-18/RLS-II/11.dt 28/2/19	Rs 4750000

Period under Review : 2019-20

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

S. No	Activities	Outcome/Achievements
1	Workshop on Intellectual Property Rights on 10th April 2019 & 14-15 November 2019	Importance of filing Intellectual properties
2	Workshop on Art of Writing Research Project Proposal on 24th April 2019 & 21-22 November 2019	Research Scholar, Faculty taught to draft research proposal & Idea generation
3	Workshop on Patent Drafting on 29-30 April 2019	Drafting procedures
4	Unleash 2.0 on 30.08. 2019	Report attached- Annexure V
5	Guest Lecture on Digital Marketing on 18.09.2019	50 students- Digital marketing opportunities learned
6	Varthaga 2.0 on 19.07.2019	Activities attached- Annexure VI
7	Webinar on Start-ups and Investments on 13th Jun 2020	75 Students participated
8	Webinar on “Engineering the Future”	102 Students Participated

[B] To identify, develop & commercialize students' innovative ideas

S. No	Activities	Outcome/Achievements
1	Unleash 2.0 on 30.08. 2019	Report attached- Annexure V
2	Varthaga 2.0 on 19.07.2019	Activities attached- Annexure VI
3	Hidden Dreams on 31.01.2020	Various ideas from the future entrepreneur
4	Pitch War on 17.02.2020	Best pitch is rewarded
5	IIT Incubation Center – Visit on 20.02.2020	Understood incubation centre activities

[C] To enhance Industry-Academia interaction

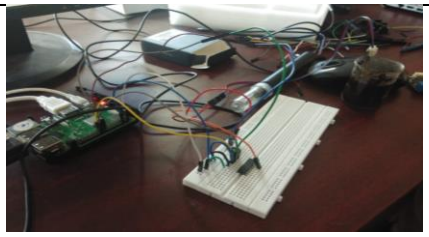
S. No	Activities	Outcome/Achievements
1	Preethi Entreprises Visit	MoU signed

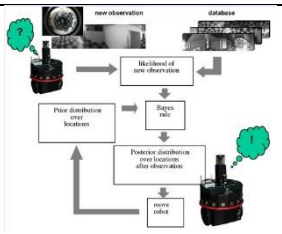
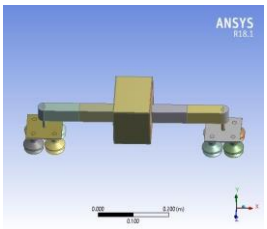
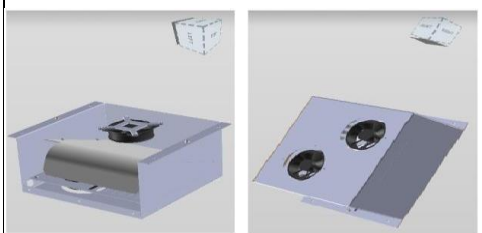
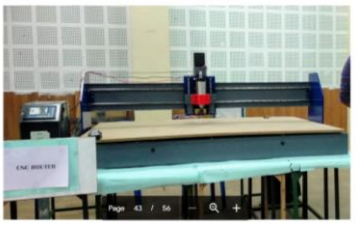
2. Deviation (shortfall) from the proposed action plan (with reasons), if any: Nil

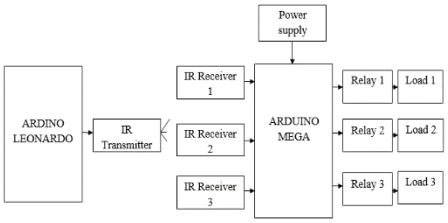
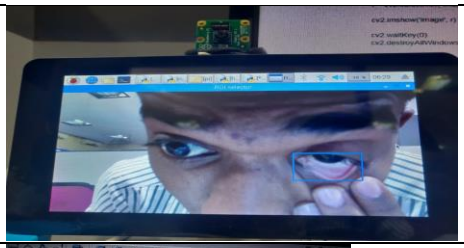
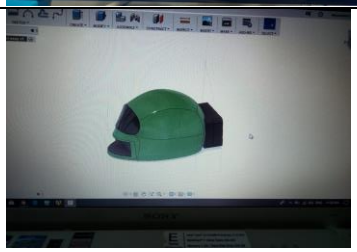
3. Other important highlights (new initiatives), if any:

i. Startup Cubicles – Inaugurated in IEDC

4. Student Projects (Please provide the following details for each student project)

S. No	Team/Project Description	Photos	Interventions made	Current Status
1	SELF-CONFIGURED AND INTERNET OF THINGS SUPPORTED CALORIES AND WORKOUT BALANCING SYSTEM (ECE)		Working model is ready for the demonstration	Patent filed; Had discussion with relevant hospitals
2	GREEN HOUSE MONITORING USING AUGUMENTED AND VIRTUAL REALITY (ECE)		Working model is ready for the demonstration	Patent filed; Deployed in Green house environment and readings taken.

3	MUSCLE STRAIN ACTIVITY ALERT SYSTEM USING BODY SENSOR NETWORK (CSE)		Working model is ready for the demonstration	Patent filed;
4	IOT GATEWAY SUPPORTED SELF-ORGANIZED WIRELESS SENSOR NODES FOR ENVIRONMENTAL MONITORING APPLICATIONS (IT)		Working model is ready for the demonstration	Patent filed; readings taken in an AC machine
5	**LPG STOVE 2.0 (MECH)**		Working model is ready for the demonstration- done for the Preethi Enterprises	Patent filed; Technology transfer with Preethi enterprises is being pursued
6	**EXTERIOR WALL PAINTING SYSTEM ASSISTED WITH WALL CLIMBING ROBOT (Mech)**		Report submitted. Patent prior art report received.	Student identified for Startup. Mr. Abhilash, III year / Mech A sec.
7	SMART BLOWER UNIT FOR CARS (Mech)		Patent prior art report received. Report Submitted.	Student has shown the demonstration to the vehicle workshop owners
8	LOW COST COMMERCIAL CNC ROUTER (Mech)		Report Submitted	Fully functional model is available in IEDC

9	EMOTIONAL INTELLIGENCE ADAPTING AI TECHNIQUES (EIE)		Report submitted	Fully functional model is available in IEDC
10	SMART WRIST CONTROL (EIE)		Report submitted	Fully functional model is available in IEDC
11	**NON-INVASIVE MEASUREMENT OF TOTAL HAEMOGLOBIN (EIE)**		Report submitted	Fully functional model is available in IEDC
12	**GUARDIAN HELMET (EEE)**		Report submitted	SPARK SAFETY SOLUTIONS, Chennai has expressed the interest for the technology transfer
13	**Development of Tensile Fabrics and Flexible Sheeting for Emergency Shelters from Recycled Plastic Waste and Jute (Civil)**		Report submitted	Initiated the discussion with relevant manufacturers

14	**AERODYNAMIC DRAG REDUCTION IN REAR BODY OF HEAVY VEHICLES(TRUCKS) TO ENHANCE FUEL SAVINGS (Automobile)**		Simulation model and working model are being analysed	Initiated the discussion with relevant manufactures
15	**GENERATION OF ELECTRICITY FROM AUTOMOBILE TURBOCHARGER (Automobile)**		Simulation model and working model are being analysed	Initiated the discussion with relevant manufactures

Submit three/four high resolution (at least 300 dpi) pictures in jpeg format showing the prototype/product along with the students and their mentor.

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. – Please refer Annexure VII & VIII

IEDC & E-Cell Activity

2019-2020

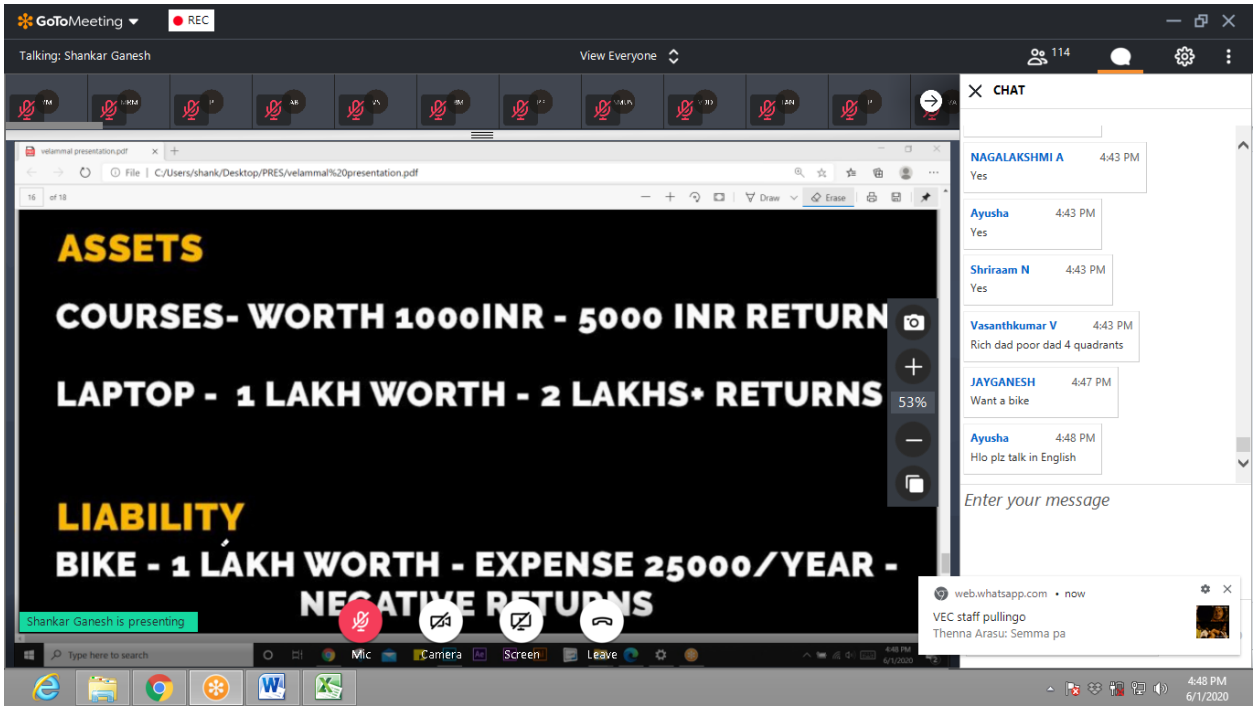
S.No.	Name of the Event	Date	Sponsored by	Number of Beneficiaries
1	Orientation Program for first Year students	08.08.2019	IEDC & E-Cell	**400**
2	Guest Lecture on Digital Marketing	18.09.2019	IEDC & E-Cell	50
3	HECKLER-2K19	26.09.2019	IEDC & E-Cell	30
4	Varthaga 2.0	19.07.2019	IEDC & E-Cell	427
5	IIC Innovation ambassador Training series – RMK engineering college	08.01.2020 to 09.01.2020	RMKEC	4 faculty
6	Hidden Dreams	31.01.2020	IEDC & E-Cell	20
7	E-Submit - IIT Bombay	01.02.20 to 02.02.20	E-Cell IIT Bombay	6
8	Pitch War	17.02.2020	IEDC & E-Cell	30
9	IIT Incubation Center – Visit	20.02.2020	IEDC & E-Cell	55
10	Online webinar on "5 absolutely doable steps to kickstart career and become rich"	01.06.2020	IEDC & E-Cell	148

HECKLER-2K19 (26.09.2019)

Hidden Dreams (31.01.2020)

E-Submit - IIT Bombay (01.02.20 to 02.02.20)

IIT Incubation Center – Visit



Online webinar on "5 absolutely doable steps to kickstart career and become rich"

A. SUMMARY SHEET

1. TITLE OF THE PROJECT:

SELF-CONFIGURED AND INTERNET OF THINGS SUPPORTED CALORIES AND WORKOUT BALANCING SYSTEM.

2. Student Team & Staff Coordinator Details:

a. Name of the student: Ms. Y. Haritha

Year & Semester: IV Year & VIII Sem

Course: B.E. Electronics and Communication Engineering

b. Name of the student: Ms. K. Sindhu priya

Year & Semester: IV Year & VIII Sem

Course: B.E. Electronics and Communication Engineering

c. Name of the student: Ms. V. Harini priya

Year & Semester: IV Year & VIII Sem

Course: B.E. Electronics and Communication Engineering

d. Name of the student: Ms. P. Pavithra

Year & Semester: IV Year & VIII Sem

Course: B.E. Electronics and Communication Engineering

e. Name of the student: Ms. S. Mythili

Year & Semester: IV Year & VIII Sem

Course: B.E. Electronics and Communication Engineering

f. Name of the Staff Coordinator: Mr. P. Vinayagam

Designation: Assistant Professor

Name of the Department: Electronics and Communication Engineering

SUMMARY OF PROGRESS MADE:

This project aims to measure the calorie values present in the food and the burnt calorie. The summary of the progress made related with our objective are as follows:

1. Dataset has been collected for the Indian food items and the corresponding calorie dataset has been prepared.
2. Usage of Raspberry pi 3 B+ model for preprocessing of the food image.
3. The feature extraction for the food image using deep learning was processed.
4. Python code using deep learning was prepared and executed to display the name of the food.

B. DETAILED REPORT

SELF-CONFIGURED AND INTERNET OF THINGS SUPPORTED CALORIES AND WORKOUT BALANCING SYSTEM

Mentor	Student Team
Mr. P. Vinayagam Asst prof ECE	Y. Haritha K. Sindhu priya V. Harini priya P. Pavithra S. Mythili

INTRODUCTION:

Need Identification:

This system proposes a effective way to measure and manage daily food intake of patients and dietitians. The system will take the images of food and using deep learning, segmentation and classification it calculates the nutrition and calorie content in the food. The proposed system will certainly improve and facilitate the current calorie measurement techniques. Food portion recognition system used for measuring the calorie values. We are performing segmentation, food portion recognition using deep learning to display the food name.

S&T Needs in Proposed Area of Intervention:

- **Raspberry pi 3 B+ Model** is used for preprocessing and feature extraction of the food items using deep learning which identifies and displays the food name.
- **Camera** will give the live video of the food. The full HD five element glass lens captures sharp and clear image while the premium autofocus adjusts smoothly and precisely to provide consistent high definition. It can record clear videos even in dim light.
- **Pedometer sensor** is a small device that counts the number of steps you take. It is also called as a step count. It offers the features like calculating the calories burnt.

OBJECTIVES: (AS APPROVED IN THE PROEJCT)

The fundamental objectives of Self-configured and internet of things supported calories and workout balancing system are stated below:

- By using deep learning, the system will be able to recognize accurately the food items on the plate.
- In this method it enables the user to capture the photo of target food item in order for the system to determine the calorie content.

- With regard to multiple food items the system will be able to segment them when they are placed separately on the plate.

METHODOLOGY FOLLOWED:

First, we have collected various data about the Indian food items.

- Then we have conducted market survey to know about various types of food calorie measuring devices, cost, customer category, customer satisfaction and strength & weakness of the products.
- We have identified that in our base paper they have discussed about the weight of the food as well as calorie per byte whereas we have found calorie value for the whole food by connecting the camera that takes video of the food item in the plate.
- Here we compare the real time calorie information with the outcome of the machine learning algorithm for better accuracy.
- In our present invention the system could be made as an individual device or it can be integrated with an existing machine.
- We have identified following technologies to design an efficient machine for detecting the calorie in the food.
    a. **Raspberry pi 3 B+ Model** is used for preprocessing and feature extraction of the food items using deep learning which identifies and displays the food name.
    b. **Camera** will give the live video of the food. The full HD five element glass lens captures sharp and clear image while the premium autofocus adjusts smoothly and precisely to provide consistent high definition. It can record clear videos even in dim light.
    c. **Pedometer sensor** is a small device that counts the number of steps you take. It is also called as a step count. It offers the features like calculating the calories burnt.
- Various testing had been carried out and required corrections are incorporated.

SCIENCE & TECHNOLOGY COMPONENT:

Functionality:

The various functionalities of the self-configured and internet of things supported calories and workout balance alert system are

- Efficient mechanism for the detection of the calorie in the food.
- Monitor live food item in the plate using camera
- All operations are controlled with the help of raspberry pi board and camera for the detection of the calorie in the food item

Improvisation:

Our product is distinctive from any other products that are commercially utilized due to the following aspects.

- This is simple and easy to use.

- User friendly when interfaced with raspberry pi.
- Reliable
- Our results indicated reasonable accuracy of our method.
- This system is very important in the field of biomedical, the actual program is clear and easy to understand.
- Camera is used to predict the accurate features of the food items.

State of the art:

VGG is a convolution neural network that is trained on more than million images from the image net database. As a result, the network has a learned rich feature representation for a wide range of images divide the data into training and validation datasets. Use 70%of the images for training and 30% for validation. We have used raspberry pi 3 B+ model board for interface. Raspberry pi 3 B+ is the final revision in the raspberry pi 3 range, Broadcom BCM2837BO, 1GB SDRAM. Extended 40 pin GPIO header, full size HDMI and 4 USB 20 ports, the input has been taken from camera as a video. The camera used here is Logitech. Camera will give the live video of the food. The full HD five element glass lens captures sharp and clear image while the premium autofocus adjusts smoothly and precisely to provide consistent high definition. It can record clear videos even in dim light. Micro SD port for loading operating system and storing data. 5volt/2.5 amps DC power input and DSI display port for connecting a raspberry pi touch screen display.

SPECIAL FEATURES:

Self-configured and IOT supported calorie measurement system which can be used to measure the calorie value in the food item with the help of the raspberry pi. The system is useful for calculating the calorie value in the food item in the real time using high revolution camera and identifying its name by comparing it with the already trained objects to identify its name. The people will see the food name on the display and it is compared with the trained dataset of the calorie value to display its calorie value. The system will display the food name and its corresponding calorie value.

PATENT STATUS:

The Patent for self-configured and internet of things supported calories and workout balancing system was filed on 8th, Nov 2019. Because of the various features, our system improves the overall calorie determination. Because of the easy operation by device, demand in users does not affect the calorie determination. The cost of the system and operating cost is lower when compared to other devices. Since our unique proposed idea uses smart processor with built-in configurations and camera to operate the system effectively for finding the calorie of the food.

This device will have following advantages:

- No need of manual interactions.
- It gives accurate results.

Overall features that has been stated above makes our product stand-alone and efficient compared to existing systems. Since there are no contemporary products which

satisfies consumer needs, our proposal becomes first of its kind and we strongly believe that it fulfils the conditions to make it patentable.

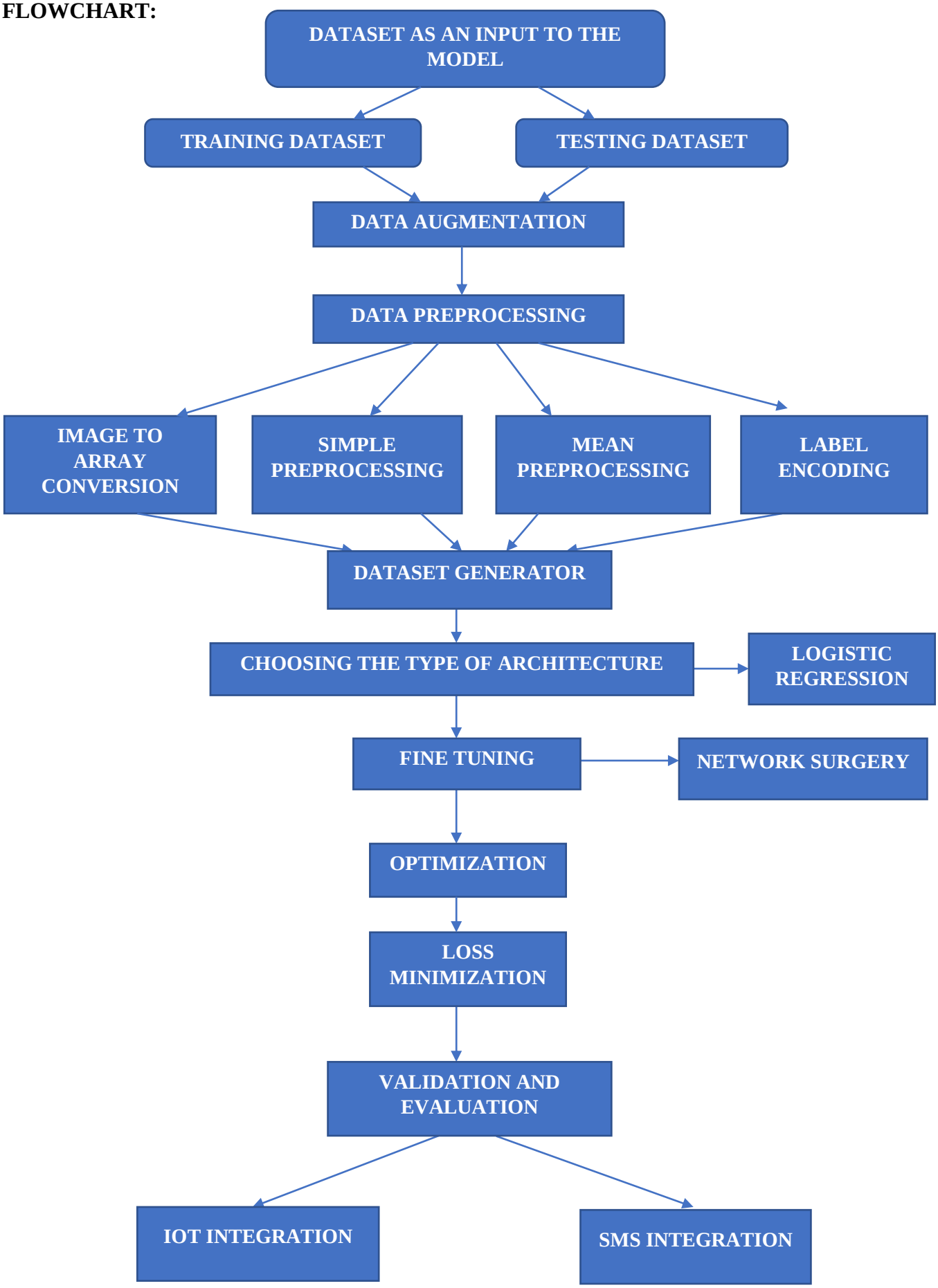
COMMERCIALIZATION PLAN:

One of the team member Ms. P. Pavithra is interested to start Startup in Chennai. She has discussed about our project in nearby hospitals and labs. Once, our project has been finalized by the hospital, she will start the Startup in an office space provided by New Gen IEDC, Velammal Engineering College, Chennai.

BRIEF DESCRIPTION ABOUT THE STUDENT STARTUPS:

- Self-configured and IOT supported calorie measurement system which can be used to measure the calorie value in the food item with the help of the raspberry pi. The system is useful for calculating the calorie value in the food item in the real time using high revolution camera and identifying its name by comparing it with the already trained objects to identify its name.
- The people will see the food name on the display and it is compared with the trained dataset of the calorie value to display its calorie value. The system will display the food name and its corresponding calorie value.
- This device is very useful for predicting the accurate value of calorie present in the food.
- The dietitian can operate this device using raspberry pi interfaced with Logitech camera. The camera used in this device will give the live picture of the food. The person sees the camera image on the display from the plate.
- Extended 40 pin GPIO header, full size HDMI and 4 USB 20 ports, the input has been taken from camera as a video.
- The full HD five element glass lens captures sharp and clear image while the premium autofocus adjusts smoothly and precisely to provide consistent high definition. It can record clear videos even in dim light.
- This device is very much reliable in our routine life.
- The camera unit and display are fixed on an assembly unit of the board which can capture the image on the plate.
- Pedometer sensor is a small device that counts the number of steps you take. It is also called a step count. It offers the features like calculating the calorie burnt.

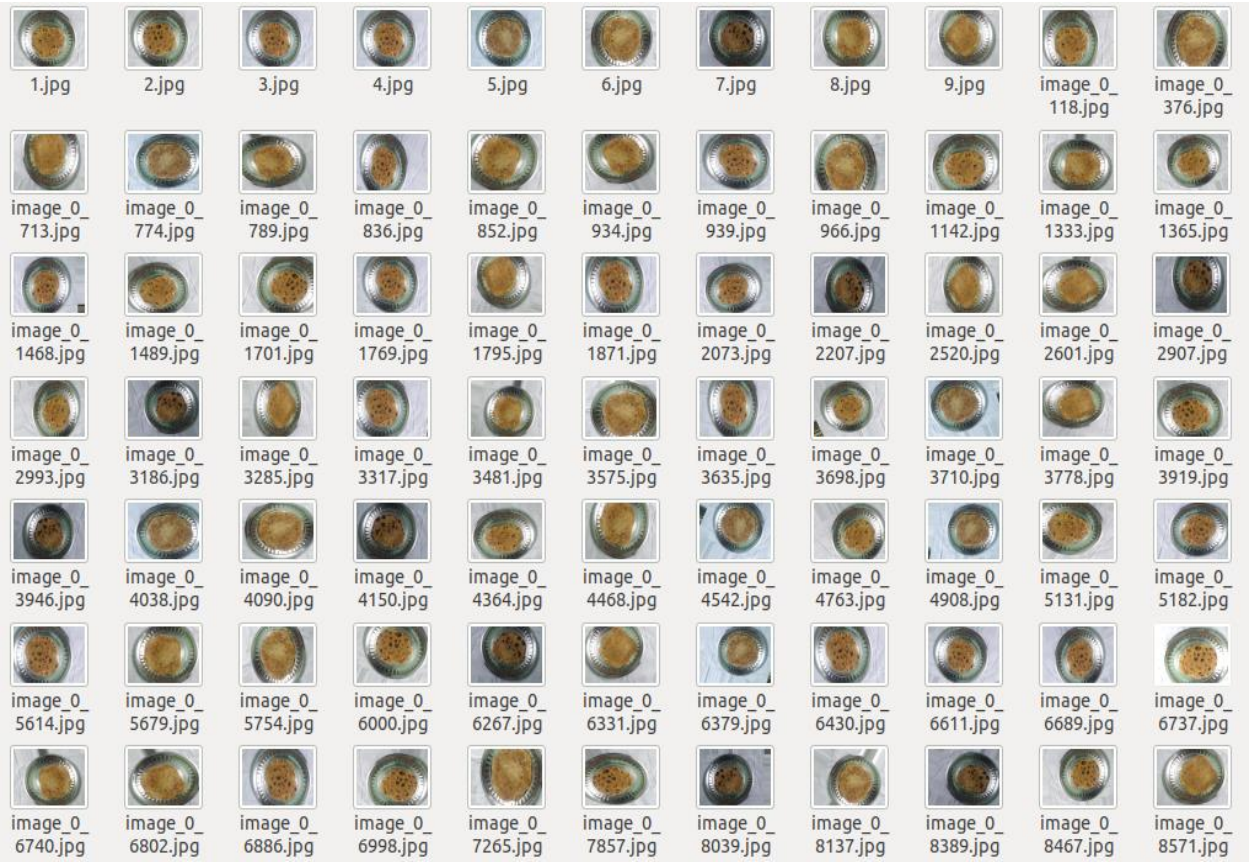
FLOWCHART:


DATASET AS AN INPUT TO THE MODEL
TRAINING DATASET
TESTING DATASET
DATA AUGMENTATION
DATA PREPROCESSING
IMAGE TO ARRAY CONVERSION
SIMPLE PREPROCESSING
MEAN PREPROCESSING
LABEL ENCODING
DATASET GENERATOR
CHOOSING THE TYPE OF ARCHITECTURE
LOGISTIC REGRESSION
FINE TUNING
NETWORK SURGERY
OPTIMIZATION
LOSS MINIMIZATION
VALIDATION AND EVALUATION
IOT INTEGRATION
SMS INTEGRATION

FINAL RESULT OBTAINED:

The images that are trained for the model can be seen in the below given figure.

After data augmentation we get the numerous images as shown in the figure



After the model is been trained we predict the output which recognizes the output that can be seen in the below figure.

The calorie for particular food is also displayed that can be seen in the below given figure

From this project we have effectively found the type of food as well as its calories which will help in less calorie consumption for a healthy diet.

CONTRIBUTION OF NEWGEN IEDC IN THE SAME:

- Provided required fund to develop the prototype.
- Technical committee conducted reviews periodically and provided many suggestions to speedup / improve the operation of prototype.
- Provided space for the team to develop the prototype.
- Provided computers, testing instruments (Multimeter, Oscilloscope etc.) and power supply units

FUTURE PLAN:

One of the team member Ms. P. Pavithra is interested to start Startup in Chennai. For the startup purpose,

- She has discussed about our project in nearby hospitals and labs.
- Once, our project has been finalized by the hospital, she will start the Startup in an office space provided by New Gen IEDC, Velammal Engineering College, Chennai.

NEWGEN INNOVATION AND ENTREPRENEUSHIP DEVELOPMENT CENTRE (NEWGEN IEDC): 2018-19

Under the aegis of:
National Science & Technology Entrepreneurship Development Board (NSTEDB)
DST, Govt. of India

SUBMISSION OF PROGRESS REPORT(2018-19)

Name of HI/ NewGen IEDC : Dr. MVS Ram Prasad

Name of the Chief Coordinator : R. Ashok Kumar

1. Initiatives/Activities Undertaken as per the Action Plan Submitted: **2018-19**

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcomes/ Achievements
1	a) Entrepreneurship Awareness Camp(EAC) b) Entrepreneurship Awareness Program by Sphoorthy NewGen IEDC	The students are able to 1. Have the ability to discern distinct entrepreneurial traits. 2. Know the parameters to assess opportunities and constraints for new business ideas. 3. Understand the systematic process to select and screen a business idea. 4. Design strategies for successful implementation of ideas 5. write a business plan.
2.	Entrepreneurship Development Program	1. Entrepreneurship and Innovation minors will be able to sell themselves and their ideas. Students master oral and visual presentation skills and establish a foundation of confidence in the skills necessary to cause others to act. 2. Entrepreneurship and Innovation minors will be able to find problems worth solving. Students advance their skills in customer development, customer validation, competitive analysis, and iteration while utilizing design thinking and process tools to evaluate in real-world problems and projects.

Sr. No.	Activities	Outcomes/ Achievements
		3. Entrepreneurship and Innovation minors will be able to mobilize people and resources. Students identify and secure customers, stakeholders, and team members through networks, primary customer research, and competitive and industry analyses in order to prioritize and pursue an initial target market in real-world projects. 4. Entrepreneurship and Innovation minors will be able to create value. Students are able to create presentations and business plans that articulate and apply financial, operational, organizational, market, and sales knowledge to identify paths to value creation through 1) company formation (for-profit); 2) social innovation (nonprofit); or 3) intellectual property licensing. 5. Entrepreneurship and Innovation minors will develop and cultivate endurance. Students increase their awareness and deliberately practice the skills and disciplines necessary to increase confidence and agency; foster self-efficacy and self-advocacy; improve communication and problem-solving skills, manage strong impulses and feelings; and identify personal purpose.
3	Faculty Development Program on Entrepreneurship	The Faculty are able to 1. Demonstrate a fundamental comprehension of business opportunity evaluation, from the perspective of a prospective investor. 2. Identify the most recognized sources of potential funding and financing for business start-ups and/or expansion. 3. Demonstrate basic computer proficiency, including the use of word processing, presentation, and spreadsheet software packages, as well as a basic facility with the internet and other research tools. 4. Demonstrate extemporaneous speaking

Sr. No.	Activities	Outcomes/ Achievements
		skills developed through in-class discussion of text materials, case study analyses, and current entrepreneurship-related issues. Assess their own personal work product(s) - and critique those of their colleagues - with regard to thoroughness, creativity and how those could apply to their own real life, future business ventures.
4	IDEATHON- Innovative Idea competition	• Creates a platform to share new ideas created by youth for their communities; • Provides an opportunity for those most affected by social issues to be a part of the solution; • Presents a competitive model to boost creative thinking and uncover innovative solutions; • Offers a fun and exciting way for youth to get involved in their communities; • Links governance into workforce development programming
6	25 students participated in Chinna Shodana Yatra in Assocation with Palle Srujana	This initiative has given tremendous boost in the way student thinks and their view point towards societal problems especially understanding the grassroots innovations. Students are made to visit various villages around and conduct survey in knowing the problems that they and analyze ways to support them.
7	Awareness program by NEN Mentors to the Students.	Created Awareness for the students in the campus on entrepreneurship and innovation.
8	Project Expo By Sphoorthy Engineering College Students	• Develop professionals having good skills, self-learning ability and confidence to support and contribute to the growth of relevant industries. • This provides opportunity for the students to demonstrate their learning experience.

Sr. No.	Activities	Outcomes/ Achievements
9	Summer training programs on Advanced technologies (IOT, DRONES, ROBOTICS , ANDROID ,3D PRINTING	• Develop professionals having good skills, self-learning ability and confidence to support and contribute to the growth of relevant industries. • This provides opportunity for the students to demonstrate their learning experience.
10	Innovation Expo organized by Sphoorthy NewGen IEDC in association with Palle Srujana	• Develop professionals having good skills, self-learning ability and confidence to support and contribute to the growth of relevant industries. • This provides opportunity for the students to demonstrate their learning experience.
11	5 students participated in “Entrepreneurship Development Program for Student Entrepreneurs” by NAARM	1. Entrepreneurship and Innovation minors will be able to mobilize people and resources. Students identify and secure customers, stakeholders, and team members through networks, primary customer research, and competitive and industry analyses in order to prioritize and pursue an initial target market in real-world projects. 2. Entrepreneurship and Innovation minors will be able to create value. Students are able to create presentations and business plans that articulate and apply financial, operational, organizational, market, and sales knowledge to identify paths to value creation through 1) company formation (for-profit); 2) social innovation (nonprofit); or 3) intellectual property licensing.

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcomes/ Achievements
1	students Participated in EXCITE JNTU PRODUCT ENGINEERNG WORK SHOP	3 Student teams (09 students) were selected for the EXCITE program. They developed prototypes on the advanced topics such as machine learning and IOT during the event.
2	Students for DISHA program in IIIT Hyderabad	26 Students undergone 45 days acceleration program on Augmented and Virtual Reality.
3	Students are participated in TEP–ISB(Indian school of Business Hyderabad) Program.	21 students completed TEP-ISB 1- year Technology entrepreneurship program.
4	Invited the industry and successful startup representatives to Project Expos and arranged Mentor TALK	Students are mentored on product development. Emphasis was given on the research and its importance in collecting the right data before product development.
5	Participation in Startup Nidhi Contest for 2019	Students were trained to make an effective business plan documents and adding to this, soft skill training was conducted, to refine their presentation skills.
6	Sending sent for Internships to work in Startups & facilitating students for DST /DSIR/Innovation challenges innovations prototype funding.	Student teams were given opportunity to do their internships in startup companies across Hyderabad. This helped them in understanding the operational hustles in startups and ways to handle them and more importantly the importance of team in success of any project or product.
7	National Level Hackathon on Health Tech & Agri Tech in Association with JNTUH-JHUB.	HACKATHON helped students' teams to work together students of various disciplines, by knowing multiple perspective of the same project. It made them realise importance of Learning by Doing.

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcomes/ Achievements
1	JCELL Activates organized by JHUB JNTU Hyderabad	JCELL has taken initiatives in Creating innovation, incubation, hackathon culture in campus
2	Appointed Mr. Pankaj Diwan from Uptech Idea Labs for establishing Industry connects.	To network and maintain strong relationships with industries and help in product development. Providing industry experience.
3	Through the support of Sphoorthy Training & Placement cell, EDC Cell, Center for excellence	Our training and Placements cell has been active in identifying skill gaps in the students and coming up with various initiatives in providing the required training to the students and further helping the students with the internship opportunities. Core team of various cells has always played a key role in successful implementation of various events. They are always in lookout in the handpicking students with entrepreneurial inclination.
4	Support of ORACLE Academy, CISCO Academy	Training and Certifications on emerging technologies such as database, programming, IoT, cyber security etc.
5	Support of TASK- Telangana Academy of Skill and Knowledge	Industry visits, collaborations, soft skills training etc.
6	MOU with NiMSME	Training and Certifications on emerging technologies such as database, programming, iot, cyber security etc.
7	ORL Industries	Training and support for product development

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

No short fall. As per action plan we completed all the activities.

3. Other important highlights (new initiatives), if any:

- A new MOU with Adapt Motors (an E-Riksha Industry) which helping a lot to provide internship for the students to identify and experience latest technologies.
- MOU with ORL Industries providing latest technology trainings.

4. Student Projects:

Sr. No	Team	Project Description	Project Status at Beginning of the year	Interventions made	Current Status
1	Tulsiram Dixithakorvi P.Srujana K. Jeevana Jyothi	**Automatic Gadget Depositer**	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons. Supporting in commercialization	Prototype Completed
2	K Pranay Bharadwaj Syed Liaqath T Abhinava Krishna Sai Reddy B Vamshi Krishna	**Smart Water Purifier** People living in the rural areas cannot afford the water purifiers which are feasible to a great extent. If they are enough capable to afford to, those purifiers are of high rates. The people living in these areas are facing this problem.	IDEA Validated and Mentor assigned. Prototype under development.	Completing the product and making the system error free. With the support of Advisory board to contact the market segment for commercialization.	Prototype Completed
3	G Harshini Reddy C Naveen Kumar Burgula. Prathik A Archita	**Leafy Vegetable Cutter** **leafy vegetable cutting machine** is perfect for cutting various leafy vegetables (lettuce,leek,celery, spinach) etc. into segments. The cutting length and thickness can be adjusted within 1-30mm by changing the speed of blade-rotation and belt speed. It is a highly recommended and a must have vegetable cutting machine for handling raw materials like vegetables and fruits.	IDEA Validated and Mentor assigned. Prototype under development.	Investigations to be made are how to overcome the balancing of aerodynamics of the vehicles.	Prototype Completed
4	R NEHITHA K DEEKSHA P ANJANI P R CHITNIS	**Parking Management System** The Parking Management System constitutes the access control system, revenue management, security system, boom barrier and statistical information.	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons.	Prototype Completed
5	T Shiva Kumar R Yaswanth B Sai Adithya P Sairam Prathik	**Automatic Planting Machine** Automatic planting machine. For reducing labor and financial cost in less time.	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons.	Prototype Completed

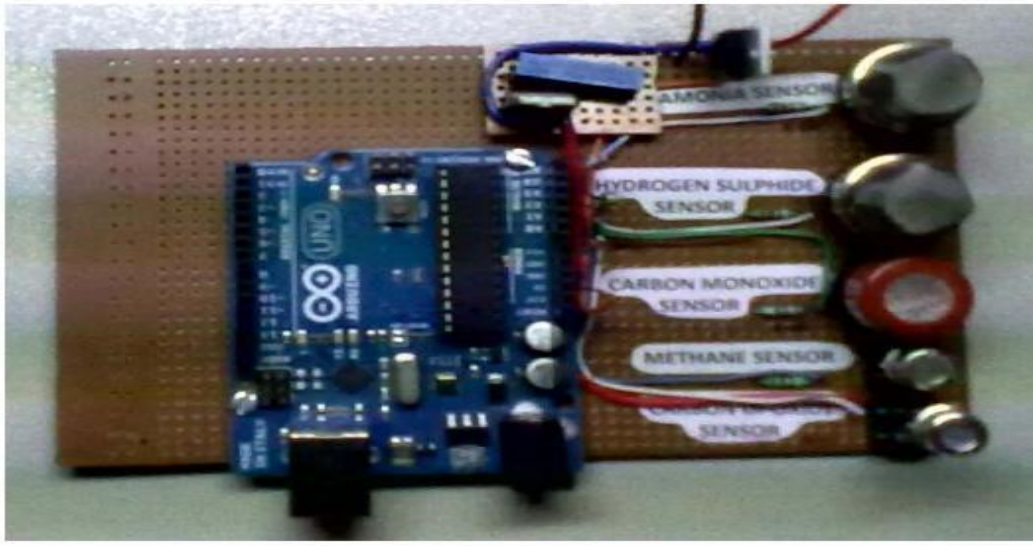
Sr. No	Team	Project Description	Project Status at Beginning of the year	Interventions made	Current Status
6	A. Shalini R. Sanjay K Harshavardhanraju M. Soumya Reddy	**Automated Curtain Less Glass Doors** As per the present scenario, the maintenance of curtains and usage of different types of glasses for windows and Doors causing improper ventilation issues and unwanted expenditure associated with it. To overcome this issue, automated glass door which can be controlled with a smart phone for its opening and closing and a special layer of glass which blurs the whole glass and clears the glass with the supply of small electric signal, which can again be controlled with your smart phone.	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons.	Prototype Completed
7	Katakam Lasya A Ashish Reddy G. Alekhya Reddy M Sharanya	**Digital Secure App** There are a lot of CCTV cameras installed in our city but still there are places where this facility is not available. So, in order to overcome this, our app converts citizen's	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons. Supporting in commercialization.	Prototype Completed
8	V Vinay Kumar V Harsha vardhan M.G. Santhosh Kumar Polishetti Harish	**Long Range Electric Bike** The electrical power generated which is used to **run** the **bike** can give better fuel ... This type of arrangement makes a chain more enduring, **long** lasting	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons. Supporting in commercialization.	Prototype Completed
9	M Kranthi Kumar S Chathurya Krishna B Mahender Sanjay.S.Torvi	**Washroom Management In Hospital** **Hospitals** are being encouraged to improve provision of accessible **washroom** facilities by installing 'Changing Places' **toilets**. ... This includes a new concept – Changing Places **toilets** - which it says should be installed in any building to which members of the public have access.	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons. Supporting in commercialization.	Prototype Completed

Sr. No	Team	Project Description	Project Status at Beginning of the year	Interventions made	Current Status
10	G Pooja Reddy M. Rohith M Amulya T Sai Koushik	**Save Life with O2** **Oxygen** is all around us; it is in the air we breathe. **Oxygen** is the foundation of **life**, and every cell in our body needs it to survive and do its job.	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons. Supporting in commercialization.	Prototype Completed
11	G Sai Charan A Vedanthkumar Reddy Ch. Ganesh Reddy D. Venkata krishna	**AVOIDING ACCIDENTS WITH REGULATION TRAFFIC** By placing a Barricade at the signal line, we can control the traffic and can maintain the traffic rules in a better way. Barricade is interlinked with the signals so that there won't be any issues with the working of the Barricade.	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons. Supporting in commercialization.	Prototype Completed
12	M anusha sree V Harsha vardhan A Manisha P Srivastava	**Cotton Picker** Cotton picking from cotton plants automatically with the help of vacuum cleaner mechanism.	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons. Supporting in commercialization.	Prototype Completed
13	Ch.Raj Kumar P.V.S.Sai Akhil M.Sai Arvind A.Jhansi Reddy	**Ground Vegetable Plucking Machine** This product is based on the idea of plucking the ground vegetables by watering the field before starting the plucking process.	IDEA Validated and Mentor assigned. Prototype under development.	Completing the product and making the system error free. With the support of Advisory board to contact the market segment for commercialization.	Prototype Completed
14	V.Harideep B Sindhu T.SAIPRIYA M.SIRISHA	**Smart alerting chair and chair pad for Vehicle Drivers** As per the present Road accidents scenario, Many Road Accidents of heavy	IDEA Validated and Mentor assigned. Prototype under	Completing prototype. Showcasing the prototypes in	Prototype Completed

Sr. No	Team	Project Description	Project Status at Beginning of the year	Interventions made	Current Status
		vehicles are due to drowsiness of the Vehicle drivers, unconsciousness, Alcoholic during Night hours and early Morning. To avoid Road accidents a smart alerting chair and chair pad is designed which vibrates at regular intervals, alarms and alerts the driver to be conscious by avoiding Drowsiness.	development.	project expos and hackathons. Supporting in commercialization	
15	G. Kavyareddy Ch. Preethi N.Akhil R.Nikitha	**Car Safety Assist** Car Wings. Avoiding the accidents while opening the car doors. Small wing will come to alerting the back vehicle drivers while opening car window on road side.	IDEA Validated and Mentor assigned. Prototype under development.	Completing prototype. Showcasing the prototypes in project expos and hackathons.	Prototype Completed


AP29 P 7376
AI QUAD CAMERA

Long Range Electric Bike



Washroom Management System

Smart Water Purifier

Leafy Vegetable Cutter

AVOIDING ACCIDENTS WITH REGULATION TRAFFIC

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

5.1 Project Name : WASHROOM MANAGEMENT SYSTEM

5.1.1 Student team details (with contact information)

1. MANCHUKONDA KRANTHI KUMAR (9701918365)
2. CHATURYA KRISHNA (9440964569)
3. SANJAY S TORVI (9398119480)
4. BHANDARI MAHENDER (9533201202)

5.1.2 Brief description about the student start-up.

Maintenance of public toilets has long remained a dead spot and not much has changed over the years. Though few public washrooms are maintained well, they follow "Scheduled cleaning "(Weekly, Fortnightly, Monthly) basis and few washrooms are not at all cared to clean them. So, our agenda is cleaning is made at all public washrooms when it is needed. So, we build a system which gauges washroom conditions based on the gases present in the washroom. It monitors the washroom condition from time to time and tell us whether it is needed to clean it or not. By this a washroom will be cleaned really when it is needed and the workforce can be utilized efficiently.

5.1.3 Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs

Technical Field of the Invention

The present field of invention generally relates to everyone who are despondent with the present unclean condition of sanitation facilities. The washroom management system makes the use of various types of gas sensors for detecting smell and HC12, an ESP8266 WiFi module for communication purpose.

Background of the Invention

According to WHO(World Health Organization) Poor sanitation is linked to transmission of diseases such as **cholera**, **diarrhoea**, **dysentery**, **hepatitis A**, **typhoid** and **polio** and exacerbates stunting. Poor sanitation reduces human well-being, social and economic development due to impacts such as anxiety, and lost educational opportunities. Poor sanitation is believed to be the main cause in some 432 000 of these deaths. Some 827 000 people in low- and middle-income

countries die as a result of inadequate water, sanitation, and hygiene each year, representing 60% of total diarrhoeal deaths.

Inadequate sanitation is estimated to cause 432 000 diarrhoeal deaths annually and is a major factor in several neglected tropical diseases, including intestinal worms, schistosomiasis, and trachoma. Poor sanitation also contributes to malnutrition.

To surmount the above quandaries the present invention has a regular check-up of the sanitation and if it's not the message is communicated to the authorized persons to clean the sanitation immediately. To avoid the spread of the unclean gases our invention is equipped with gas sensors which detects any harmful gases present in the sanitation and informs the same to the concerned officials to visit the particular sanitation and clean it before consumers can use it.

We strongly believe that through our invention we can save more human lifes than loosing them

Brief Summary of the Invention

The following presents a simplified summary of the disclosure in order to provide a basic understanding to the reader. This summary is not an extensive overview of the disclosure and it does not identify key/critical elements of the invention or delineate the scope of the invention. Its sole purpose is to present some concepts disclosed herein in a simplified form as a prelude to the more detailed description that is presented later.

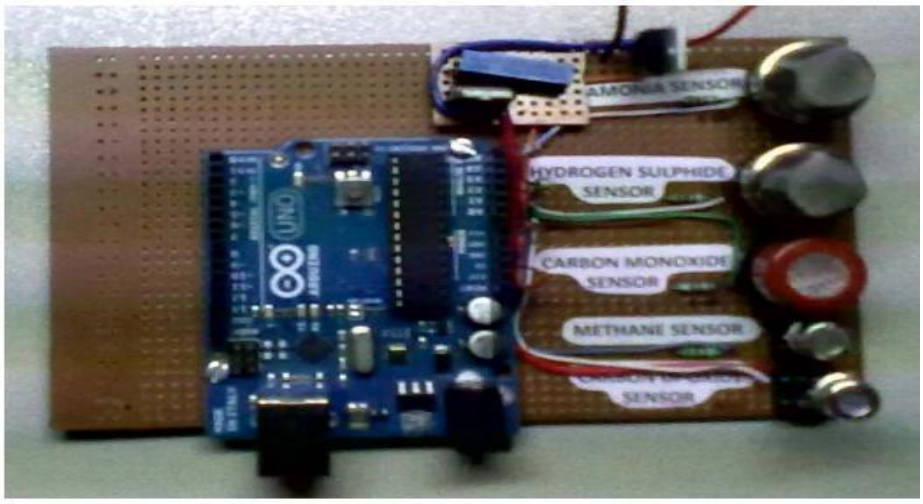
In accordance with the first aspect of the invention, there is provided a compact electronic device equipped with various gas sensors which is placed in a suitable place in the washroom designed to detect if any harmful gases are evolved in the room and get the concerned authority informed about the condition.

In accordance with a second aspect of the invention, there is provided a network established using HC-12 protocol. Using this network, the condition of the washroom is informed periodically to the concerned authority.

In accordance with a third aspect of the invention, there is provided a service through which the information about the washroom is sent including the concentration of the toxic gases evolved to the concerned authority

In accordance with a fourth aspect of the invention, there is provided an exhaust fan which turns on automatically when the gases evolved are detected in the washroom in order to maintain the air clean temporarily till the room is actually cleaned.

In accordance with a fifth aspect of the invention, there is provided an AC adapter to be plugged into a power source in order to power the device.



5.1.4 Contribution of NewGen IEDC in the same

NewGen IEDC provided funding for the development of the project and provided necessary mentoring in the development of prototype. Good guidance is provided to develop business plan. Especially feasibility analysis and research study training helped the team to understand the practical and financial feasibility of the product in the organization. Those validation helped students to revisit their design and refine the prototype as per the customer feedback. NewGen IEDC has significantly motivated the student to take the complete prototyping on a serious note.

5.1.5 Future plan

Team would build the initial prototype and test it in the organization. Based on the inputs received from the customers, they will improve the product design. Agile product development methodology will be applied in the product revisions and taking it to the market. They have already initiated discussion with various organization to test the product representing the NewGen IEDC. Phase wise product development and commercialization is further planned with the support of various stakeholders.

5.2 Project Name : SMART WATER PURIFIER

5.2.1 Student team details (with contact information) \

1. K. PRANAY BHARADWAJ (8712309428)
2. T. ABHINAVA KRISHNA SAI REDDY (7330713450)
3. B. VAMSHI KRISHNA (8712707127)
4. SYED LIAQATH. (+918919306743)

5.2.2 Brief description about the student start-up.

Purifying water at micro level by maintaining adequate mineral and fluoride levels is the main problem. As Excess percentage of fluoride in potable water causes many harmful diseases such as tooth decay, skeletal fluorosis, neurological development related diseases. To counter this problem, with at most purification level of water also with adequate minerals need for the body, this purifier satisfies the requirements.

5.2.3 Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs:

Purest and healthiest form of potable and safe drinking water is always a issue to be ponder upon. Sometimes, purifying water more than necessarily makes it lose adequate and required minerals for the body. Fluoride dissolved potable water can make human body counter long ranged problems. Journey to find a solution to this problem started in NARI, when we went for an project expo. We met Mr. K. Rama Krishna, professor over there. He was into

purification of safest drinking water. After a long conversation with him, we found out the actual problem about fluoride that people are facing. From there, our journey began.

As time passed by, we began meeting different people who are into this, Geocare technologies have always stayed as a pillar of support. After doing some research with the help of Geocare, we succeeded in meeting the requirements. We maintained the level of fluoride as per WHO, by using Aluminum as a source in the filtration process by converting it into a long-lasting spherical shape. We also maintained the TDS level of water so that, adequate minerals are not lost in the process of purification.

5.2.4 Contribution of NewGen IEDC in the same

NewGen IEDC provided funding for the development of the project and provided necessary mentoring in the development of prototype. Good guidance is provided to develop business plan. Encouraged to exhibit in different platforms such as project expos and hackathons.

Students have got enough financial backup and bandwidth in trying best possible solutions in the building an optimal and efficient water purifier. More importantly, the recognition students received as a NewGen IEDC team has given them true motivation and complete support from various stakeholder.

Currently, representing NewGen IEDC they are trying to validate and push the prototype building process in the faster pace across the stake holders.

5.2.5 Future plan

To introduce this purifier to every households. The team would approach the stake holders to commercialize the product. Initially, the product validation is being done at various rural areas where minimal level of fluoride(F) containing portable water purifier is not in reach. The team has been planned to test the best possible prototype in the market and enter in to the market with perfectly functional prototype with high-quality material standards. Commercialization road map will be built after successful trails in various areas wherever necessary.

NEWGEN INNOVATION AND ENTREPRENEUSHIP DEVELOPMENT CENTRE (NEWGEN IEDC): 2019-20

Under the aegis of:
National Science & Technology Entrepreneurship Development Board (NSTEDB)
DST, Govt. ofIndia

Submission of Progress Report
(for the period of 2018-19)

Name of HI/NewGen IEDC: Prof D S Chauhan

Name of the Chief Coordinator: Prof. Manoj Kumar

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&Tstudents

S. No.	Activities	Duration	Period
01	Mentoring Session on Marketing	01 Day	July 30, 2019
02	Workshop on Innovation	01 Day	August 17, 2019
03	Hi-5 With Youtubers	01 Day	September 7, 2019
04	Startup Enrichment Program	01 Day	October 4, 2019
05	Startup Mentoring Session	01 Day	November 6, 2019
06	3D Designing & Printing Workshop	01 Day	November 16, 2019
07	Stock Market Workshop	01 Day	November 16, 2019
08	Investor Pitching Session	01 Day	November 25, 2019
09	Lateral Thinking Workshop	01 Day	December 2, 2019
10	Jet lagging of Startups	01 Day	December 4, 2019
11	Idea Generation Workshop	01 Day	December 5, 2019
12	Startup Bootcamp on Idea Designing & Development	01 Day	December 12, 2019
13	Ethical Hacking Workshop	01 Day	January 9, 2020
14	Alumni Mentoring Session	01 Day	January 25, 2020
15	Entrepreneurship Conclave'20	03 Day	February 27-29, 2020
16	Be Intuitive	01 Day	February 29, 2020

[B] To identify, develop & commercialize students' innovativeideas

Sr. No.	Activities	Duration	Period
01	Idea Progress Review for Ideas of Session 2018-19	01 Day	September 18, 2019
02	Third Advisory Board Meeting	01 Day	October12, 2019
03	First Idea Progress Meeting of Session 2018 – 19	01 Day	January 25, 2020
04	Pitch Perfect (B-Plan Competition)	01 Day	February 29, 2020

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Duration	Period
01	A session with Dr. H. Purushotam (Chairman & MD at NSDC)	01 Day	August 03, 2019
02	A session with Mrs. Priyanka Sharma (Team Lead at Wadhwani Foundation)	01 Day	September 17, 2019
03	A session with Dr. Raghunandan (Ex-Executive Director at ISBA)	03 Day	September 24-26, 2019
04	A session with Mr. Ashish Jain (CEO at JSS STEP, Noida)	01 Day	October 4, 2019
05	A session with Mr. Ashu Kumar (Chief catalyst at Beaver Valley, LaunchBox, USA)	01 Day	December 13, 2019

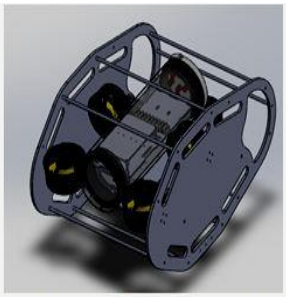
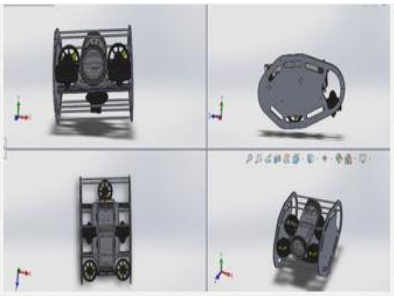
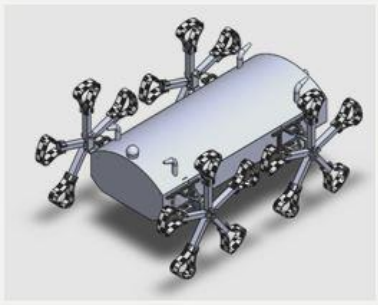
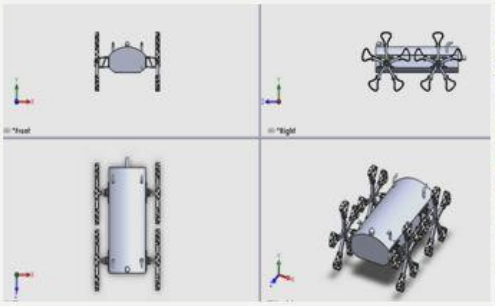
2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

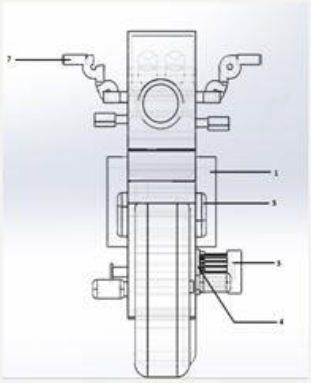
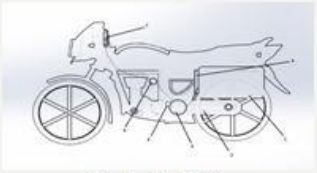
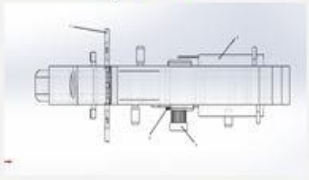
The Project Commercialization as we were planning was not executed in that way. The reason of this shortfall is limitation in the getting various accreditations from different bodies due to Covid-19 Pandemic.

3. Other important highlights (new initiatives), if any:

1. "Startup Launchpad" in campus itself and where we have registered 07 companies successfully.
2. Successfully conducted 11 "Guest Lectures" Online on Zoom Teaching Application during the Covid –19 Pandemic situation.
3. Conduced 03 "Online Completions" during the Covid –19 Pandemic situation.
4. Proposed "e - Summer Internship" in association with QFCI
5. Successfully filed "18 – Patents" in the name of NewGen IEDC in Indian Patent Office.

4. Student Projects (Please provide the following details for each student project)

Sr. No.	Team/Project description	Project status at the beginning of year	Interventions made	Current status
1.	**Under Water Robot:** An unmanned underwater vehicle (UUV). Able to operate underwater without human occupant. A mobile robot designed for aquatic work.	3-D Modeling and Literature Study has been done.	Taken guidance from BARC – Scientist as an expert.	Completed
	 Fig1: depicts the isometric view of the robot.  Fig2 : depicts the four view of robot. 			
2.	**Fire Fighting Robo**t: This is movement-based Robot. It used to sense the fire and spreads the pressurized CO2 over that direction. The robotic vehicle is loaded with the tanker and actuators which is controlled by microcontroller.	3-D Modeling and Literature Study has been done.	Taken guidance from SVR Infotech, Pune.	Completed
	 Fig1 :depicts the isometric view of the robot.  Fig2: depicts the four view of robot.  Fig 3: depicts the actual image of developing prototype			

	 			
3	**Conversion of Petrol Bike into Hybrid Bike:** We have two options of fuel selection petrol and hybrid. Conversion of Petrol Bike into Hybrid Bike.	Completed market survey and purchased all necessary equipments.	Replaced normal batteries with Lithium Ions Batteries.	Completed
	 Fig 1: Front View  Fig 2: Side View  Fig 3: Top View  Fig 4: depicts the actual image of developing prototype with mentor			
4	**Eye Blink Detector:** Vehicle accidents are most common if the driving is inadequate. These happen on most factors if the driver is drowsy or if he is alcoholic. Driver drowsiness is recognized as an important factor in the vehicle accidents. It was demonstrated that driving performance deteriorates with increased drowsiness with resulting crashes constituting more than 20% of all vehicle accidents.	Completed market survey and purchased all necessary equipments.	Checked with different users and changed the proposed invention accordingly.	Completed

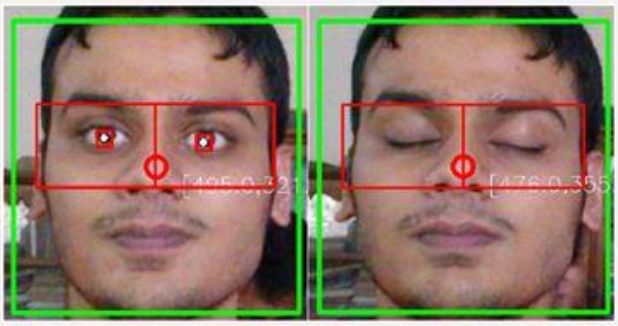


Fig1 :depicts the virtual testing image of developing prototype

Fig 2 : the actual image of developing prototype

5	**Automatic Supporters For Bicycle:** To fabricate such kind of automatic supporters which can adjust itself according to speed of the vehicle and it should be so compact that it can be fitted in any size of bicycle very easily.	3-D Modeling and all necessary equipments have been purchased.	Showcase the prototypes to ATLAS Company and taken their feedbacks.	Completed

Fig 1 : actual image of developing prototype with mentor

6	**Aaswan (Water Purifier):** Distilled-Mineral Water System is the innovative idea for treating sea/inconsumable water into potable water.	3-D Modeling and Literature Study has been done.	Compared with all the existing Water Purifiers	Completed

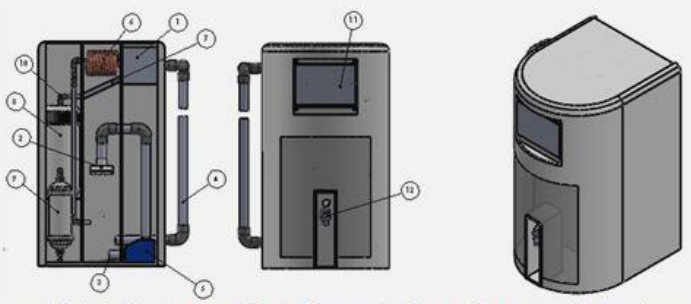
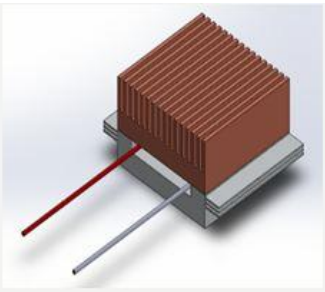
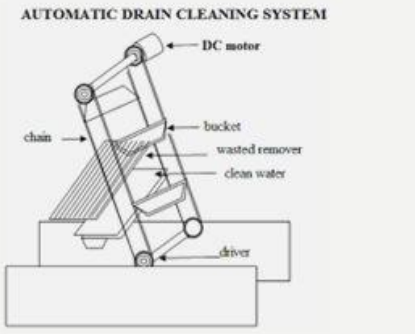


Fig1: depicts the front, back & isometric view of the proposed model

Fig 2: depicts developing prototype with mentor

7	**Portable Power Generator:** Thermoelectric generator (TEG) is a device which gives constant DC as output when a temperature gradient is maintained across its two ends to power a number of consumer electronic products.	3-D Modeling and Literature Study has been done.	Checked on various heating devices and trying to extend its limitations.	Completed
	 Fig1: Prototype cover in which assembly will be done.  Fig2: Peltier module with heat sink assembly  Fig3 : The actual image of developing prototype with mentor 			
8	**Automatic Sewage Cleaning System:** The project is about the cleaning of sewage automatically, It take very less time and no human effort to clean the sewage perfectly.	3-D Modeling and Literature Study has been done	Comparing with existing models.	Partially Completed
	 Fig1: CAD Model of proposed Model  Fig2: Line diagram of proposed Model			

				
9	**Fresh-O-Air:** A setup to filter air and generate oxygen Monitor air quality and toxins level and provide data to analyze and alert the user if toxins are beyond safe level.	Completed market survey and purchased all necessary equipments.	Comparing with existing models.	Completed
	 Fig 1: depicts the working model & simulation result of proposed prototype.			
10	**Smart Dust Bin:** A Smart Dustbin that operates automatically to help solve this issue using IOT and sensor-based circuitry.	Completed market survey and purchased all necessary equipments.	Comparing with existing models.	Completed
	 Fig 1: depicts CAD Model, working model & student standing with proposed prototype.			
11	**Energy Harvesting (Mobile):** It is based on the concept of charge pump electronics circuit and radio frequency (RF) signal amplifier. The RF signals are acquired by the Dickson charge pump circuit, amplified, and converted into a desired DC signal.	Literature Study has been done	Purchased all the necessary equipments.	Partially Completed

Fig1: depicts the actual image of developing prototype

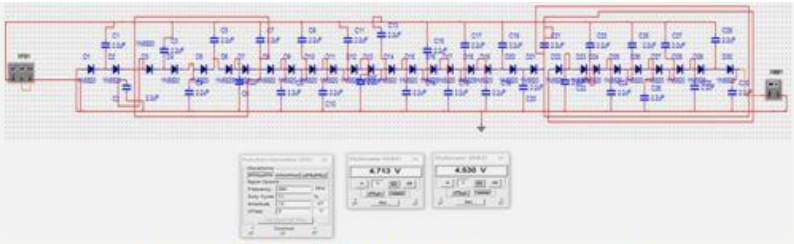
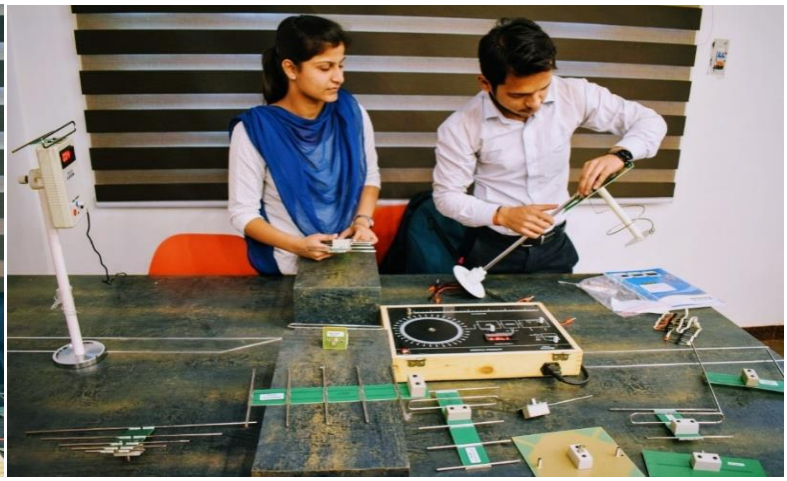


Fig 2: depicts the virtual working image of developing prototype



12	**Smart Vegetable Cutter:** Simply insert the vegetable press it and everything is cut perfectly in seconds. Whether soft or hard vegetable such as Zucchini, Tomato, mushrooms etc.	Completed market survey and purchased all necessary equipments.	Comparing with existing all kinds of models in the market.	Completed

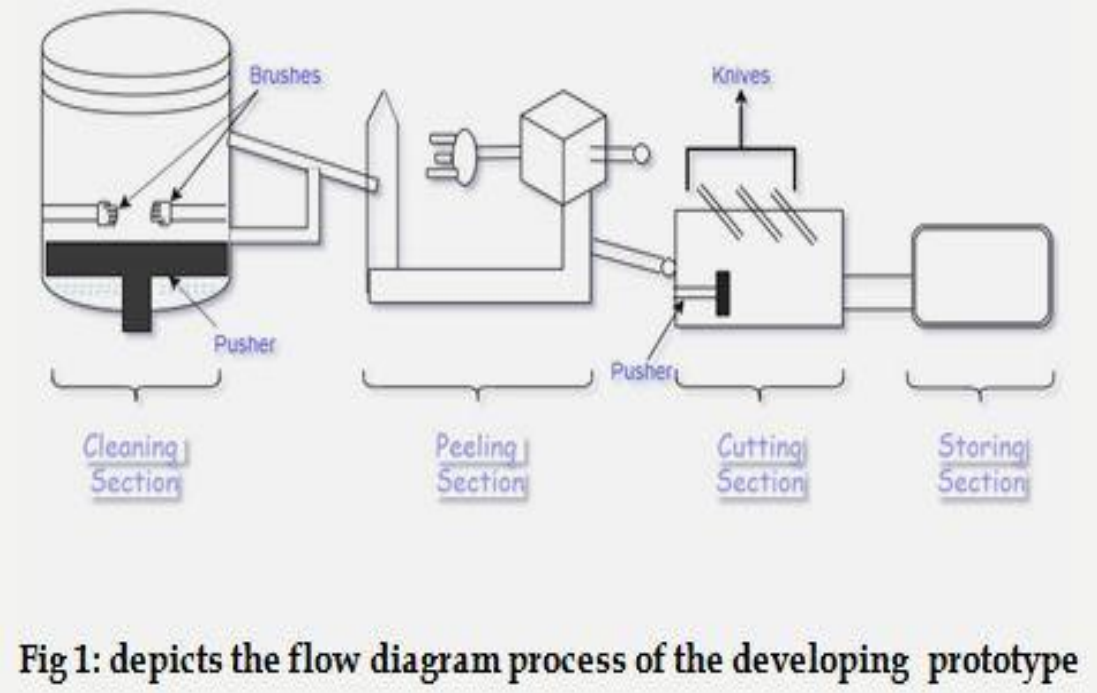
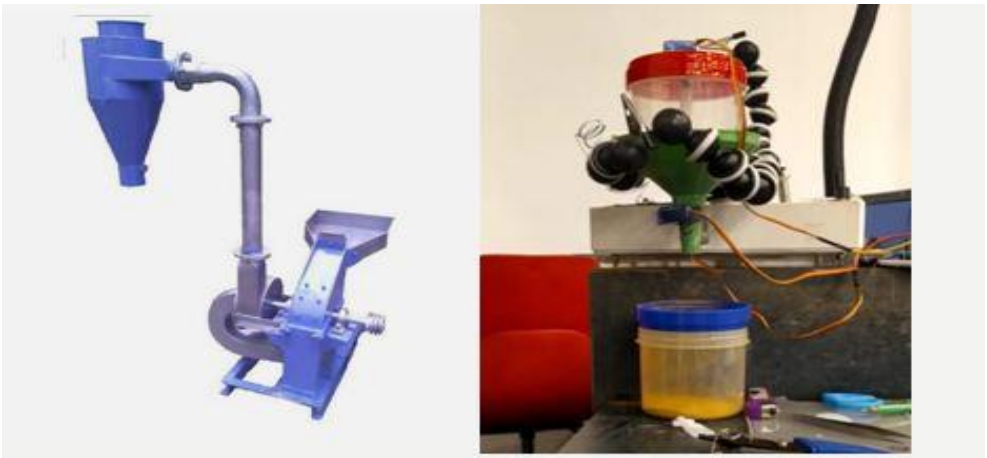
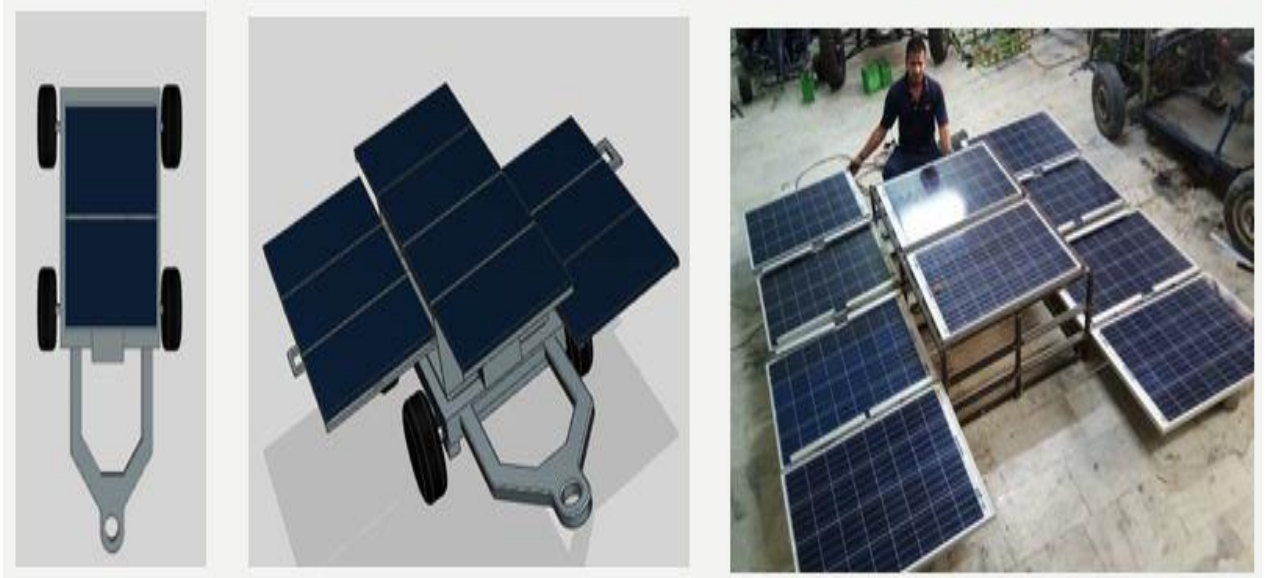
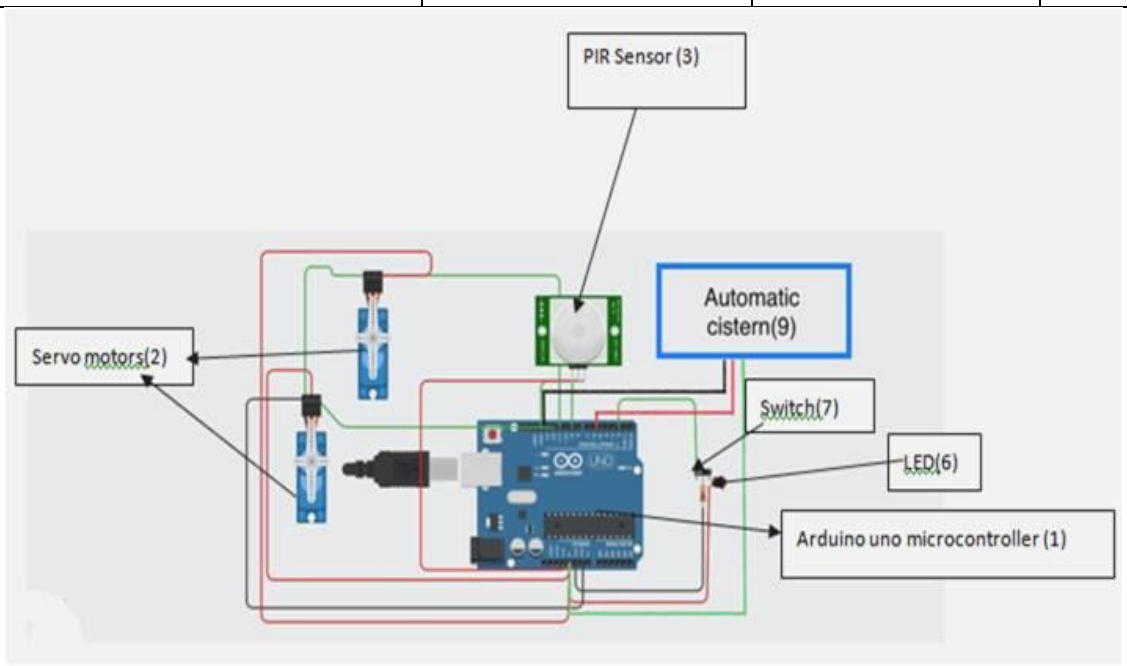
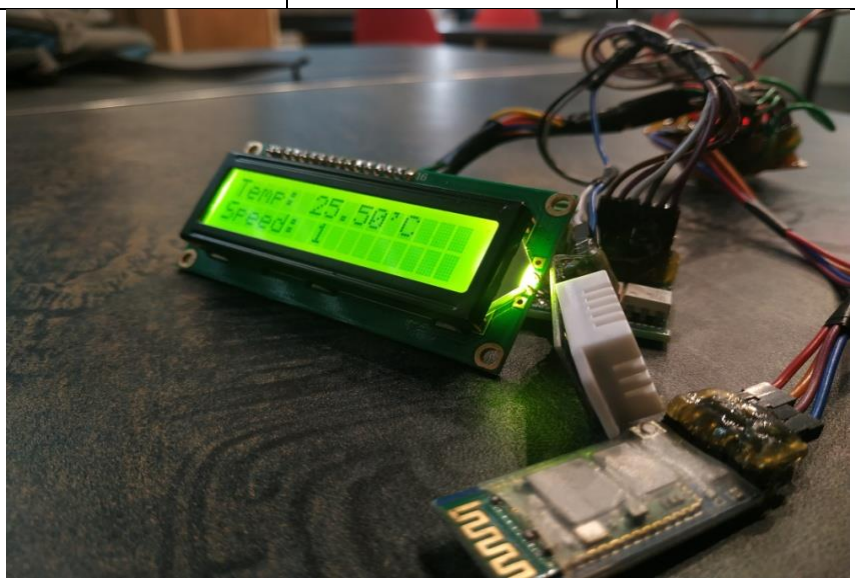


Fig 1: depicts the flow diagram process of the developing prototype

13	**Kitchen Masala Maker:** We can grind all type of masala items and it's very easy to grind.	Completed market survey and purchased all necessary equipments.	Comparing with existing models.	Partially Completed
	 Fig1 : depicts the CAD model & the actual image of the developing prototype			
14	**Vacuum Flushing System:** Vacuum toilets are flush toilets that uses suction for the removal of faces and urine resulting in a minimal requirement of water (0.2 to 0.3 gallons). Vacuum toilets provide the same level of comfort as traditional flush toilets but at minimum cost.	3-D Modeling and Literature Study has been done	Comparing with existing models in Indian Railways and Aero planes models.	Partially Completed
	 Fig 1 : depicts the actual image of developing prototype with mentor			

	Sunflower Solar System: Sunflower All in One Power System, the system. This sunflower doesn't just produce electricity from solar energy	3-D Modeling and Literature Study has been done	Comparing with existing models.	Partially Completed.
15	 Fig1: depicts the top & isometric view of the proposed model Fig 2 : depicts the actual image of developing prototype			
16	**Automatic Toilet Cleaner:** Completely cleans & refreshes toilet bowl. Even under the rim. Safe for septic system. Removes and prevents stain & scum build-up. Prevents rust and hard water stains	3-D Modeling and Literature Study has been done	Comparing with existing models.	Partially Completed
	 **Fig 1: depicts Sample Circuit Diagram**			

	Krisco Netra: Project involves bringing of the IOT and Cloud together to enforce the idea. Project empowers smart farming in traditional field of farming in India. This project has three process of working. It measures the moisture content in soil so as to automatically control water pump to give appropriate amount of water to crop.	Completed market survey and purchased all necessary equipments.	Comparing with existing models.	Completed
17	 Fig1 : Image of developing prototype  Fig2 : The actual image of developing prototype with mentor			
18	**Intelligent Ceiling Fan Regulator:** It is an automatic regulator which automatically control the speed of fan according to the environment's Humidity and temperature. It helps to save electricity.	Completed market survey and purchased all necessary equipments.	Comparing with existing models.	Completed
	 **Fig1 : depicts the actual image of developed prototype**			

19	**Agro Robo:** To Make which can sow seeds, water the plant as per requirement and get the rid the weed.	Completed market survey and purchased all necessary equipments.	Comparing with existing models.	Completed

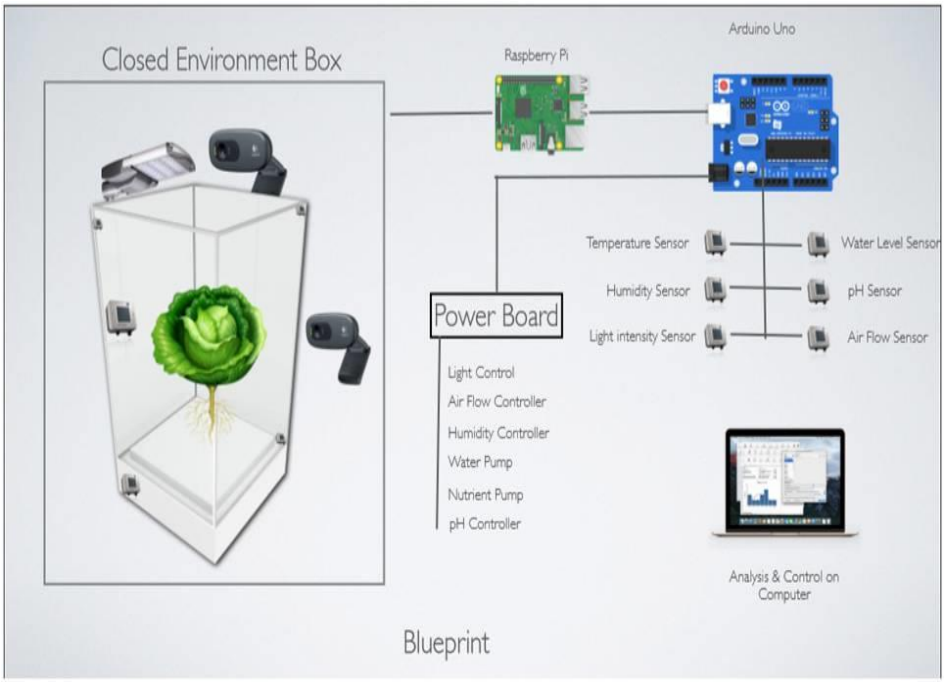


Fig 1: depicts blue print of the proposed model

20	**Fire Fighting Drone:** An unmanned underwater vehicle (UUV). Able to operate underwater without human occupant. A mobile robot designed for aquatic work environments.	3-D Modeling and Literature Study has been done	Comparing with prototypes.	Completed

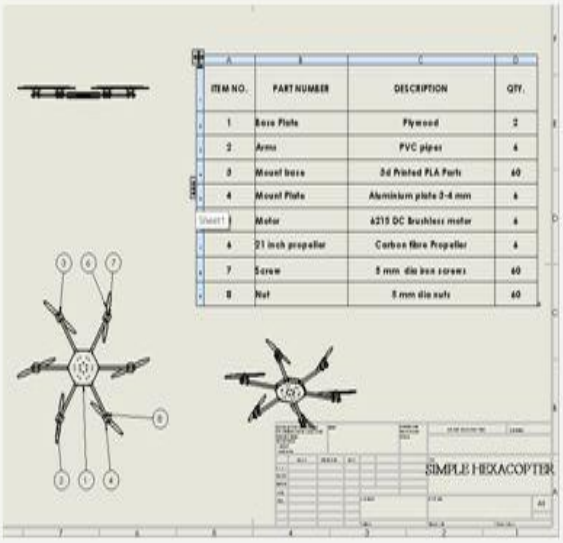


Fig1: depicts the actual drawing of proposed drone

Fig2: depicts the image of the developing prototype with mentor

21	**Optimized Inbuilt Pneumatic Jack:** utilizing the compressed air, the pneumatic jack which is mounted on the chassis can be operated in order to lift the vehicle for the purpose of changing tyre or for wheel alignment etc.	Completed market survey and purchased all necessary equipments.	Made a 3-D model and installed on a Maruti Car.	Completed

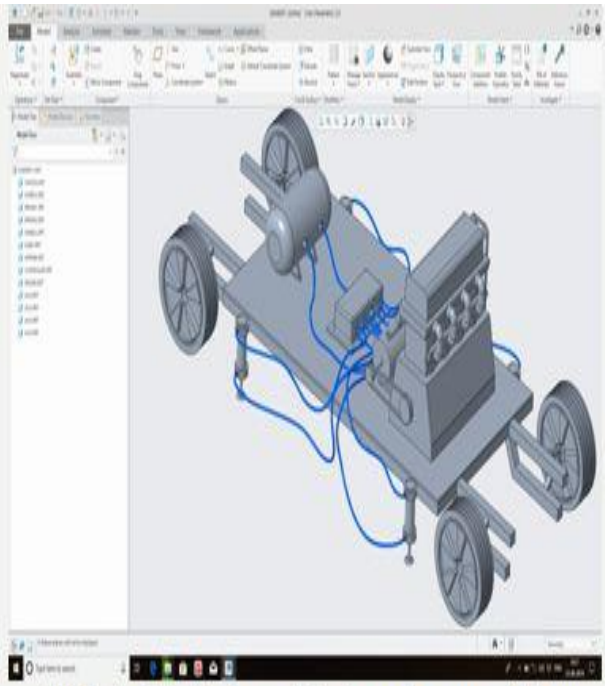
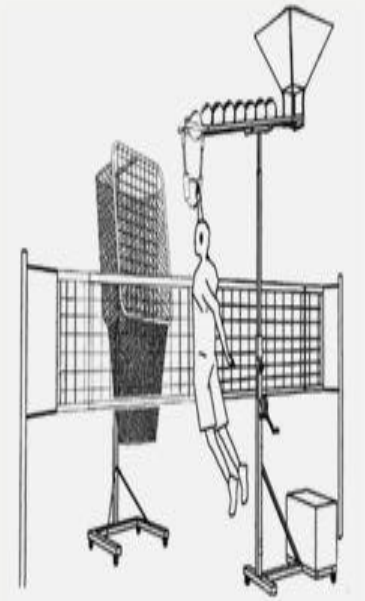
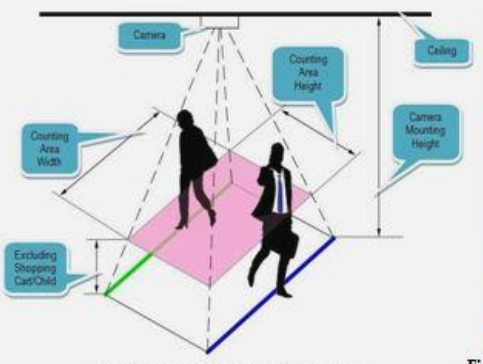
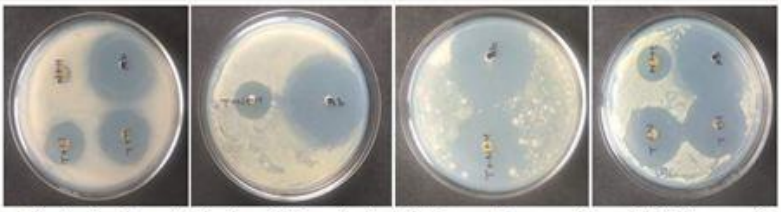
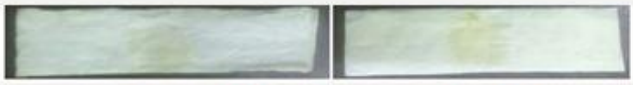
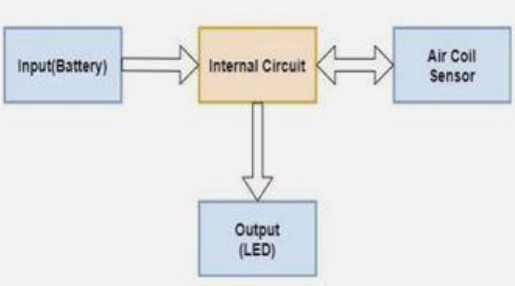
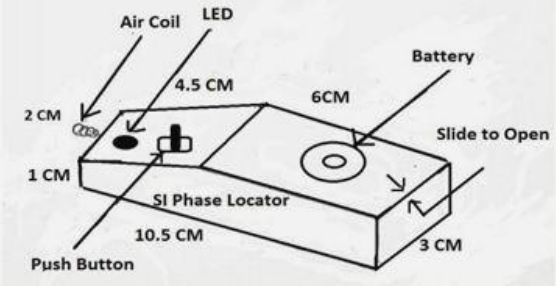
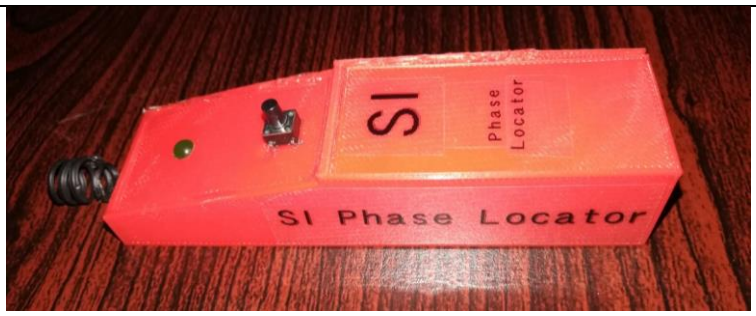
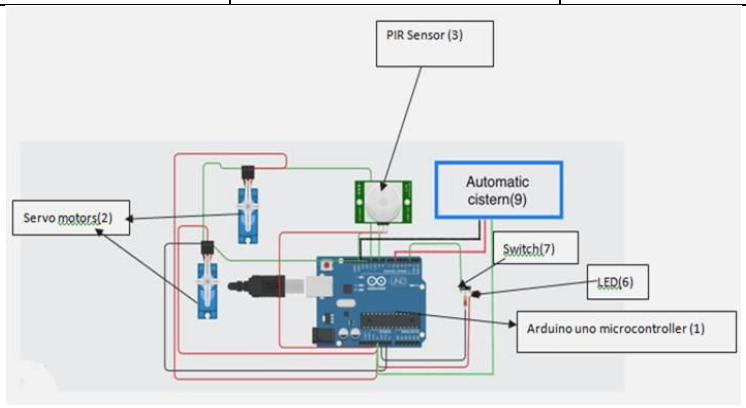


Fig1: depicts the isometric view of proposed drone

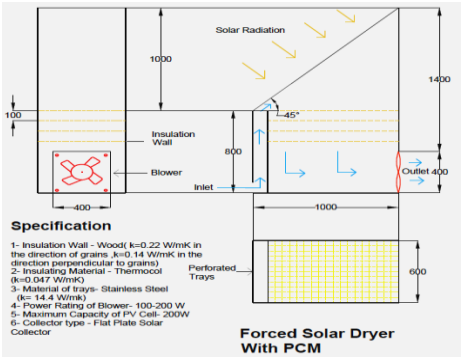
Fig2: depicts the image of the developing prototype with mentor

22	**Automatic Volleyball Spike Machine:** This is a new multi-ball, self-reloading volleyball spike machine, compact in design and light in weight.	Purchased all the necessary equipments.	Made a 3-D Model	Partially Completed
	 Fig1: depicts the image of the proposed solution   Fig2: depicts the isometric view of proposed model			
23	**Crowd Management System:** The system mounted anywhere, is able to count persons entering or leaving the place with high accuracy. The great characteristic of these devices is that they are able to record date and time information which allows users to make a required statistical analysis at a later time. These systems are easily installed and offers counting accuracy greater than 98%.	Purchased all the necessary equipment and completed market survey	Started Testing at various areas.	Partially Completed
	 Fig 1: depicts the actual image of temple  Fig 2: depicts the proposed model  Fig 3: depicts the place where cameras will be placed			

24	**Greeama:** The idea is to prepare a "Herbal Bandage" exclusively made by herbal constituents. The GREEAMA overcome all the problems of traditional bandage like itching, pale patch left on skin, skin allergies due to latex, etc. The bandage is apt for all age groups, its ayurvedic ingredients made them safe to use by anyone and are biodegradable after use.	Purchased all the necessary equipment and completed market survey.	Started Testing and made various kind of HERBAL Bandages	Completed
	 Fig 1: depicts Antimicrobial activity of Neem, Turmeric and Hibiscus oil  Fig 2: depicts The herbal bandage 'GREEAMA'			
25	**SI Phase Locator:** It is a device which detect phase on insulated wire by the LED, which we use as indicator, we get know the presence of current. We can detect phase with a distance of 1cm. human safety against electric shock with use of SI Phase locator. It is cheapest and easy to use. It detects the high voltage in spark plug of vehicles. Easily detect the fault in bull's series connection it easily detects high voltage area. Its operation is on very low battery consumption. It works for several months.	Purchased all the necessary equipments.	Started Testing	Completed
	 Fig1: depicts the Block diagram of SI Phase Locator  Fig2: depicts the Design of SI phase Locator			

				
26	**Automatic Toilet Seat:** It is the project to automate the cleaning process of Toilet seat. Presently we are working on western seats and on one specific size and type of seat. In this a robotic hand is implemented in seat cover. On pressing a button this hand will come out and will clean the entire seat and will go to its place. A brush will be fixed on the head of this hand. It will be operated by a portable and rechargeable battery. Further we will install the WIFI module and will extend to work just by pressing a button on your mobile.	Purchased all the IoT based equipments.	Started Testing in the real kind of Toilets and further changes few things in the prototype.	Completed
	 **Fig 1: depicts Sample Circuit Diagram**			
27	**Solar Dryer:** This invention will help the farmers to save their grains from contamination and so they can sell it in the reasonable price and live their livelihood. **Solar Distiller:** This is an instrument purposely designed to use non-conventional form of Solar energy to distill water. This Solar Distiller can even purify the saline water.	3-D Modeling and Literature Study has been done	Starting their testing in real time lab as well virtually on various Software.	Completed

Solar Dryer:



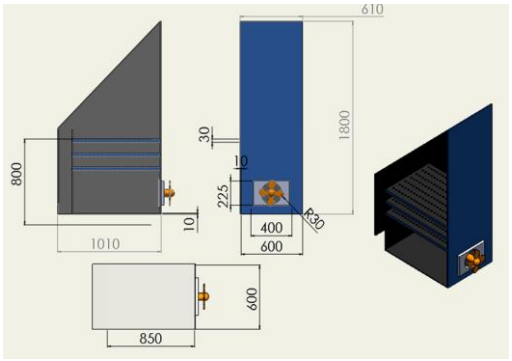


Fig 1: depicts blue print of the proposed 3 D model

Solar Distiller:

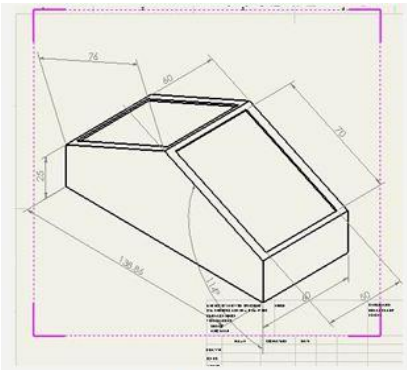


Fig 1: depicts pictorial drawing of solar distiller

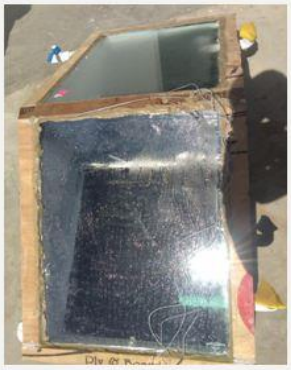


Fig 2: depicts actual image

28	**Ignition Cutoff Stand:** This device cut off the ignition of the engine if any stand i.e. side stand and centre stand is engaged. This device is act as child lock by setting the weight of the driver by their parents, this device can easily installed in the existing vehicles. This device can also installed by the manufacturer to reduce the accident	Purchased all the necessary equipments	Installed and checked all the equipments on the real machines.	Completed

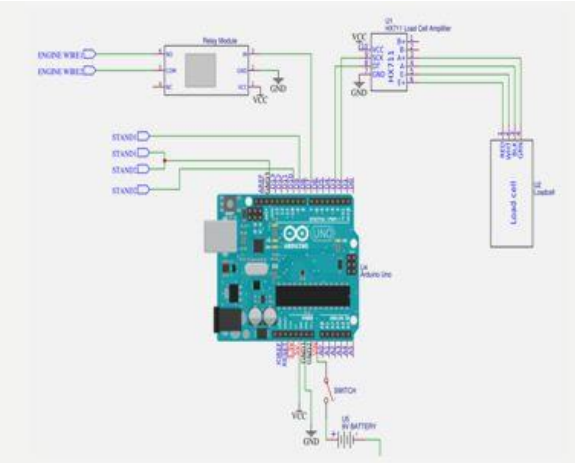


Fig1: depicts the Circuit Diagram of Ignition Cut off System

Fig2: depicts the Assembly Drawing of Ignition cut-off system

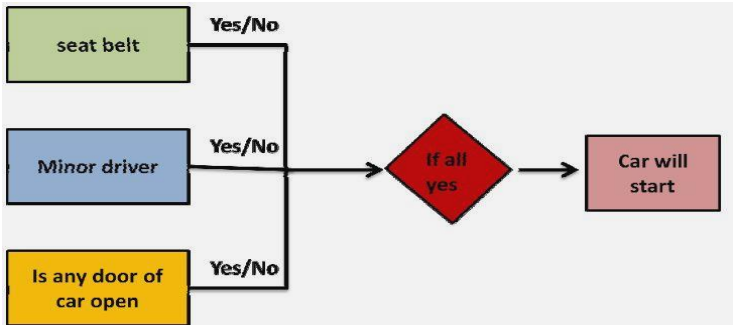
<table>
<tr><td></td><td colspan="4"> 
</td></tr>
<tr><td rowspan="2">29</td><td>Smart Car Ignition System:
Installing Smart car ignition system (SCI-S) in cars that ensure automobile passenger safety by checking following:
Fasten seatbelt
Doors close properly
Restrict minor driving</td><td>Purchased all the necessary equipments</td><td>Installed and checked all the equipments on the real machines.</td><td>Completed</td></tr>
<tr><td colspan="4"> 

Fig1: depicts Circuit diagram of smart car ignition system (SCI-S)</td></tr>
</table>

5. Provide a minimum two-page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

The Project commercialization of above listed 29 projects as we were planning was not executed in that way. The reason of this shortfall is limitation in the getting various accreditations from different bodies due to Covid-19 Pandemic. But we are highlighting the best two commercialized projects of last session.

First Commercialized Product – Fingerprint Locks & Smart Bag Module
Company Name: E – Bibil Technologies Pvt. Ltd.

Student Team Details:

a. Anindya Singh - CEO, Contact No: +91 - 9807707073 E-Mail: anindya.singh@outlook.com
b. Jay Kattyayan - COO, Contact No: 8126110545, E-Mail: jaykattyayan009@gmail.com
c. Siddhartha Bajpai - CTO, Contact No: 8052912313 E-Mail: sidbajpai9807346747@gmail.com
d. Shalini Sharma - CAO, Contact No: 7388092405 E-Mail: 24.shalini.sharma1995@gmail.com
e. Daanish Ahmad - CFO, Contact No: 8707555918 E-Mail: danish.a0007@gmail.com

Description about Start-Up:

E-Bible Technologies Pvt. Ltd. focuses on developing both product and service-based business. We are working on bilateral platforms wherein we are not only creating physical devices but also online platforms for our service based idea. So given below is a complete description of our product range which our company intends to do business within a stipulated time-frame for the coming years.

Products:

1. **Fingerprint Locks**: Fingerprint locks will revolutionize the security purpose by eliminating the use of keys as in all types of conventional locking systems. It will be operated by using fingerprints which will increase the security level up a notch using a dedicated app that will also allow unlocking through PIN protection. The fingerprint lock will be available for different applications and the most common form will be padlocks. To operate the lock, the user has to place his/her finger on the fingerprint sensor on the front face of the lock. This concept greatly reduces the chances of losing keys or getting duplicated. Our company has taken it as a mission to bring this keyless revolution to all households and commercials.

2. **Smart Bag Module:** Smart Bag Module is a device that fits on any luggage carrying product like bags, rucksacks, suitcases, etc. This module uses a mobile application and RFID sensing, which allows the user to make a list of items which are put inside a bag and helps by reminding him/her to keep the items through simple push notifications. This will be a modular device which will also be equipped not only with GPS tracking system but also have USB ports for charging devices and attaching other add-on modules provided by us like air pollution sensor, temperature sensor, etc.

- **Entrepreneurial Journey:**

  The journey which initiated from hostel rooms of GLA University in 2017 got the initial support from E-Cell GLA University and subsequently IEDC which helps the journey to move a step forward and reach to prototype stage by early 2018. Patents are also received during 2018. Now, the future plans will be to take them on the floor in 2019.

- **The contribution of IEDC:**

  IEDC was very helpful in taking these products from ideation to prototype stage. They provided an ecosystem which is helpful in developing prototypes and funds which played an important role in this development. For a startup like us which are still in Ideation stages, these help provide a lot of support.

- **Future Plan:**

  Future plans are clear as we are eager to take both of these products to the production stage. For which initial level work is done. Like, finalization of product developer and other necessary work are done. Within next year, we are dedicated to taking them on the floor.

Second Commercialized Product: Tred – E – Cycle
Company Name: Tredmolen E-Cycle Private Limited

Student Team Details:

a. Sachin Singh Sengar - CEO, Contact No: +91 - 9807707073 E-Mail: anindya.singh@outlook.com
b. Jay Kattyayan - COO, Contact No: 8126110545, E-Mail: jaykattyayan009@gmail.com
c. Siddhartha Bajpai - CTO, Contact No: 8052912313 E-Mail: sidbajpai9807346747@gmail.com
d. Shalini Sharma - CAO, Contact No: 7388092405 E-Mail: 24.shalini.sharma1995@gmail.com
e. Daanish Ahmad - CFO, Contact No: 8707555918 E-Mail: danish.a0007@gmail.com

- **Description about Start-Up:**

  The present invention relates to exercise equipment having the features of a treadmill, bicycle, and e-bike. More particularly, a treadmill-electric-cycle that works on a chain arrangement through which it functions in three different ways. It is basically designed on THREE in ONE concept. It is an assembly of a treadmill and a bicycle which is governed by the motor. People may use it as a treadmill, bicycle & e-bike. You have to simply walk over it & it starts to move in a forward direction. The whole mechanism is governed by a motor which helps to multiply your speed. It is basically designed for the women, youth & for fitness flicks.

- **Entrepreneurial Journey:**

  The journey Exercise is an activity that improves health and reduces the risk of many diseases in the human body. But in the present scenario, people are too busy and they don't have time to perform exercises. There are many exercising equipment's in the market, among which bicycles and treadmills are very common and widely used for exercise to stay fit and healthy. Through normal bicycles, one can only exercise the muscles of the legs and lower torso and exercise through treadmill increases the strength of the heart, reduces weight, and decreased insulin resistance. To perform exercise through such equipment's one have to purchase different equipment's. From this, the concept of this product arises and manufacturing of this product was started. After the manufacturing of the product due to the demand of this product, this product is going to be launched in the market for the benefit of the society.

- **The contribution of IEDC:** Newgen IEDC has provided us the funds for the manufacturing of the prototype after knowing about our idea and benefits of this product to the society and environment also. NewGen Iedc is also helping in the commercialization of this product also.

- **Future Plan:**

  - Profitability and growth.
  - Adding up new innovative ideas.
  - Usability for every class of the society.

NewGen IEDC
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC : **NEWGEN IEDC, IIT Guwahati, Guwahati**
Name of the Chief Coordinator : **R. Ganesh Narayanan**
Period under Review : **May 2019 to June 2020**

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

S. No.	Activities	Outcome
1	Healthcare hackathon, September 5 to 7, 2019	Participants fabricated products/prototypes providing possible solutions for the problems provided in healthcare sector. The main outcome is the mentality to provide innovative solution and make a prototype in short duration, which will pave way for innovation and start-ups.
2	One-day workshop on Entrepreneurship Development, September 11, 2019 [Co-organized by TIC, IITG]	Networking development and words from entrepreneurs of IITG providing motivation for entrepreneurship. Also government initiatives on entrepreneurship are highlighted.

[B] To identify, develop & commercialize students' innovative ideas

S. No.	Activities	Outcome
1	Healthcare hackathon, September 5 to 7, 2019	Participants fabricated products/prototypes providing possible solutions for the problems provided in healthcare sector. This helped them in developing innovative ideas. Doctors provided suggestions for improvising the solutions and to know the problems in technical issues when commercialization. Yet to organize event for commercialization.
2	COVID-19 challenge in April 2020	Innovative ideas are provided by several student participants, and several of these will be considered for long term research.

[C] To enhance Industry-Academia interaction

S. No.	Activities	Outcome
1	Talk and interaction session with Nitin Gupta, Sickel Innovations Private Ltd., March 6, 2020	Nitin interacted with interested students relevant to initiate start-ups in future.
2	Online software skill development program from May 31, 2020	Software experts from industries will be interacting with students via webinar. In the first part, Solidworks software training will be provided, and it is ongoing from May 31. Visit: https://youtu.be/5FJvOshst-I

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

- Medical Innovation Hackathon was planned from March 19 to 22, 2020 as part of Research Conclave 2020. Got cancelled due to lock down.

- A hands-on training program in software skills was planned from March 21 to 22, 2020 as part of Research Conclave 2020. Got cancelled due to lock down.

- The following were planned, but could not initiate.
    - Workshop cum showcase on product fabrication and commercialization
    - Invited talks cum interaction with industries relevant to NE India

3. Other important highlights (new initiatives), if any:

- NEWGEN IEDC of IIT Guwahati supported COVID-19 related events and challenge. This helped students to provide solutions to prevent the crisis. We supported those who provided solutions udner board objectives of Detection of infected persons, Newer treatment approaches, Resources distribution, Precautions to halt its spread, Society impact, Supporting essential services, Supporting health care workers, Transportation of goods, Disease outbreak pattern, Migration of humans, Behavior changes.

4. Student Projects (Please provide the following details for each student project)

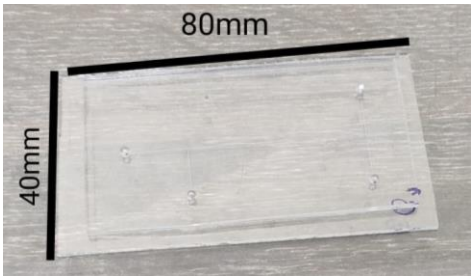
No.	Projects description	Project status at beginning of the Year	Interventions Made	Current status (As informed by the mentor and student team in the recent status report)
1	Walking aid device for disabled peoples	Only proposal was ready in all the projects. Some of the projects did not provide clear-cut objectives on product and prototype development.	Several suggestions were provided in the advisor board meeting. Critical questions were posed to student teams for the updates. Commercialization aspects were questioned. Recently, we started out discussion with a venture company for helping expose technology and commercialization.	The project is divided into three stages: 1. Design – Literature Survery, Design and Finite element modelling. (Accomplished) 2. Manufacturing – Manufacturing the parts and Patent. (To be done) 3. Product – Clinical Trials, GAIT analysis, Design Review and Commercialization. (To be done) Once the product is manufacured after the locked down period is over, it will be tested in patients. Once it is fixed with patients, 6 months followup is required to assess the improvement of patient posture in the gait lab developed as part of NECBH at IIT Guwahati
2	Development of Piezoelectric Fiber Reinforced Composites			All test are conducted such as FESEM, XRD, FTIR, and Mechanical strength for material characterization except electrical testing. In order to check the performance of piezoelectric nanogenerator, it is required to do electrical testing. For this, we need experimental setup such as; Digital Storage Oscilloscope, Digital function generator. This facility is available in our college. It is very defficult to complete all objective staying at home. However, once college is open, it will take one more month to complete the project. This technology will be transferred to M/S Admeca Design and Engineering Solutions LLP, Bhiwani for its commercialization.

No.	Projects description	Project status at beginning of the Year	Interventions Made	Current status (As informed by the mentor and student team in the recent status report)
3	Dynamics of ferrofluidic droplet generation under the influence of external magnetic field.			We have successfully fabricated the test section and the experimental setup. The droplet generation process, both in the absence and presence of magnetic, have been investigated. The implication of the position of the magnet, i.e., magnet at upstream and downstream of the T junction have been explored. However, full controllability in the droplet generation process is yet to be ascertained, and more experiments are required for that purpose. In the table below, we show the timeframe of the progress made till date and the probable completion time of the project. The final product will be ready by October 2020.
4	Thermo-hydraulic Performance assessment of Tube Heat Exchanger using Passive Technique			•Design of novel solar collector, inbuilt with tube heat exchagers has been finalized. •Perforated circular ring has been selected as insert geometry. •Fabrication of the test setup in under process. •Testing of the novel solar collector under actual climatic condition is pending. •After testing the novel solar collector can be attached to solar dryer for further commercialization.
5	Design and development of novel evacuated tube solar collector integrated with parabolic reflector			The experimental step-up of the product is built. However, the last objective of carrying out an economic analysis of the developed setup for finding its viability and sustainability when compared with commercially available solar collectors is left to go for commercialization.
6	Design and development of novel solar air heaters for drying various agricultural food products			•A newly developed energy efficienct solar air heater model has been fabricated. •Need to attach mass flow meter inorder to determine the flow of air mass inside the collector. •Experimental analysis of solar air heater for drying of various agricultural products yet to be performed. •Market research has been conducted for various agricultural products and this will be useful for commercialization.
7	Dynamic-mechanical ankle joint for trans-femoral and trans-tibia amputees to increase their stability while walking in an uneven surface			•2nd prototype is ready for the patient trial. •Once patient trial is completed, based on the feedback received from the users, design improvement will be done. •Upon completion of patient trial of the modified one, an attempt will be made for commercialization.

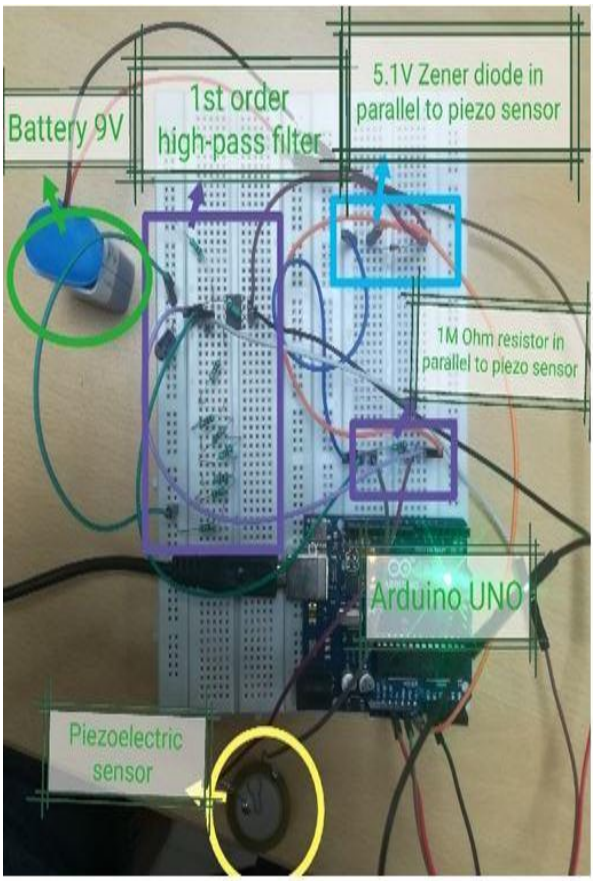
No.	Projects description	Project status at beginning of the Year	Interventions Made	Current status (As informed by the mentor and student team in the recent status report)
8	Sensing Acoustical Emissions from the Knee for Wearable Joint Health Assessment			•The project is in the middle stage of its completion. Once the sensor calibration and subject's knee acoustic data samples will be successfully analysed, the whole miniature device will be fabricated. •Wearable device will be integrated with indigenously developed piezoelectric sensors in one PCB.
9	Modern Cold Press for Vegetable Oil Extraction			Progressing partially.
10	Development of a Next Generation Acetabular Cup for Total Hip Joint Arthroplasty (Tha)			As per the objective of the project, the development part is completed. However, as it is a bio-implant, the product needs exhaustive studies on its bio-compatibility and life. A lot of protocol and authorization process are needed to be followed to take the product to the next level, which is expected to take more time. The product testing in OBM is expected to be completed within next 6 months. A patent is granted.

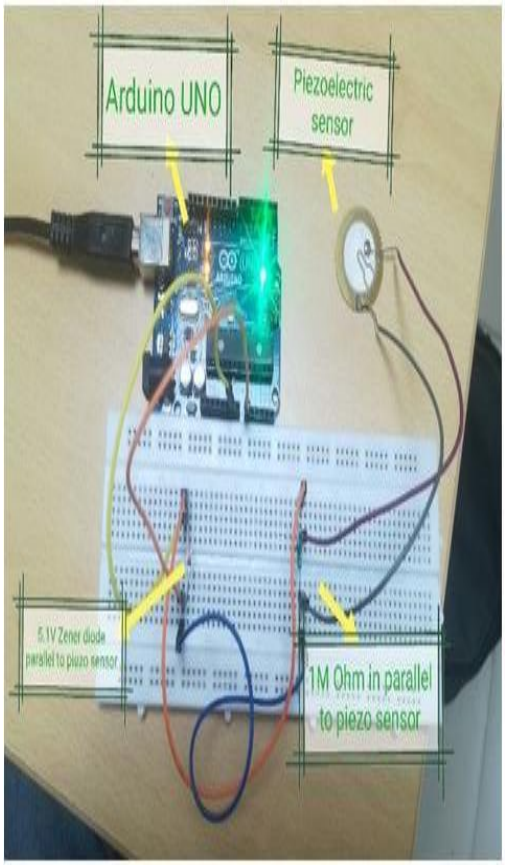
- Dynamic-mechanical ankle joint for trans-femoral and trans-tibia amputees to increase their stability while walking in an uneven surface

- Dynamics of ferro-fluidic droplet generation under the influence of external magnetic field (A micro channel is fabricated)



- Piezoelectric sensor





- Acetabular Cup for Total Hip Joint Arthroplasty

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list.

- All the projects have shown potential to develop prototype and products, however, not fully completed. Hence, they have not reached the level of commercialization and start-ups.
- Though this is the case, the following projects have potential for commercialization in near future.

1) Design and development of novel evacuated tube solar collector integrated with parabolic reflector
2) Modern Cold Press for Vegetable Oil Extraction
3) Design and development of novel solar air heaters for drying various agricultural food products
4) Dynamic-mechanical ankle joint for trans-femoral and trans-tibia amputees to increase their stability while walking in an uneven surface
5) Development of Piezoelectric Fiber Reinforced Composites

Out of these projects, projects [1] to [3] are being considered for further discussion with a venture company who can help in commercialization.

NewGen IEDC

Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC : Marwadi University

Name of the Chief Coordinator : Dr. Y. P. Kosta, Provost, Marwadi University

Period under Review : Dec, 2018 to January 2020

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	Entrepreneurship Awareness Programme	30+ event organized and sanitized 5000+ students
2	Expert talk on Entrepreneurial Career Option	2 days Entrepreneurship conclave organized, 15 speakers motivated 500 students for their entrepreneur journey and motivated
3	University Level Hackathon (2 or 3 of industry/Society problem)	• Smart City Hackathon Rajkot 2020 organized to solve local problems of Rajkot Municipal corporation at campus. 59 team, 287 students,16 mentor, 27 jury, 65 students volunteers, 20 MU staff involved • Smart India Hackathon 2020 organized at campus and 80 idea; 300 students participated
4	Sprint Workshop “How to test Big idea in 5 days”	4 days Entrepreneurial Sprint on AI & Internet-of-Things organized, 63 participants participated and Prog. conducted by Prof. Kunal Mankodiya, USA
5	IPR Awareness Programme	5 IPR awareness programme organized and sensitized 1400+ students
6	Prototype Building Workshop (3 D Printing)	3 Programme organized and participated 150 students
7	Prototype Building Workshop (Laser Cutting)	3 Programme organized and participated 150 students
8	Prototype Building Workshop (PCB Designing)	1 Programme organized and participated 50 students

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	Idea Generation-Brainstorm product issues	Organized 15 days Entrepreneurship Development Programme where all the topics covered by the 14 experts in 24 session Domain specific technical experts are invited time to time to talk on their technological startup journey and further guidance Prototyping lab equipment and tools usage explained and guide for the working model development
2	New product development strategy	
3	Idea Screening	
4	Innovation support	
5	New product concept development	
6	Rapid Prototyping and Minimum Viable Product	
7	To develop and test concepts in a rapid way for a low cost	
8	Collaborative and digital design tools and rapid prototyping Business analysis of new products	
9	Business analysis of new products	
10	New product prototypes and market testing	
11	Launching and commercializing new products	
12	Initial introduction of a product or service to its mass production and adoption	

[C] To enhance Industry-Academia interaction

<table>
<tr><th>Sr. No.</th><th>Activities</th><th>Outcome/Achievements</th></tr>
<tr><td>1</td><td>Awareness Programme for NewGen IEDC Scheme with the Industry/Institute</td><td>• Awareness Programme organized with inviting experts from Accuprec Research Labs Pvt. Ltd. and Anand College of Pharmacy at the Campus</td></tr>
<tr><td>2</td><td>Workshop on Academia – Industry Collaborations</td><td>• Organized Workshop on startup by Digital Impact Square, TCS initiative</td></tr>
<tr><td>3</td><td>Entrepreneur/Startup Internship work at Industry/Institute</td><td>• Students registered under the NewGen IEDC project have completed internship work related to their product/process/service to know better technology and further usage in their prototype development.
<table>
<tr><td>Name of Student</td><td>Company</td><td>Location</td></tr>
<tr><td>Kishan Kantilal Shingala</td><td>Emsys Control</td><td>Ahemdabad</td></tr>
<tr><td>Manan Jyotilbhai Patel</td><td>Verson Systems Pvt Ltd</td><td>Rajkot</td></tr>
<tr><td>Vidita Jigneshbhai Dahiya</td><td>RKinfotech</td><td>Rajkot</td></tr>
<tr><td>Marlin . Shah</td><td>Oizom Redefining resources</td><td>Ahmedabad</td></tr>
<tr><td>Devanshi Vipulbhai Joshi</td><td>Verson Systems Pvt Ltd</td><td>Rajkot</td></tr>
<tr><td>Abhi Vallabhbhai Kevadiya</td><td>Tvadartham</td><td>Ahmedabad</td></tr>
<tr><td>Tarak Pravinbhai Gopani</td><td>creor solutions</td><td>Mumbai</td></tr>
<tr><td>Manharsinh Janaksinh Jadeja</td><td>Prompt ERP, Rajkot</td><td>Rajkot</td></tr>
<tr><td>Harshal Maheshbhai Faldu</td><td>Tvadartham</td><td>Ahmedabad</td></tr>
<tr><td>Nipun Dipenbhai Parekh</td><td>Elluminati</td><td>Rajkot</td></tr>
</table></td></tr>
<tr><td>4</td><td>Resource sharing collaboration with Industry/Institute</td><td>• DAIICT, Gandhinagar for Startup Mentorship Support
• Education Department, Govt. of Gujarat for resource sharing of mentorship, hackathon, Maker lab development
• Wearable Biosensing Lab, USA for Startup Mentorship and technology guidance</td></tr>
</table>

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Startups Prototype Development are in progress and further initiated discussion with LetsVenture for Angel Investing & Startup Fundraising.

3. Other important highlights (new initiatives), if any:

- Organized National Level Event Indicon 2019 with IEEE India Council at the campus.
- Organized 2 Entrepreneurship Conclave inviting 17 experts from the Industry.
- Started Innovative Project Selection workshop for all the 7th Semester Engineering Student to sensitize young students and their innovation potential.
- Setup “First Office” a Coworking Space for the Startups for the i.e. Meeting room, 5 close cabins, 4 open cabins, waiting area and other facility.
- Initiated 4 credit Entrepreneurship Development Programme in the BBA and BBA Honors 4th semester students and will implement in other streams.

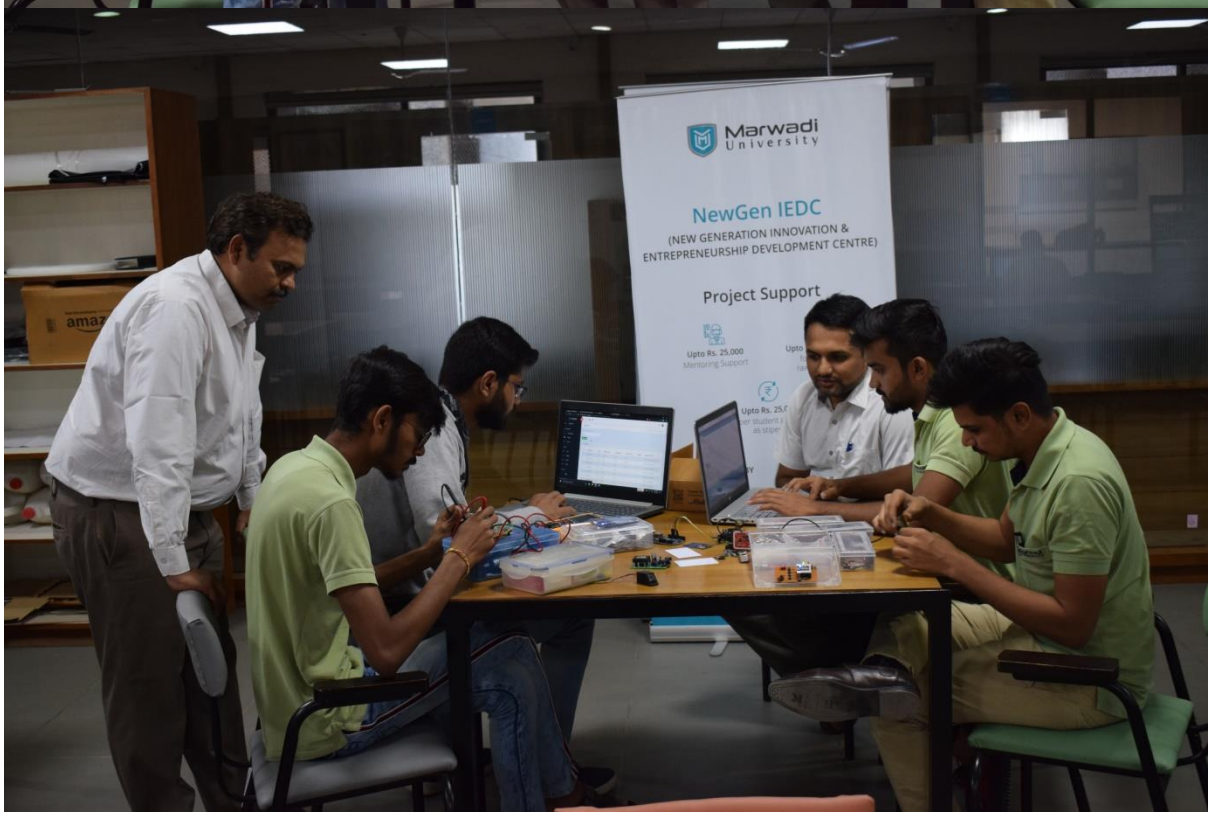
4. Student Projects (Please provide the following details for each student project)

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
1	Care Cardia	Proof of concept Stage	Prototype Development	Prototype Under Development
2	Apt Intellect (Smart Classes)	Proof of concept Stage	Prototype Development	Prototype Testing Completed
3	Design and Development of Plug-in Hybrid Motorbike	Proof of concept Stage	Prototype Development	Prototype Under Development
4	DigiPen	Proof of concept Stage	Prototype Development	Prototype Under Development
5	Kinnect-O-Therapy	Proof of concept Stage	Prototype Development	Prototype Under Development
6	Medguide	Proof of concept Stage	Prototype Development	Prototype Under Development
7	Solar Duel axis chronological tracking	Proof of concept Stage	Prototype Development	Prototype Under Development
8	Smart Digi Farming	Proof of concept Stage	Prototype Development	Prototype Under Development
9	Smart Home Automation	Proof of concept Stage	Prototype Development	Prototype Under Development
10	Domestic Wastewater Treatment	Proof of concept Stage	Prototype Development	Prototype Under Development

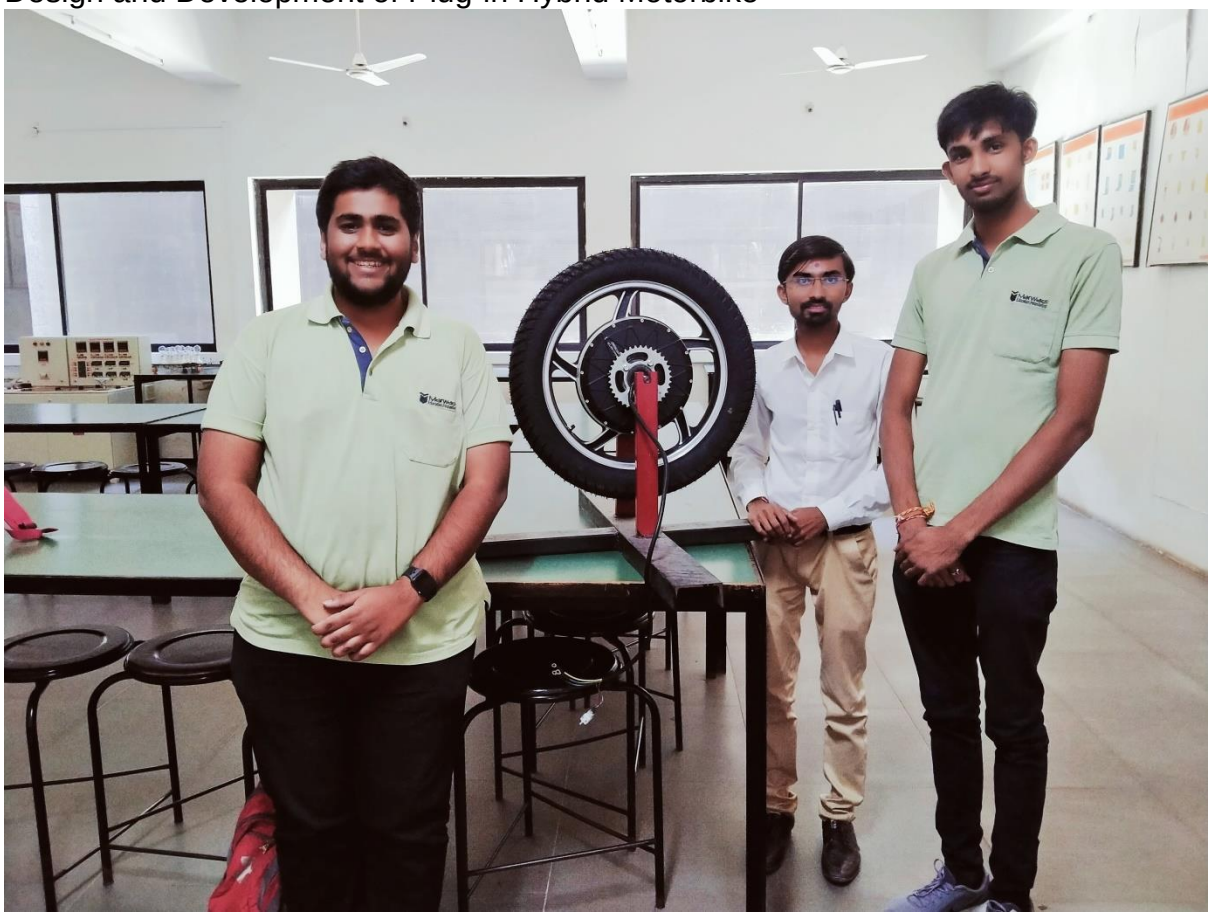
Students photos with mentor:

Care Cardia

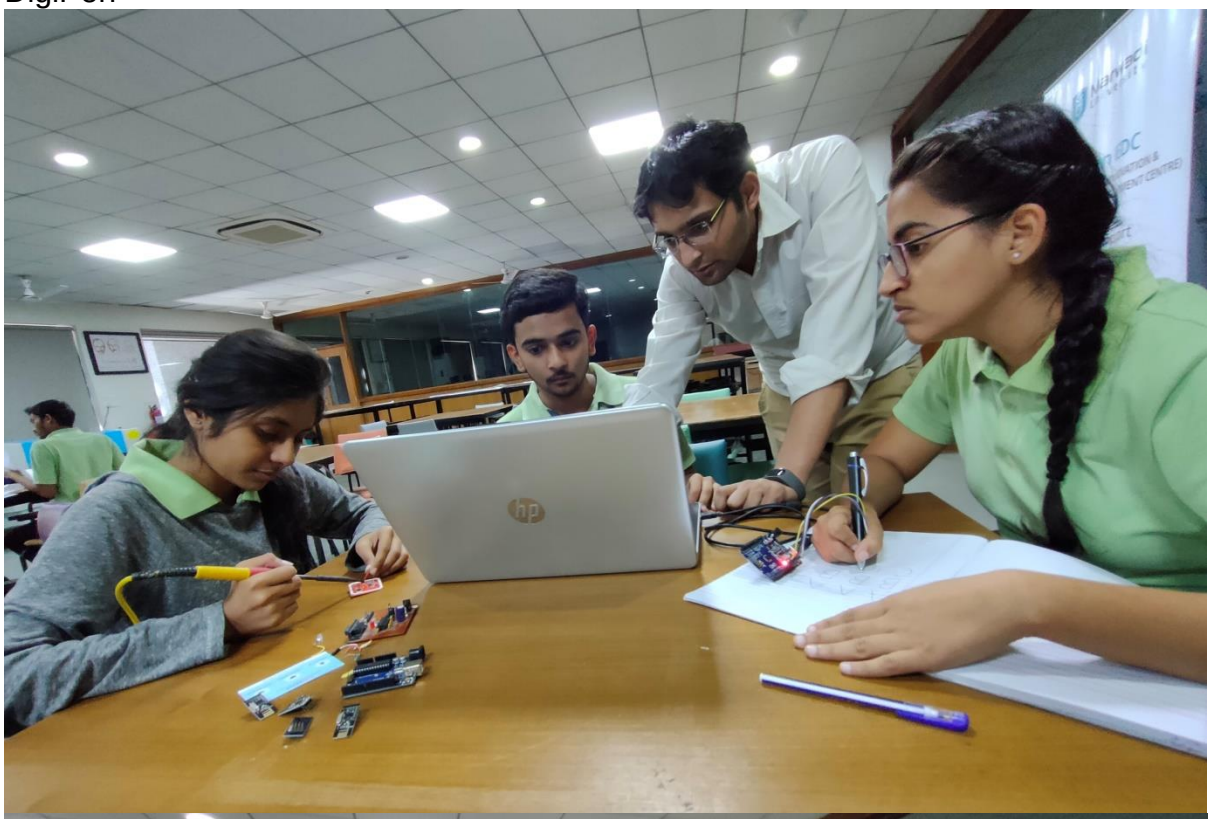
Apt Intellect (Smart Classes)



Design and Development of Plug-in Hybrid Motorbike

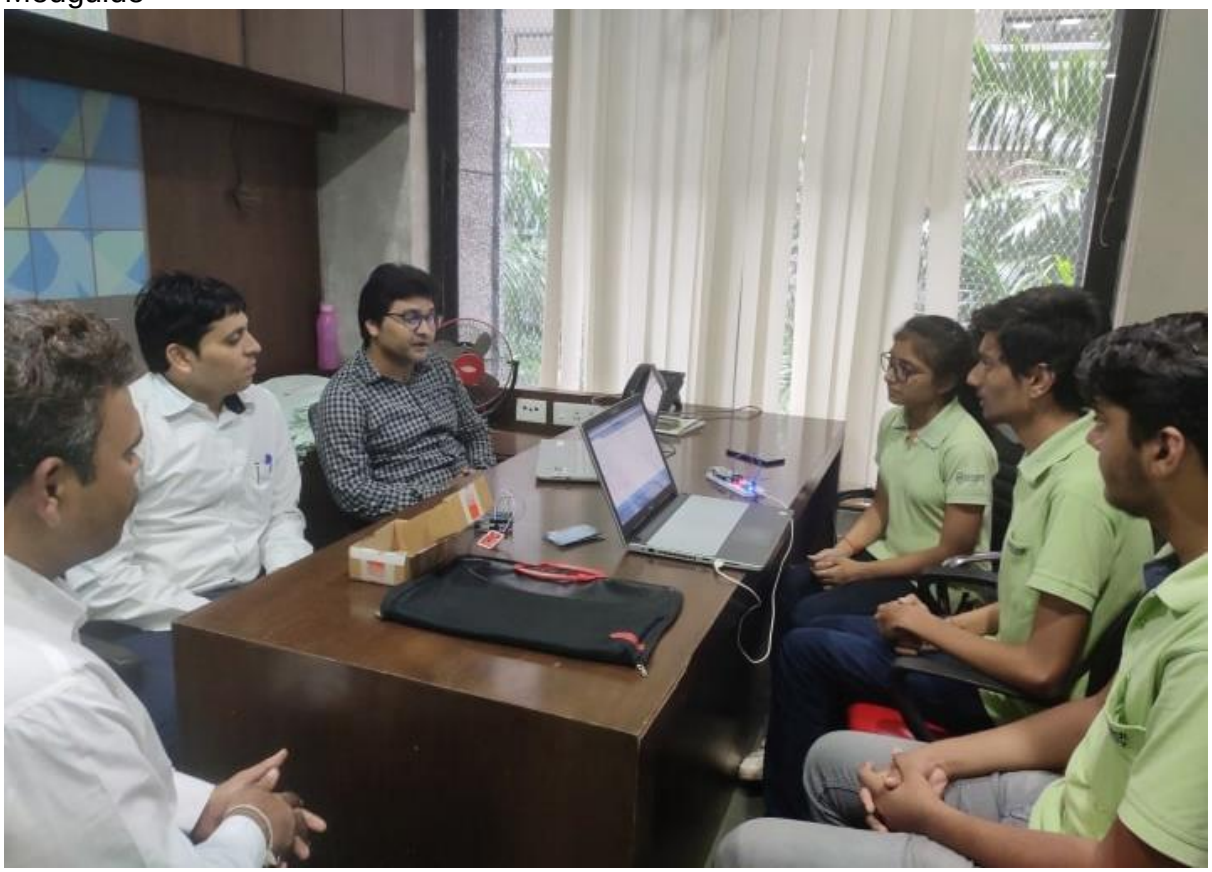


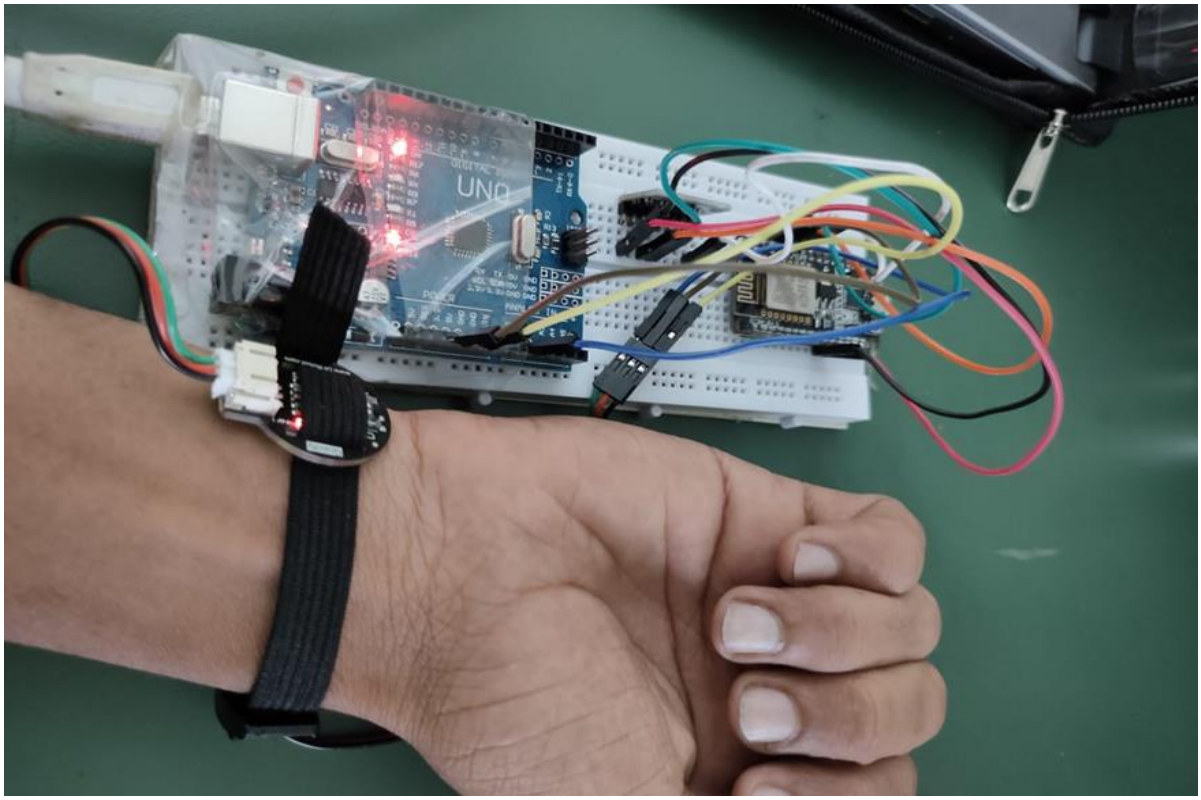
DigiPen



Kinnect-O-Therapy

Medguide





Solar Duel axis chronological tracking

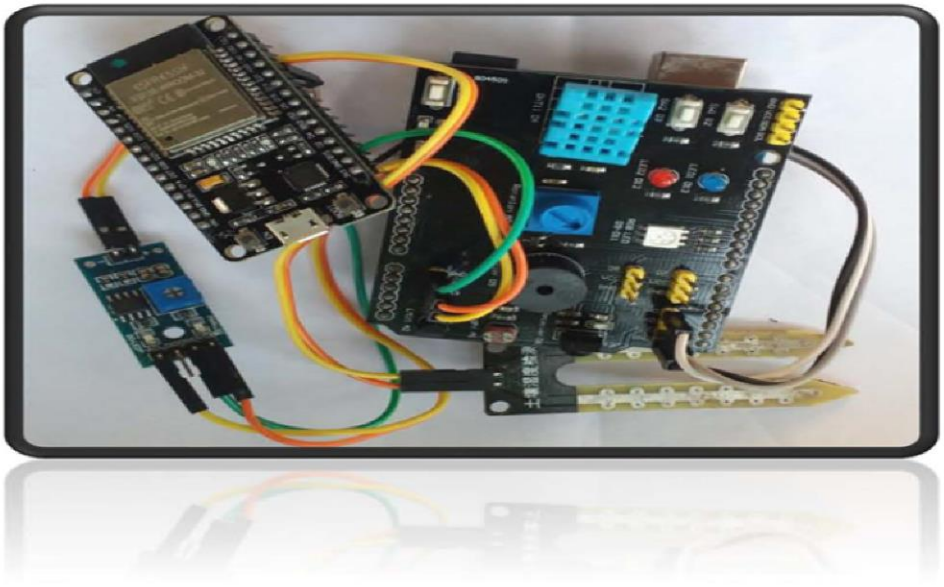
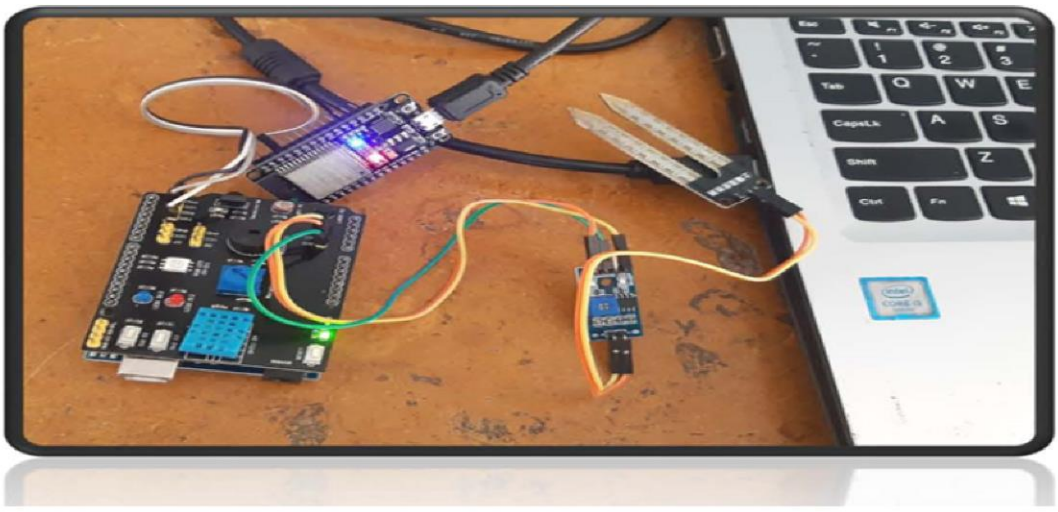


Fig 2.0- Prototype



Smart Home Automation

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Student Project 1: Solar Duel axis chronological tracking

Students Team Details:

Amit Bharatkumar Chotai	amit.chotai100626@marwadiuniversity.ac.in	9429263967
Parth Jitendrabhai Gohel	parth.gohel1100627@marwadiuniversity.ac.in	7874910006
Nirav Bharatbhai Sanavda	nirav.sanavda100833@marwadiuniversity.ac.in	8469204395
Stavan Nitinbhai Mehta	stavan.mehta100678@marwadiuniversity.ac.in	9913368991

Brief Description about student Start up:

Solar energy resources are the biggest renewable energy resources having potential to fulfil any demand related to energy requirement in the future. Solar Energy Systems have been there for years. They are less efficient due to their high heat losses and due to its collector shape. Parabolic collector shape is known as the most efficient shape as it concentrates the solar radiation on absorber tube. Required collection surface area is less and it reduces the cost. To get the maximum radiation intensity, Collector must track the sun's position throughout the day. Dual axis tracking system for parabolic trough collector is available in the market which tracks sun's position in every 15 minutes. Tracking efficiency can be increase by reducing this time to every 1 minute and that too in low cost with the help of Arduino programming. Our target is to achieve 250 degrees Celsius on Thermic oil. We can achieve up to 400 degrees by using dual axis tracking theoretically. After achieving targeted temperature it will be ready to be applicable in industries. Parabolic trough collector can be used in any industry which is dependent on conventional energy. Parabolic trough collector requires only an instalment investment and it does not require running cost. Thus, parabolic trough collector can become a good alternative of conventional sources.

Start-ups entrepreneurial journey from ideation to prototype:

Base of the whole structure can be made by simple fabrication. Collector can be made of any reflective material. So we first used aluminium sheet as a collector. In which we successfully executed single axis tracking. Then aluminium sheet was replaced by plates of mirror as it has higher reflectivity. There are two angles required for dual axis tracking, Altitude and Azimuth. For continues tracking in every one minute, Mathematical formulas are required to calculate the angles. There are lots of other solar angle related terms which are considered during the calculation. For tracking, the

whole system should be able to move accordingly. Linear actuator and turning take are used for the dual axis tracking of the system. Now the data of the angles need to be calibrated with actuator and turning table. For that we have programmed Arduino and even developed a mobile application.

Experimental setup

Contribution of NewGen IEDC

NewGen IEDC aims to inculcate the spirit of innovation and entrepreneurship amongst the young students. For developing and experimental analysis, the project requires expenses. NewGen gives financial support to us to achieve our goal. It lets us to apply new ideas and innovation to our project. The total sanctioned amount for our project is Rs. 2,50,000.

Future Plan

Work on single axis has been completed. In the next stage, design and fabrication for second axis would be complete. Furthermore, Efficiency of the parabolic trough collector can be increased in many ways. If absorber tube is covered with evacuated tube then convective heat loss from absorber tube to at atmosphere can be prevented.

Student Project 2:

Students Team Details:

Yatin Gadhiya	yatinkumar.gadhiya@marwadieducation.edu.in	9638086466
Ronakpari Goswami	ronakpari.goswami14521@marwadieducation.edu.in	9723543545
Raj Hapaliya	rajhapaliya@gmail.com	9913363327

Brief description about the student start-up

Main aim of this project is design and develop hybrid electric vehicle that can runs on both petrol as well as electricity. Business idea is to develop electric kit that can be fit to any electrical bike as an additional energy source like CNG kit's available in market. Main challenge is to develop electric throttle that governs both fuel injection to IC engine as well as battery current to the electric motor for optimum performance.

Start up entrepreneurial journey from ideation to prototype or commercialization

Issues like global warming and air pollution united whole world to take care of our environment. Government of many countries planned to ban production and future sale of IC engine-based vehicles to reduce CO2 emission. India is one of them decided to ban ICE from year 2030. Thus, including India whole world is promoting electrical propulsion system in all field. Electric vehicle including two-wheeler, three-wheeler, Cars & busses are major attractions. While major countries are concentrating on electric cars and buses, scenario of India and like countries is different. In India two-wheeler covers approximate 75% of automobile industries. Thus, this project idea is about electric two-wheeler. Numbers of start-up have been registered in in Electric Two-Wheeler segment in last few years. Improving density and reduction in li-ion battery cost slowly and steadily boosting up electrical vehicle market. However, battery range and lack of public charging facility creates inferiority to the customers.

Proposed idea is to develop plug-in hybrid vehicle with flexible electric kit. It will allow the user to experience real power of electric vehicle without feeling inferior for battery range as backed by IC engine. In addition to reduction in CO2 emission, people will experience zero vibration riding experience at any speed which may amaze and gave more reasons to go foe electric vehicle. Likewise, proposed project may boost adaptation of electrical vehicles and support government mission NEMMP-2020 (National Electric Mobility Mission).

Fabricate and paint testing structure

Hub motor testing structure

Rear wheel chain gear modification

Modification of rear wheel

BLDC hub motor with gear and wheel

Contribution of NewGen IEDC in the same:
NewGen IEDC has been instrumental in moral and financial support to the development of the prototype.

Future plan:

a. Testing and validation of control algorithm

b. Rear wheel (Rim) fitting and match tyre and suspension size

c. Fitting of disk brake to old bike without provision of disk brake may required extra attention

d. Arranging gear system in petrol and disconnecting on electric mode is also challenge

NewGen IEDC
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of the College/Institution hosting NewGen IEDC	**Jawaharlal Nehru National College of Engineering**		
Year of starting NewGen IEDC	**2018**		
Name of the Head/Principal of the Institution/College	**Dr. H.R Mahadevaswamy**		
Name of NewGen IEDC Coordinator	**Dr. H.R Mahadevaswamy**		
Contact Details of NewGen IEDC Coordinator • Mobile Number • E-Mail ID	**7899478990** **principal@jnnce.ac.in**		
Financial Details	Sanction Order No./ Date		Amount Sanctioned
Previous Sanction Order Details	1.	**EDII/DST–NewGen IEDC/18-19/03 Dated 13.11.2018**	**Rs. 60,00,000/-**

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
01	Innovation Day Celebration on 15/10/2019	Students known about the importance of innovation in development of nation and about the presentation of Dr. A P J Abdul Kalam to India.
02	Outreach Programme & Ideation and Lateral Thinking Workshop from 13/11/2019 to 14/11/2019	Students motivated about Self-awareness, goal setting, emotional & Time management, also learned about creative problem solving technique, required qualities for successful entrepreneurs.
03	DREAMZ- Student Interaction Programme on 30/11/2019	Students and faculties interact about innovation, dream in our life, successful stories from successful persons.
04	Awareness Program on Sustainability Enterprise Award & Jagriti Yatra on 30/03/2019	Students got information about Jagruthi Yatra journey, which provides opportunity to spend more time with successful entrepreneurs & also explained about the facilities provided during journey.
05	Two weeks Entrepreneurship Awareness Program From 16/12/2019 to 28/12/2019	Here participants known about initiatives of state and central government for the development entrepreneurship, loan schemes for start up's, Entrepreneurship Development schemes in private sectors, Industry Visit.

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
01	Boot Camp on 29/08/2019	Participants known about how to work about their idea, how to write ideation canvas, product canvas , business canvas

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
01	Karnataka Tech Entrepreneurship Summit-2020	Platform for Industry - Academia interaction, this programme has immense learning environment, invaluable motivated the upcoming innovators to take their ideas into a reality. With this event, turbulent flow of knowledge and waves to build strong start-up ecosystem and entrepreneurship spirit in Tier-2 cities and may generate employment and accelerate the economic growth of Tier-2 cities. Successful entrepreneurs, industrialist,

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

- As this was the first batch, we were able to conduct these many activities or events.
- From next year we will plan and conduct more activities and events To inculcate the spirit of innovation and entrepreneurship amongst S&T students, identify, develop & commercialize students' ideas

4. Student Projects (Please provide the following details for each student project)

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
1	**Biometric Based Bus Ticket** **Team Members:** Adithya K Harshad G Naik Kiran L Chandan hedge **Guide:** **Dr. Manjunath P,** Prof. & Head, Dept. of ECE **Project Description:** The ticket printing machine with network enabled (internet) which includes the data logger in it along with the Unique Identification using fingerprint (biometric) sensors. The ticket collector has to get the biometric details of the passenger before issuing the ticket.	In beginning team members have some survey data and not started the project to build.	*Able to take fingerprint and analyze it *Able to build a web application using php and mysql *Team members built the hardware system which take finger print and register ticket, send sms to passenger and show that data in webpage	Prepared the prototype which explains the project easy. Now the Team members are trying to convert this project prototype to product.
2	**Bionix** **Team Members:** Mohammed Mehran Girish Kumar S R Mohammed Abid **Guide:** **Mr. Mallesh Kumar K S** Project Manager, CIE **Kanchana H J** Asst. Prof, Civil Dept **Project Description:** Bionix is a waste management startup which converts wet waste into useful products in the form of fuel, electricity.	Team members are involved in research and development stage , studies and calibrations	*Grinding of the wet waste into wet paste and then is added into the pit. *Addition of anaerobic bacteria and bionix catalyzer technology for fast production of bio gas. *The produced gas is to be stored into cylinders or is converted into electricity through gas generators.	Prepared Decentralized solid waste management prototype.

3	**Automation Unit for Industrial Appliances** **Team Members:** Ullas S Boomika K V Harshita AShetty **Guide:** **Mr. Abhijith.N,** Asst. Prof., Dept. of ECE **Project Description:** Automation unit should be developed by implementing concepts of Real time and EEPROM with microcontroller and industrial relays. The unit is very significant in the field of chemical industries, agricultural industries and automobile industries to switch between the operations effectively and efficiently	Team members started to learning and make survey of the current trends in Industries. Purchased Components and started building the Prototype	*Built a prototype with microcontrollers and relays. Then planned to build it on large scale for Industries.	Currently building large scale of Prototype for Industries and preparing to convert into Product level.
4	**Study and Implementation of Interline Custom Power Devices (ICPD)** **Team Members:** Nagaraj Achari Praveen M **Guide:** **Dr. Thejaswi A H,** Prof.,Dept of EEE **Mr. Veeresha K B** Asst.Prof, Dept of EEE **Project Description:** ICPD Prototype model is made to demonstrate performance of ICPD to mitigate current imperfections in first bus which is connected with Non-linear load and voltage imperfections in the other bus which is connected with sensitive load.	Team members completed the literature survey, Simulation work and started to make procurement of hardware components.	*Making setup of Linear and Non Linear load setup with electronic components procured.	Interfacing of DSP with other components completed. Hardware testing is in progress.

5	**IIOT Based Process Automation** **Team Members:** Shreyas B Sowjanya Jain Vasuki H A **Guide:** **Dr. Manjunath P,** Prof. & Head, Dept. of ECE **Mr. Pradeepa S C** Asst.Prof, Dept of ECE **Project Description:** Automating Industrial Process through IIOT having study about PLC based CNC machines in order to get and track the inputs and outputs from the machine.	Team members started to learning and make survey of the current procedure in Industries to track the input and outputs from the machine. Investigated all the theoretical data on the current idea . Studied on microcontrollers and sensors to be used in this product. Purchased Components and started to building the Prototype	*Built a prototype with microcontrollers, sensors, relays. Then planned to build it on large scale for Industries.	Currently building large scale of Prototype for Industries and preparing to convert into Product level.
6	**Design & Fabrication of Prototype bio-reactor Plant for Bio-Ethanol Production from Samanea Samman Fruits (Rain Tree fruits)** **Team Members:** Rahul S R Sharan J **Guide:** **Mr.Chethan S G** Asst. Prof, Dept of Chemistry **Project Description:** The production of bioethanol using various locally available resources. The bioethanol is obtained by fermentation of sugar source with the use of suitable microorganism.	Team members made a design and plan about bioreactor plant for bioethanol production from Samanea	*Design of Bioreactor. *Procured material for fabrication . *Regularly monitored fabrication works. *Most of the fabrication work completed . *Procured ethanol testing lab equipment's.	Most of fabrication work completed. Fabrication to complete project work by using heating coil and pressure gauge.

7	**Self Checkout App** **Team Members:** Kowshik K J Kousthubha R Udupa Nikhil G Dubashi Amarthya D G **Guide:** **Dr. S.V Sathyanarayan** Prof, Dept of E&C **Project Description:** The mobile self-checkout application is operated via a virtual shopping cart. This virtual shopping cart is linked to the customer's account which consists of the customer's personal and payment card information created on the mobile self- checkout application. The payment card can be either credit or debit cards as well as other payment merchants for a seamless payment system.	Team members made a survey of current technology or situation in Super Markets	*Design web application and Mobile app. *Testing of app and trying to host in Server.	Designing of App is over. Approaching various supermarkets like "more" in order to implement this project.

8	**Smart Weighing Bed** **Team Members:** Pavan Ganesh Kulkarni Sujan G Bhargav Shrikanth Vaidya S M Vinay Kumar Koulur **Guide:** **Dr. Manjunath P** HOD & Prof, Dept of E&C **Project Description:** Smart Weighing bed includes calculating the weight of the patients and to get the accurate data of the patient, we will be using sensor-based technique to find the weight. We will be using load sensors, which gives the accurate weight of the objects. We will place these load sensors at different corners and places of the bed.	Team members made design virtually of smart weighing bed and discussed with concern hospitals and health care experts.	Team members made Circuit connection and practical weighing analysis is done by attaching it to bed.	Prototype completed and developing of final product is being preparing.

9	**Pervious Concrete for Paver Blocks & Slabs** **Team Members:** Deepak Ashok Doddagoni Basavalinga Shashank Ravikiran **Guide:** **Neeraj S N** Asst Prof, Dept of Civil **Project Description:** It is a special type of concrete with high porosity used for concrete flatwork applications that allows water from precipitation and other sources to pass directly through, thereby reducing the runoff and allowing groundwater recharge.	Team members made mix design and planned for experimental casting.	Optimized casting of pervious concrete by minimizing the materials.	Started Casting .

10	**Data Management of Milk Dairy using Cloud Applications** **Team Members** Varun Kumar M V Lokesh A S Ramya M **Guide** **Anil Kumar J** Asst.Prof, Dept of ECE **Project Description:** Automation unit for village milk dairies using Microprocessor and other devices like milk analyzer and weighing machine. The system is very useful in village dairies with automatic billing and testing unit and all the data is stored in website that data is accessed by dairy farmers through android application.	Team members made learning and survey of the current technology in dairies. Design and implementation of project model and website is under progress	*Built a project model using microprocessor and required devices. *Pplanned to install the model in village milk dairies.	Project final model design and implementation is completed and submitted to IEDC. Design and implementation of website is completed. Android application design work is under progress.

5. Two Best Student Project:

Project Title: Bionix

Students Team Members Details

Name	E-Mail ID	Contact Number
Mohammed Mehran	mehranmajeed06@gmail.com	9538153644
Girish Kumar S R	girishsmg1998@gmail.com	7406100748
Mohammed Abid	salmanmohammed182@gmail.com	9880863417

Brief description about the student start-up:

- Bionix is a waste management startup which mainly focuses on production & services of decentralized bioreactors for solid waste treatment.
- Bionix reactor is an integrated module of dis integrator, ultrasonic chamber, bio digester, accelerator & initiators, gas detector, thermal electricity plant or water heater (depending on the requirement)
- Bionix reactors come in various designs depending on the environmental conditions of the place, quantity of waste produced, type of waste and further requirement.

Startups entrepreneurial journey from ideation to prototype :

- The main reason for the initiation of the idea behind the concept was the viable use of Gobar gas plants in the villages. Gobar gas was more sustainable and was a renewable source of energy.
- Cities produce tons of wet waste on a daily basis, treated by land filling or incineration which released a lot of greenhouse methane gas in to the atmosphere.
- Methane acts as a good alternative to the lpg used in houses, thus acting as a fuel source.
- with this being the triggering idea , team members started to conducting research in the particular field and with the process we developed the prototype of the reactor.
- Success of the results of the reactor gave us the motivation to start a consulting team in designing of a sustainable energy Bio-gas plant for bigger infrastructural areas such as college campus and apartments.

Contribution of NewGen IEDC :

- NewGen IEDC provided required seed capital
- Through NewGen IEDC team members formed a great team when pitching of ideas was announced.
- It acts as an institutional mechanism for providing information on all aspects of start-up.

- NewGen IEDC helped in catalyzing and promoting development of this idea and providing us opportunity to work on it

Future Plan :

- Plans for doing further research in product development
- Plans for commercializing our skills
- Organizing awareness about sustainable development registering a consulting and designing firm to render our services to commercial industry

Project Title: **Data Management of Milk Dairy using Cloud Applications**

Team Members Details

Name	E-Mail ID	Contact Number
Varun Kumar M V	varunkumarmv5@gmail.com	9590922306
Lokesh A S	lokeshs1432@gmail.com	9008957673
Ramya M	ramya.smg17@gmail.com	9148264645

Brief description about the student start-up:

- Data Management of Milk Dairy using Cloud Applications is an automation unit for village milk dairies using Microprocessor and other devices like milk analyzer and weighing machine.
- The system is very useful in village dairies with automatic billing and testing unit and all the data is stored in website that data is accessed by dairy farmers through android application.
- The project makes ensure fair enumerative prices to farmers by the elimination of middlemen ensuring good quality of milk.
- The project aims at helping the dairy farmers with timely messages and educating about their daily transactions and automatic billing based on fat content in cloud platform.

Startups entrepreneurial journey from ideation to prototype:

- The main reason for the initiation of the idea behind the concept is to helping the dairy farmers by the elimination of middlemen ensuring good quality of milk.
- By using Internet of Things and Embedded System Develop a automated corruption free milk collection system in the diary to measure the milk parameter by using various sensors.
- This device is used in small dairies for the quality analysis of milk. It provides quality assurance for farmers and consumers with timely messages and educating about their daily transactions and automatic billing based on fat content in cloud platform.

Contribution of NewGen IEDC :

- NewGen IEDC provided required seed capital
- Through NewGen IEDC team members formed a great team when pitching of ideas was announced.
- It acts as an institutional mechanism for providing information on all aspects of start-up.
- NewGen IEDC helped in catalyzing and promoting development of this idea and providing us opportunity to work on it.

NewGen IEDC

Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC : Datta Meghe Institute of Medical Sciences

Name of the Chief Coordinator: Dr Abhay Gaidhane, Director, SEPH, DMIMS(DU)

Program Director: Dr S Z Quazi, Director, R&D, DMIMS(DU)

Program Manager: Dr Punit Fulzele

Period under Review: 2019-2020

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements Number of beneficiaries
1.	Sets of Workshop 1. Introduction & Basics of Entrepreneurship 2. Stages of technology development and commercialization 3. Cognitive Skills, Design and Critical thinking Funding schemes /opportunities for start ups	Four workshops held Total 72 beneficiaries
2.	Workshop on rapid prototyping	Two workshops held total 25 beneficiaries
3.	Field trips to Incubation center	NIDHI TBI, Gandhinagar, MSME TBI, Raisoni
4.	Workshop on IPR for Students and Faculty Members. Technology related IP issues & Legal services	Five workshops held total 617 beneficiaries
5.	Set of workshops: 'Start up: Launching and Sustaining' programme 1. Pre-Incubation Planning 2. Registration of Start-up: 3. Web-portal for Mentoring of Start-ups: 4. Seed Fund for Student Start-up 5. Elevator-Pitch	Five workshops held total 52 beneficiaries
6.	Workshop on IPR, Innovation for Students and Faculty Members • Health science colleges – Six events • Engineering colleges – Two events	Eight events and 704 participants/ delegates
7.	Hands on workshop on Additive manufacturing in MedTech	One event and 32 beneficiaries
8.	Seminar for Social entrepreneurship and Innovation	One event and 79 beneficiaries
9.	Dissemination event for NEWGEN IEDC and entrepreneurship • Health science colleges – Five events • Engineering colleges – Two events	Seven events nearly 2000 participants/ delegates

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1.	Idea Competition	78 ideas received and screened 20 ideas were shortlisted
2.	Design/ Proof of Concept development Competition	10 ideas shortlisted
3.	Hackathon/ Innovation camp	One innovation camp. 18 beneficiaries
4.	Exhibition / Presentation of Proof of Concept and Innovative Ideas	Two exhibitions
5.	Workshop on Business plan Development - Scale up and commercialization	One workshop held 30 innovators participated
6.	Boot Camps for Entrepreneurship Development.	One boot camp 17 beneficiaries
7.	Business Plan Competitions	One Competitions 17 beneficiaries
8.	**Summer Internship**	One six month internship - 18 participants

[C] To enhance Industry-Academia interaction

Sr. No	Activities	Outcome/Achievements
1.	Industry linkage Formation of Advisory Board	Memorandum of Understanding for industrial linkage Signed With • GNG - GENEXT GENOMICS PVT LTD, Nagpur • Atmen Technovention Private Limited Pune • Ceinsys Tech Ltd, Nagpur • iHealTH-AID Consortium (AIIMS Jodhpur- IIPH Gandhinagar-DMIMS) • Indian Institute of Technology Kharagpur • Indian Institute of Science, Bangalore
2.	Guest lectures from industry partners	• Prof. Luc de Witte Chair in Health Services Research Centre for Assistive Technology and Connected Healthcare School of Health and Research, Sheffield University • Nitin Gujarathi Principal Consultant Renukiyam eSols • Parvez Kudrolli Principal Associate at Khurana & Khurana, Advocates and IP Attorneys, Mumbai
3.	• Interactive sessions with entrepreneurs/ bankers/ investors/ potential customers. • Interaction with Angels investors and Venture Capitalists	• Satyanarayana L, Business development manager, Digi Heath Platforms Pvt Ltd, Bangalore • Nitin Gujarathi, Principal Consultant, Renukiyam eSols
4.	Technical Expos / Exhibitions/ Start-up Fest	-"Innovation Gallery"- Joint with BETiC and YCCE Kutuhal Nagpur, (medical science awareness program) BETiC IITB- MEDHA, MEDIC, Medical Device expo.

		WIN Conference, IIT Gandhinagar. ACIES 2020 Innovations In Comprehensive Health Care at IIPH, Gandhinagar.
5.	Internship at industry	Internship at BETiC innovation cell,
6.	Entrepreneur's club/ E-Cell	e-cell in association with DMIMS IIC
7.	Entrepreneurship talk	One event 285 participants
8.	India First Leadership Talk by Shri. Anand Mahindra	One event 415 participants
9.	Episode 02 of India First Leadership Talk Series with Dr. Anand Deshpande	One event 606 participants

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

NIL. No significant deviation from the proposed action plan.

3. Other important highlights (new initiatives), if any:

- CONFERENCE-
  - "Ethical issues in biomedical innovation" at The third National Bioethics, Medical and Research Conference, 'ETHOS-2019'
  - dedicated tract on "innovation in public health and Heath technology assessment" in collaboration with HTA, Center at IIPHG, approved by Govt. of Gujrat during the MHIAPSMIPHACON2020
- BETiC Innovation cell
- iHealTH-AID Consortium (AIIMS Jodhpur- IIPH Gandhinagar- DMIMS)

4. Student Projects (Please provide the following details for each student project)

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
1	Big data analytics in public health. Student Name: **Shital Telrandhe** Student Mentor name: **Dr. Abhay M Gaidhane**	POC	Prototype development	If process of development of the Big Date PoC for Public health with specific focus on Non communicable disease 2. PoC will be built on the sample data. The data is accessed from various sources, such as National Health and Demographic Surveys, National Sample Survey, World Bank Data, Service Statistics of Government of India, data from social media Next steps 3. To develop interactive dashboards for data visualization 4. To reach out to big data distribution vendor fort partnership 5. To formalize the governance structure 6. Working on the scalability and sustainability – identifying the investors and revenue streams, registering as a start-up enterprise

2	Solar powered, temperature controlled cold box insulin carrier Student Name: **Ms. Sneha Sudarnia** Student Mentor name: **Ms. Sneha Sudarnia**	Ideation	POC development	POC developed. MVP development and testing in process
3	Smart Neonatal Incubator Student Name: **Mr. Krishna Waghmare** Student Mentor name: **Priti Vilasrao Bhagat**	POC	Prototype development	POC developed. MVP development and testing in process
4	Portable antibiotic bead manufacturing machine Student Name: **Sagar Kayarkar** Student Mentor name: **Dr. Abhay M Gaidhane**	Ideation	POC development	POC developed. MVP development and testing in process
5	Thermal Imaging Device for Early detection of Post-operative Infection. Student Name: **Mr. Shubham Jagtap** Student Mentor name: **Dr S Z Quazi**	Ideatio	POC development	POC developed. MVP development and testing in process
6	Corn De-seeding with Cattle food Making Machine. Student Name: **Mr Asif Solanki** Student Mentor name: **Mr Shirish N Gandhare**	POC	Prototype development	MVP development and testing done. Ready for launch
7	Histoinsight' Student Name: **Akhilesh Agrawal** Student Mentor name: **Dr. Alka Hande**	Ideation	POC development	POC developed
8	Device for detection of Hemolysis in blood samples. Student Name:**Mr. Aniket shirsode**	Ideation	POC development	POC developed. MVP development and testing in process

	Mentor name: Dr Vivek Gupta			
9	Novel tooth vitality monitor. Student Name: **Chaitanaya hedaoo** Student Mentor name: Dr Punit Fulzele	Ideation	POC development	POC developed. MVP development and testing in process
10	Cervical dilator Student Name: Kajal Roy Mentor name: Dr Arpita Jaiswal	POC	Prototype development	POC developed. MVP testing in process

Submit three/four high resolution (at least 300 dpi) pics in jpeg format showing the prototype/product along with the students and their mentor

5. Provide a minimum two- page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

Student team details (with contact information)
Brief description about the student start-up
Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high-resolution photographs
Contribution of NewGen IEDC in the same
Future plan

Projects 1: <u>Title - Corn De-seeding with Cattle food making machine</u>

Name of the Start-up – Gayatri Agro products, Pavnar, Dist- Wardha, Maharashtra in Association with Yatharth Associate, Hinganghat, Dist- Wardha.

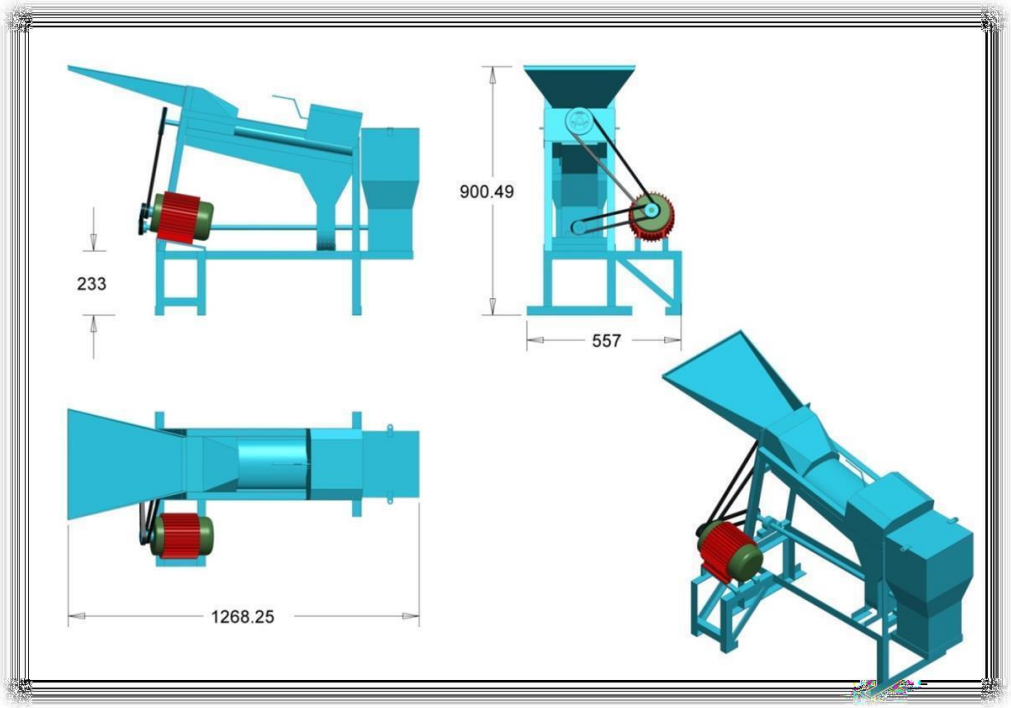
Student details: Mr Asif Solanki.
Mentor detail:
Prof Shirish Nanaji Gandhare (Mentor)
Mobile No- +91-9824367224
Email- gandhare.shirish@gmail.com

1. **EXECUTIVE SUMMARY**

Description of Business: In India, multigrain seed crop are the most important crops and it has a source of a large number of industrial products besides its use as human food and animal feed. Corns, Jowar, Bajra are the world's largest resourceful seed crop. The techniques used to separate seed grains in old days are removing the leaf by hand or by chopping the seed by wooden rod. In this process, the grains are damaged and the rate of production was less. Additional feature if the product is to use the waste of the deseeded material can be used as cattle food. Agriculture application of the product is to provide gradient food to the cattle's can increase the quality of milk and creates good resource for farmers. Another major problem these days is that the cost of the machines that are available in the market is high and is not affordable by the farmers. In order to address the above problems, the project design and fabrication of low cost grain de-seeding machine for de-seeding of multi grain crops without any damages has been developed. Fabrication of machines & Sales through farmers/ rural youths is the key feature of the product. Generating employment for farmers as well as minimizing their efforts, time & money is the objective.

2. **The Market**: Indian Market from North Punjab to central India and nearby Vidarbha Region, rest of Maharashtra, mainly farmers are the extent area to cover through the channel of marketing.

3. **Product And Its Application:**



4. **Desired Qualification For Promoter:**

No Specific Educational qualification is required to promote the start-up. Incubate is Diploma in Mechanical Engineer & for fabrication purpose will hire an ITI certified fabricator.

5. **Growth Potential:**

The various analytics indicates that new product launches and product development are the most adopted strategies by major players in the industry. The present report carries out an in-depth analysis of the grain seed market, providing information on utilization of seeds. The grain like jowar, bajra and Maize or corn is the third-largest planted crop, after wheat and rice. The crop is mostly used and traded as a feed crop, but it is also an important food crop. Complimentary crops are versatile cereal crop grown in tropical, subtropical, and temperate regions of the world.

Complimentary crops are widely cultivated throughout the India & world; major producing states with high demand for seeds are the Punjab, Haryana, Uttar Pradesh, Maharashtra, Madhya Pradesh & rest of India. Now days to feed the cattle complementary crops are supplement for milk growth which accounting for nearly 65% of the Indian market.

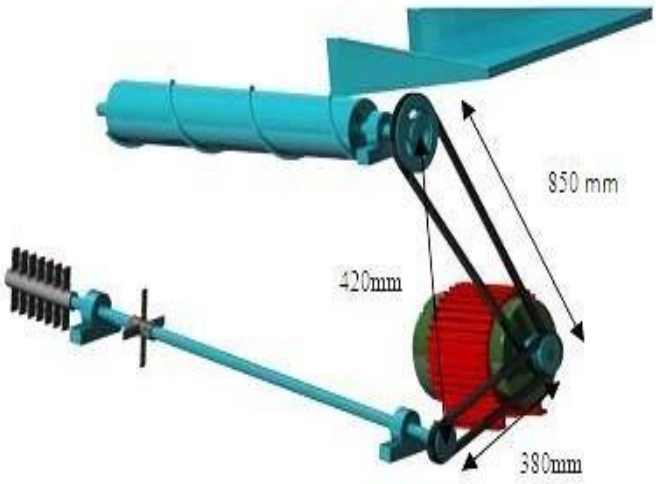
6. **Market Potential and Marketing Issues, If Any:**

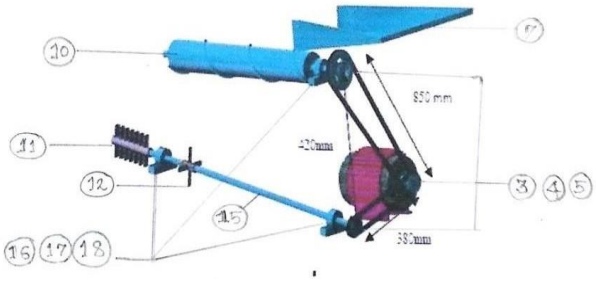
De-seeding Mechanisms are available in market but multifunctional machines with minimum cost & high efficiency is desirable. To capture the market these potential areas are sustainable. Project proposing the fabrication workshop, which can survive the business with complimentary work in the area of manufacturing of other machines, related to agricultural usability.

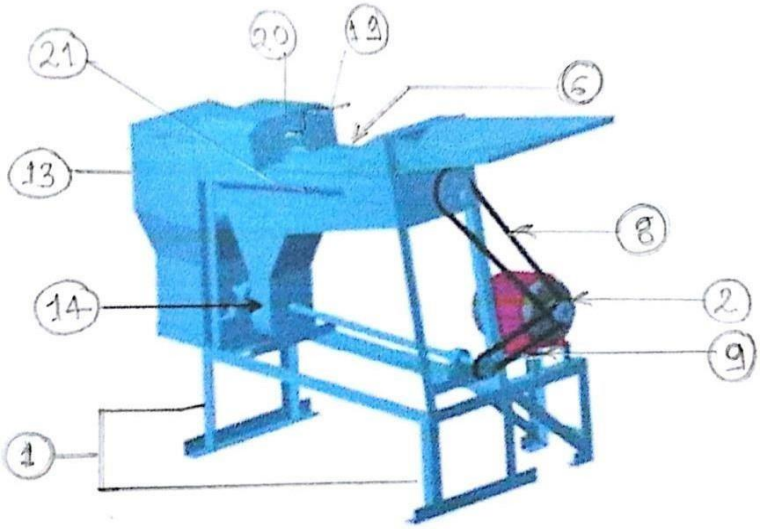
7. **Start-ups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs:**

The process of manufacture of De-seeding mechanism is assembly of different mechanical & Electrical components. To begin with, the frame structure and de-seeded mechanism is the crucial part of an assembly.

Photograph of a Prototype


850 mm
420mm
380mm





Photograph of fabricated Parts of Corn de-seeding Machine

Parts of machine

1. Frame/Stand
2. Motor
3. Pulley 1
4. Pulley 2
5. Pulley 3
6. Hopper
7. Tray
8. V belt 1
9. V belt 2
10. Cylindrical tool (taper shape)
11. Cob cutter (with blades)
12. Corn cutter (with blades)
13. Cob cutting chamber
14. Corn cutting chamber
15. Power transmission rod (shaft)
16. Ball bearing1
17. Ball bearing 2
18. Ball bearing 3
19. Adjustment handle as per corn size
20. Height adjustment hole
21. Hopper cover

9. Contribution of NewGen IEDC:

New Gen IEDC provided us the machineries and equipment to establish the firm. . Financial support will be required for further development of an Enterprise.

10. Future Plan & Profitability Calculations :

1. Production Capacity and Build up

Production capacity at 100% would be Nos. of de-seeding Machines produced as per the order taken considering working of about 15 days per product or as per the batch production required. It is assumed that the plant would be operated at 60% and 75% respectively during first 2 years.

2. Sales Revenue at 100%:

Product	Qty.	Production cost (Rs)		Selling Price (Rs)	Sales (Rs. In lakhs)	Remark
De-seeder and cattle food making Machine	1 No.	Raw Material	20,000	50,000	0.5	Order Based Production
		Labor	3000			
		Power	1000			
		Miscellaneous	6000			
			40,000	**Total**	**0.5**	
***Assume to be 4 machines per month production = 2 Lakh per month.**						
48 Machines to be produced per year with the sales, 2,40,0000 per year sales						

3. Profitability Projections:

Particulars	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Capacity utilization (%)	**20%**	**40%**	**60%**	**80%**	**100%**
Sales	240000	288500	345600	414720	497464
Expenses	192000	230400	276480	331776	398131.2
Gross profit	48000	57600	69120	82944	99532.8
Profit to Sales (%)	20.00	20.00	20.00	20.00	20.00

Note: The profitability basis and projections are indicative and on approximate basis only.

16. Breakeven Analyses:

FC X 100: 5.30 X 100 =
530 FC + Profit: 5.30
+5.6 = 10.9 BEP = 48.62 %

17. Backward and Forward Integration:

As forward integration, Entrepreneur may think of going for the production of newer concept & fabricate various types of agricultural equipments to reform the firm & increase the sales.

18. Channel of Marketing

- Through the organizations who is selling agricultural machineries.
- Bakeries, farmers and other new resources

Project: 2 **Title -** Neonatal Incubator: Smart Neonatal Incubator

Student details: **Mr. Krishna Waghmare**

Mentor detail: **Priti Vilasrao Bhagat**

- Brief description about the student start-up: The preliminary study for proposed devices was carried out. The prototype for incubator with controlled infant body temperature, humidity, inside temperature was fabricated. The challenge of compact design and making it portable accepted. The new design is very build the incubator small and compact. The basic algorithm for non-invasive detection of bilirubin is constructed but yet not tested on patient. The ethical committee approval for these tests was obtained.
- Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs: The idea for incubator is to develop a protable device which can be isntlle dat mother side without the help of medical person for regular monitering and control of various parameters. Accoeding to following specification was included in the prototype. eloping a degradable drug loaded beads used in surgery. The various bio:

a) **Features of the device/instrument proposed to be taken up for development** India has the highest infant mortality rate for pre-term babies in the world. Many births occur at home, or in rural health centers that don't have facilities to care for premature infants. Common problems associated with prematurity include jaundice, respiratory complications, heat loss, and dehydration—some of which can be prevented or lessened using proper incubation. The proposed device can be used for treatment of hyperbilirubinemia by phototherapy and simultaneously can be used to monitor and measure the level of bilirubin by IoT based system. It helps in appropriate treatment of neonatal jaundice without much intervention of medical fraternity. It can be operated by non-medico person and can provide the facility of take home treatment (proposed on minimum rental charges) where the hospital treatment charges are not affordable. It can be installed at home near mother's bed (bed-side) and can provide effective treatment in lower middle income countries.

b) **Specifications.:** The proposed system consists of power supply both AC standard & DC 05V, solar power charging unit, Camera, interfacing unit, microcontroller, LED for phototherapy, temperature measurement sensors, humidifier, Heater to maintain womb like temperature i.e. 37^0C, feedback system, data transmission unit, mobile application for device registration and monitoring and collecting data from of bilirubin level during treatment.

C) **Description of various techniques and reasons for choosing the particular technique of measurement:** Digital transformation will take India from 426 million (30% of total papulation) in 2017 to 829 million (59 % of Indian Population) of internet user. The development of IoT base devices is need of today's market. It not only makes intelligent system but can produce the effective, affordable and minimum human intervention system. The proposed device is based on artificial intelligent algorithm for regular monitoring working inside condition of incubator along with bilirubin of infant.

d) **Principle or operation:** The device is based on sensor mobile cloud computing (SMCC) for monitoring and data transmission. It is integration of Electronic, Computer science, product design engineer to convert the prototype into a product for final use.

e) Engineering Design of device/instrument: The objective of design is to have compact size for easy storage and easiness in assembly and dismantling. Accordingly the following design has been proposed. Fig.10. The side panel will consist of control unit and fan for circulating air. While top panel will have LED and Bilirubin monitoring and other sensors. The step for opening and closing of proposed incubator is mentioned in Fig 1

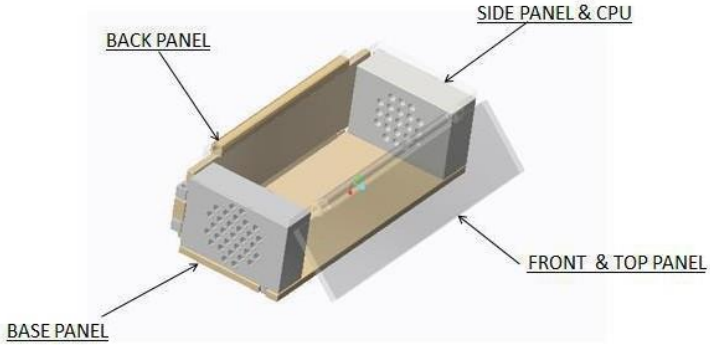


Fig.1 Proposed design of Smart Incubator (Consist of Base Panel, side panel, front and top panel, back panel with independent Degree of freedom for assembling and dismantling)

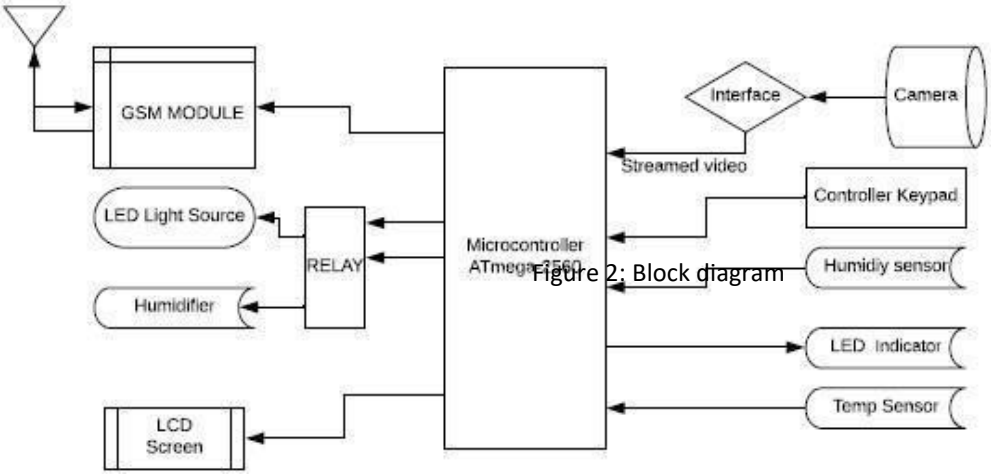
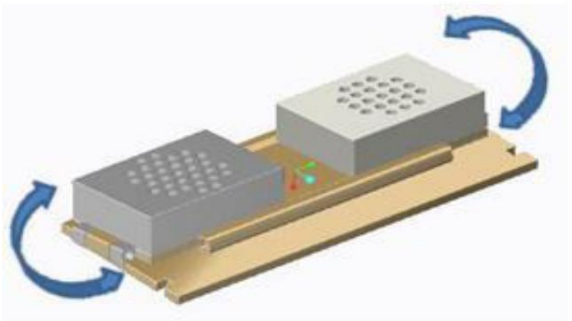
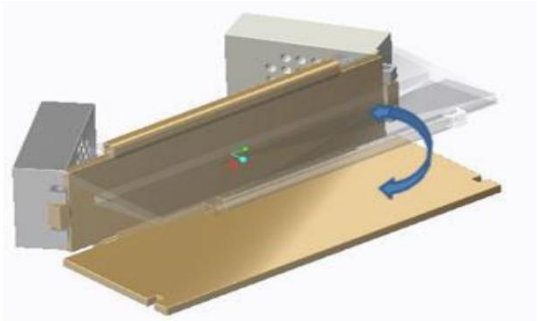


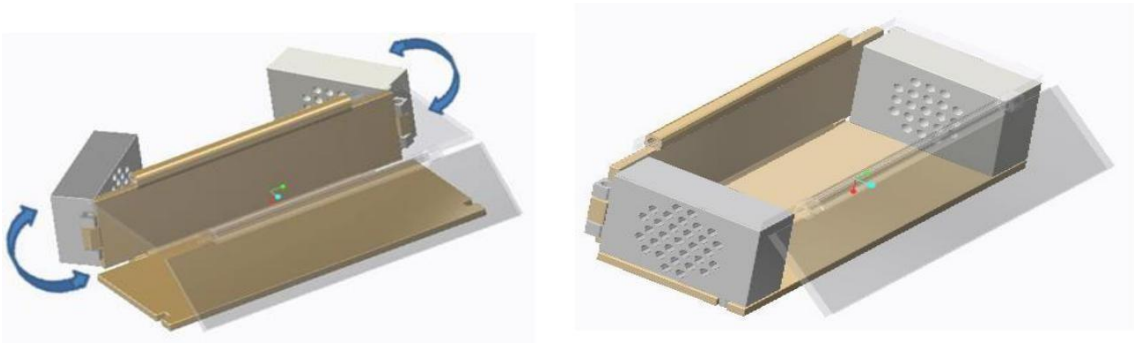
Figure 2: Block diagram



Step 1

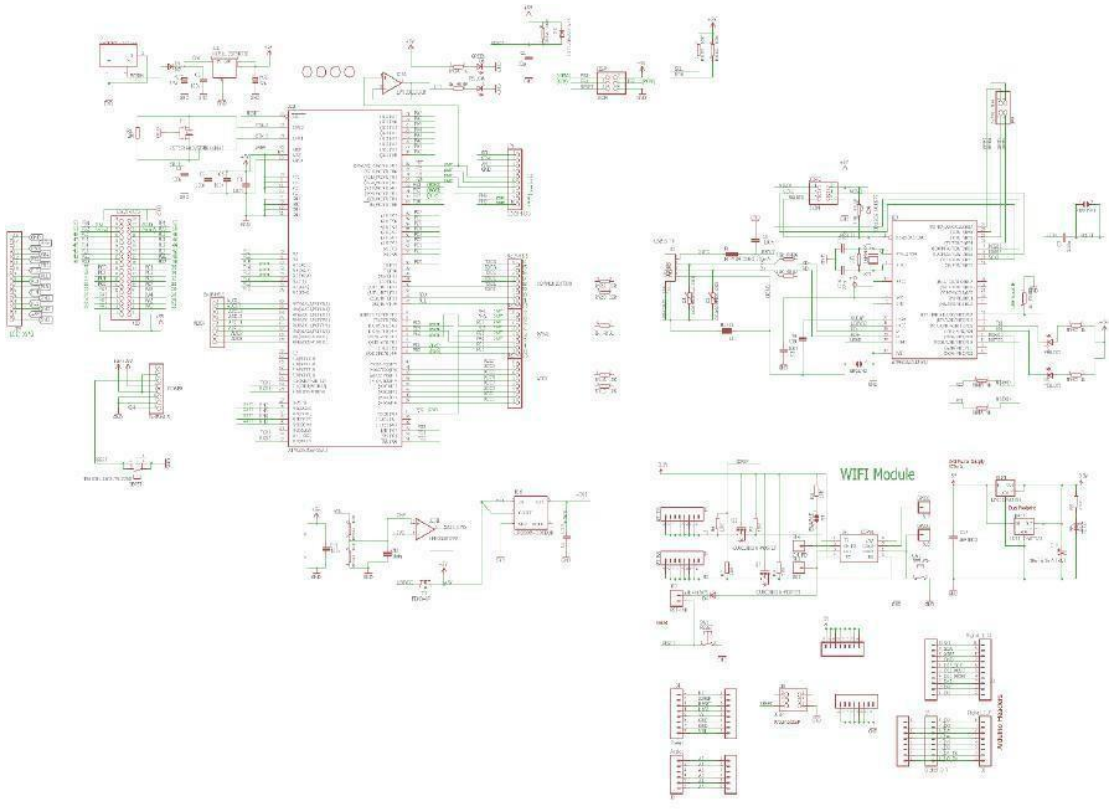


Step 2



Step 3 Step 4

Fig 3. Step for opening and closing of incubator



Circuit diagram of proposed device.

e) Description of various sub-systems etc. In our proposed device the attention is on making the affordable smart incubator with monitoring the level of bilirubin in neonates. To attain this objective, out of various available techniques, selection will be done on the basic of components accessibility, affordability and infant comfort. The following main parts are decided to use in project:

i. **Power Supply:** Regular 05 Volts supply unit will be developed with the view of its portability. The inbuilt lithium battery will be able to provide uninterrupted 10 hours of power backup. This unit can be operated via using AC 230 Volts Indian Sockets through integral adapter unit or can be switched over to solar charging port.

ii. **Controller:** The micro controller will be selected on basis of input and output pins requirement. At present ATmega2560 is proposed to use.

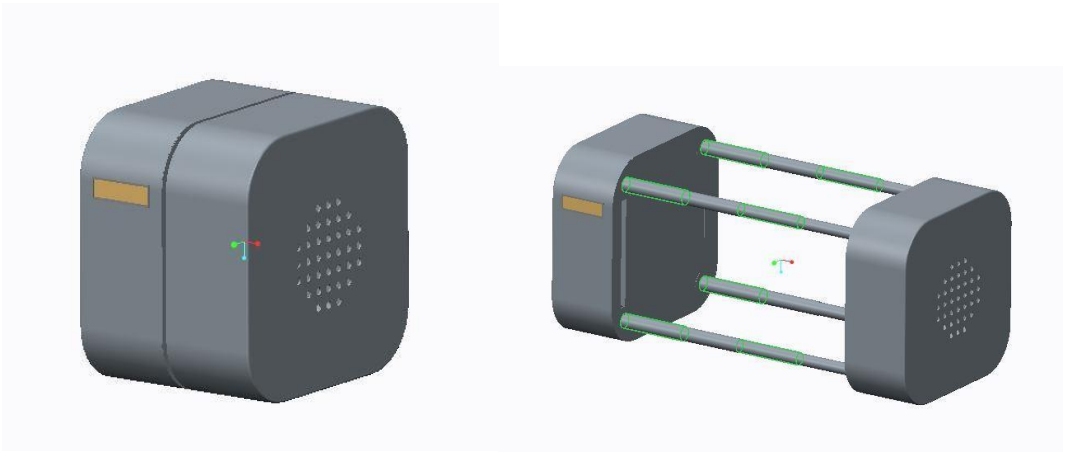
iii. **Camera and Interfacing unit:** Camera is integrated to micro controller though some interfacing unit for monitoring the bilirubin level in infant distally and track the improvement in treatment.

iv. **GSM/Wi-Fi/BT module:** The image captured through camera need to transmit at regular interval to cloud storage for monitoring and analysis purpose.

v. **M- Health monitoring:** A unique IoT base algorithm is planned to develop based on sensor mobile cloud computing (SMCC) for measurement and monitoring of bilirubin present in blood through noninvasive way. The data stored in controller will send to cloud via Wi-Fi/ BT/ USB connection either to IoT base systems or mobile app. It will help to track the progress of infant and in some condition to refer to some expert medical practitioner for further treatment. Each image will be analyzed using algorithm or app developed and will help to improve the database for next sample analysis.

vi. **Sensor unit:** Non-contact temperature, humidity, heart rate, oxygen saturation measurement of infant is planned. If the temperature goes beyond the suggested the unit will stop immediately and gives 100 % reliable solution. Simultaneously humidifier is also used to monitor humidity level inside the incubator.

vii. **LED:** In Clinical practice the use of blue LED with 450nm wavelength is acceptable for jaundice treatment which is proposed in our device too.



(a) (b)

(c)

Fig : Proposed design

f) Contribution of NewGen IEDC in the same: The New gen help us ideation and making a physical prototype of device. It helps us in learning the difficulty for various sensor intration and provide a good platform for great learning.

g) Future plan: Base on proposed design a more compact model is decided to fabricate.

h) Submit three/four high resolution (at least 300 dpi) pics in jpeg format showing the prototype/product along with the students and their mentor.

Contribution of NewGen IEDC in the same

NewGen IEDC provided the necessary support for development of the POC followed by the fabrication of the prototype. The center provides with a ecosystem which facilitates the designing, development, fabrication and testing under one roof. The guidance and mentorship provided by the mentors and faculty has helped immensely in development of this project.

Future plan

The duration is divided into six phases. Current stage is phase III involving testing and pre-clinical trials. Phase IV and V is about improvement, IPR management followed by exhibiting devices. The last Phases is for trying technology licensing or start-up to make it truly reachable for community it was developed.

NewGen IEDC

Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC	**:**	**Chitkara University, Punjab** **Chandigarh-Patiala National Highway (NH- 64), Village, Jansla, Rajpura, Punjab 140401**
Name of the Chief Coordinator	**:**	**Dr. ArchanaMantri**
Period under Review	**:**	**February 2019 – January 2020**

1. Initiatives/Activities Undertaken as per the Action PlanSubmitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&Tstudents

Sr. No.	Activities	Outcome/Achievements
1	STEAM School	STEAM school is designed to provide basic skills in Science, Technology, Engineering, Arts and Maths to the first year engineering students in a fun filled activities based structure. The program ran from January 2019 to April 2019 where 63 faculty members ran 19 courses for 305 students after the college working hours (4:30-6:30PM). Some of the courses conducted were – Solar Cell Device Simulation, Game Design, Making AR Application, Circuit Sketching etc. 
2	Engineering Exploration Course	Engineering Exploration (Credit) Course was conducted from August to December 2019 for all engineering streams at the university. The course was conducted as part of Integrated Projects for the students where students could opt to work in one of the following verticals – Engineering Project in Community Service (EPICS), Engineering Projects in Solving Campus Problems (EPIP) and Publishing Research. During the end of the course, top projects were given an opportunity to submit their ideas to NewGen IEDC for funding support to build advanced level prototypes.
3	Entrepreneurship Course	About 120 First and Second year engineering students took this course on Entrepreneurship that was held during January – June 2019. The course was focused on identification of a problem followed by team formation, understanding target market, preparing business canvas, learning marketing strategies etc. Students who are really keen to take entrepreneurship route in their career opted for this course.
4	Start-up Boot Camp	We organized a two-week start-up boot camp for the first year engineering students in the month of August 2019. The objective of this boot-camp was to sensitize first year students about the start-up and entrepreneurship ecosystem of the university. Close to 100 students attend this boot camp.

		
5	Mentor-Mentee Connect Series	We organized volume III of mentor-mentee connect series at the university to connect our students having entrepreneurship bent of mind with the leading entrepreneurs. This edition of connect series was held in September 2019 with Mr. Avelo Roy – MD, Kolkata Ventures invited as an expert. Mr. Avelo is a serial entrepreneur who has built 8 businesses in the US and he interacted with our students and shared his expertise with them. About 250 students attended his talk. 

[B] To identify, develop & commercialize students' innovativeideas

Sr. No.	Activities	Outcome/Achievements
1	NOVATE 2019	Chitkara University Organized its 3rd Annual Problem Solving Challenge NOVATE 2019 on 2nd April 2019. At NOVATE 2019 students were competing to solve the 35 identified problems of the society. Out of total 270 teams top 60 teams were shortlisted for the grand finale of NOVATE 2019. The students and faculty members worked relentlessly during January-March 2019 on finding innovative solutions to given problems and presented Proof of Concepts and Prototypes to eminent jury members on April 2, 2019. Top three teams were given cash prizes and opportunity to receive funding from NewGen IEDC for building advanced level prototypes.

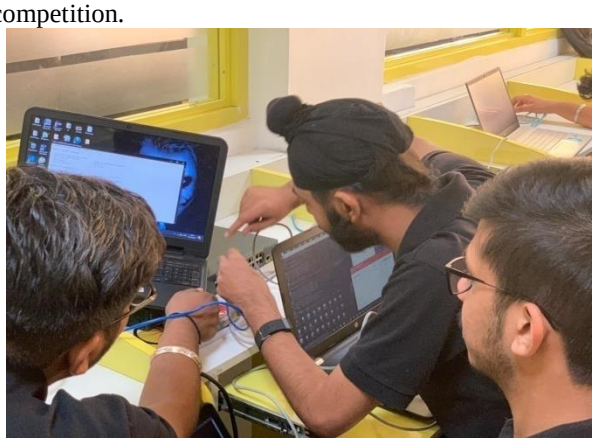
		
2	India Fund Fest 2020	Chitkara University was the co-organizer in the India Fund Fest 2020 that was held in Chitkara University and Chandigarh on Feb 6 and 7 respectively. About 30 start-ups including 6 from ChitkaraUniversity presented their businesses pitches and raised capital. One such start-up from Chitkara University was Anukai Solutions that raised INR 80 Lakhsfrom the investor. This project has been supported by NewGen IEDC. 
3	Startup Day	In the month of April 2019 we organized two Start-up days with a theme Pitch Perfect. 42 student start-ups pitched their business idea to the jury and 12 best ideas were shortlisted. These 12 ideas were assigned mentors to guide them and to refine their business pitches. On the second start-up day these 12 ideas were given an opportunity to present their final pitch in front of external jury. Top three ideas were offered prototyping grant from NewGen IEDC and office space in Chitkara University incubator. These start-up days were held on April 18 and 25.
4	E-Cell Members visit to CIIF	Chitkara University has E-Cell that comprised on students who are keen on taking up entrepreneurship as career. On February 2, 2019 about 50 E-Cell members visited Chitkara Innovation Incubation Foundation (CIIF) which is situated in IT Park Chandigarh. Students were exposed to various support services that they can access in CIIF like access to seed money, one-to-one mentoring, capacity building, developing scalable business plans etc.

[C] To enhance Industry-Academiainteraction

Sr. No.	Activities	Outcome/Achievements
1	Flagship Conferences Organized	Chitkara University in association with National Chung Cheng University, Taiwan jointly organized the IEEE sponsored International Conference on Computing, Analytics and Networks - ICAN 2020, with the aims to broadly focus on mobile cloud computing, big data analytics and building secure networks. Over 250

		delegates attended the conference that featured paper presentations, keynote talks, tutorials and a panel discussion.  26th National Conference on Liquid Crystals was organized by Chitkara University and it aimed to provide an open forum for discussion of scientific and recent advancements in the field of Liquid Crystals. The conference also served as platform for researchers to discuss and share emerging interdisciplinary areas of Soft Matter, Nanotechnology and Biological Systems. About 200 delegates attended the conference that was held during October 21-23, 2019 
2.	Collaborator in Punjab Innovation and Technology Summit	Chitkara University NewGen IEDC collaborated with Punjab Innovation and Technology Summit organized by Punjab Government in Chandigarh on November 5, 2019. We put-up an exhibit during the summit and showcased the innovations being carried out at Chitkara University NewGen IEDC. 

3.	Expert Talks	1. An Expert Talk on 'Data Science' was organized in October, 2019 for the students of Computer Science & Engineering and was delivered by Karan Arora, Founder & CEO, Itronix Solutions about 150 students attended the talk. 2. IEEE CIET Student Branch organized an Expert Talk on 'Innovation Technology with Entrepreneurship' in January 2020 and it was delivered by Mr. SakshamChaudhary - Co-Founder, LearnCodeOnline. The main aim of the talk was to bridge the gap between technology and entrepreneurship while expanding the boundaries of technical interests for students.  3. An expert talk on 'Argumented and Virtual Reality in Science Education' was organized during the previous semester. MrPkParthasarathy, Dean, Department of Gaming and Design, Chitkara University delivered the talk that was attended by about 90 students and faculty members. 
4.	Electronic Sector Skill Council of India	Department of Electronics & Communication Engineering has signed an MoU with Electronic Sector Skill Council of India in the year 2019. Under this MoU Electronic Sector Skill Council of India will provide technical and monetary support for conducting various students' training programs and workshops.
5.	HONDA Automotive Research Workshop	Chitkara College of Applied Engineering (CCAE) organized a two-day workshop on 'Assembling and desembling of two wheeler and four wheeler engines' that was held in December 2019. The workshop was delivered by Mr. Gaurav Kali and Mr. Rajesh Kumar faculty CCAE and was attended by about 25 students of different engineering branches including CSE, Electrical, Electronics and Civil Engineering. 

6.	HUAWEI Training for faculty and students	HUAWEI Authorized Information and Network Academy (HAINA) conducted the ICT competition in Chitkara University that was launched in October 2019. 24 students signed up for this competition; students took training before appearing for an exam. 19 students cleared the exams and top three were invited to compete in the national level competition. 
7.	Two-day Workshop by NXP Semiconductors	Chitkara University NewGen IEDC supported the two-day workshop on Analog Circuits Design conducted by ECE department for third year students. The workshop was delivered by industry expert from NXP Mr. Vijay M. He trained students on Analog circuits design with a special focus on layout design in Cadence tool. This hands-on workshop was attended by about 35 students including 5 M.E./Phd Scholars

2. Deviation (shortfall) from the proposed action plan (with reasons), ifany:

None

3. Other important highlights (new initiatives), ifany:

In order to find innovative solutions to COVID-19 challenges, Chitkara University has announced a National Level Event – NOVATE+ 2020. This event has been anchored by Chitakara University NewGen IEDC. We have received 300 entries in the competition. Website of NOVATE+ 2020 - https://www.chitkara.edu.in/novate

Other new initiatives to be taken by Chitkara University NewGen IEDC have been presented in Annexure I (Action Plan) that has already been submitted.

4. Student Projects (Please provide the following details for each student project)

15 projects were supported by Chitkara University NewGen IEDC in the First year. The list of projects is given below. Detailed information about each project in the prescribed format along with photographs are given in **Annexure A toward the end of this document**.

Sr. No	Team/Project Description
1	Intellights – 3D smart traffic light
2	Black Carbon Battery – Cost effective battery from bio and metallic waste
3	Hyperspace – AI/VR based solution for solving complex mathematical problems.
4	Bhugoal – Weather predicting solution

Sr. No	Team/Project Description
5	Brill-Tab Edukit – Braille based educational kit for visually impaired
6	Fogminator – solution for improved driving in Foggy condition
7	Video Laryngyoscope -
8	SwachhNeer – Water purification system using earthen pot
9	Learn-O- Little – AR/VR based learning platform for kids
10	Pied- Piper – AI based autonomous rat trapping device
11	Grain Paddy Drier
12	Driving Test Simulator
13	Hybrix – low water consumption desert cooler
14	IoT and AI based tea vending machine
15	Intelligent Urea Spreading Machine

- Submit three/four high resolution (at least 300 dpi) pictures in jpeg format showing the prototype/product along with the students and theirmentor.

Please see Annexure A

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let shouldinclude:

Case Studies of two projects have been added as Annexure B toward the end of this report.

- Student team details (with contactinformation)
- Brief description about the studentstart-up
- Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolutionphotographs
- Contribution of NewGen IEDC in thesame
- Futureplan

ANNEXURE A

Student Projects (Please provide the following details for each student project)

1. **Team / Project Description:** Intellights – 3D smart traffic light

   Project status at beginning of the Year: Proof of concept was available and it was competing in different competitions

   Interventions made:

   a. Provided support in making full-fledged product.

   b. Provided platforms where it could get more visibility and mentoring from industry experts.

   c. Provided support in field deployment of the product.

   d. Given a grant of INR250,000 from NewGen IEDC.

   Current status:

   a. Successfully registered a company

   b. Product has been successfully deployed at one street light in Mohali city.

   c. Raised a capital of INR 80 Lacs from the investors in India Fund Fest.

   Photographs:

2. **Team / Project Description:** Black Carbon Battery – Cost effective battery from bio and metallic waste

Project status at beginning of the Year: It was just an idea on paper when submitted for grant in NewGen IEDC.

Interventions made:

a. Grant of INR 250,000 was given for building the prototype.
b. Central Instrumentation Facility at NewGen IEDC was offered for building the prototype – 3D printing, CNC etc.
c. Two progress reviews have been done, mentor has been assigned for some mechanical jobs

Current status:

a. The project is currently in process.
b. Lab testing has been carried out.

Photographs:

3. **Team / Project Description:** Hyperspace : AI/VR based solution for solving complex mathematical problems.

Project status at beginning of the Year: Received an idea, PoC was not available.

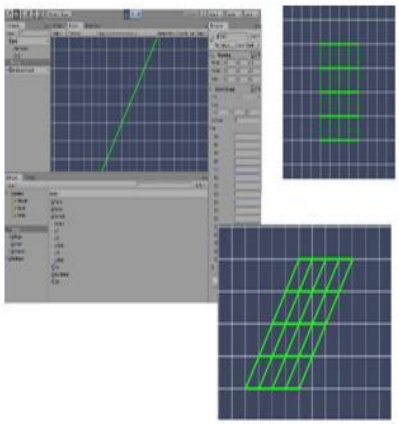
Interventions made:

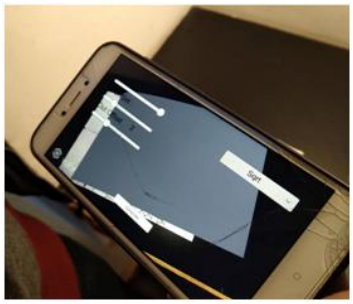
a. Funding support for procuring the components for the project
b. Once the basic level prototype was made, mentoring support has been provided to widen the scope of the application

Current status:

a. This application is being used in the Graphic Programming Course in CSE in the university.

Photographs:





4. **Team / Project Description:** Bhugoal – Weather predicting solution

   Project status at beginning of the Year: It was an idea without PoC.

   Interventions made:

   a. Funding support from NewGen IEDC
   b. 3D designing and 3D printing support
   c. Direction of participating in different competitions
   d. Helped in filing a patent.

   Current status:

   a. Three different versions of advanced level prototypes are ready.
   b. It has won two national/international level competitions – IIGP 2.0, IICDC 2018
   c. Registered a company.

   Photographs:

5. **Team / Project Description:** Brill-Tab Edukit – Braille based educational kit for visually impaired

Project status at beginning of the Year: Basic level prototype was available.

Interventions made:

a. Funding support from NewGen IEDC

b. 3D designing and 3D printing support

c. Direction of participating in different competitions.

d. Providing support in PCB designing and manufacturing

Current status:

a. Different models of the products have been made.

b. Tested with the potential users.

c. Company has been registered

d. Currently working on improving the aesthetics and robustness.

Photographs:

6. **Team / Project Description:** Fogminator – Solution for improved driving in foggy condition

   Project status at beginning of the Year: It was an idea without PoC.

   Interventions made:

   a. Funding support from NewGen IEDC.

   b. Mentoring support from Mechanical Engineering department after two progress review.

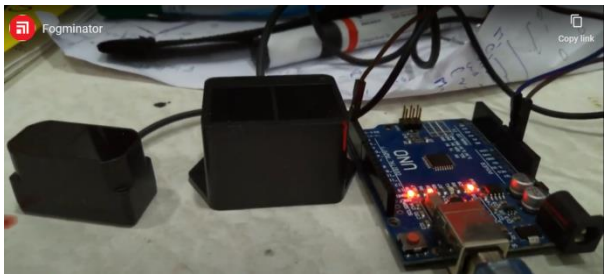
   c. Helped in filing a patent.

   Current status:

   a. Prototype is being made

   b. Patent has been filed

   Photographs:



7. **Team / Project Description**: Video Laryngyoscope

   Project status at beginning of the Year: It was an idea without PoC.

   Interventions made:

   a. Funding support from NewGen IEDC.

   b. 3D designing and 3D printing support

   Current status:

   a. Prototype is ready.

   Photographs:

8. **Team / Project Description:** SwachhNeer – Water purification system using earthen pot

Project status at beginning of the Year: Patent was filed for the idea. Prototype was not available

Interventions made:

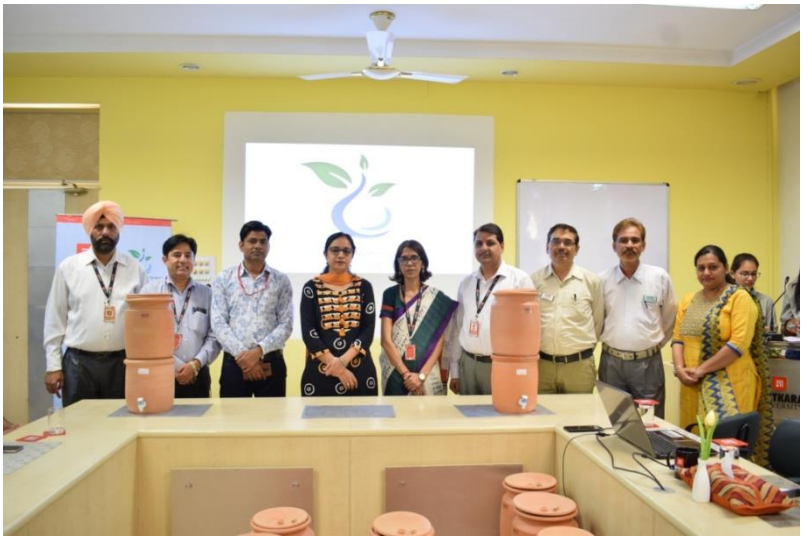
a. Funding support in making the prototype.

b. Provided assistance in getting certification

Current status:

a. 50 units were made and distributed for pilot run.

Photographs:



9. **Team / Project Description:** Learn-O- Little – AR/VR based learning platform for kids

Project status at beginning of the Year:

It was an idea without PoC.

Interventions made:

a. Funding support from NewGen IEDC.

b. 3D design and 3D printing support

c. Mentoring from AR/VR lab

Current status:

a. Working on the commercialization

b. Won First Prize in Hackathon at IIT Bhubaneswar

Photographs:

10. **Team / Project Description:** Pied- Piper – AI based autonomous rat trapping device

Project status at beginning of the Year:

It was an idea without PoC.

Interventions made:

a. Funding and mentoring support from NewGen IEDC

b. Support in filing patent

c. Lab/Machine support in making prototype using sheet metal

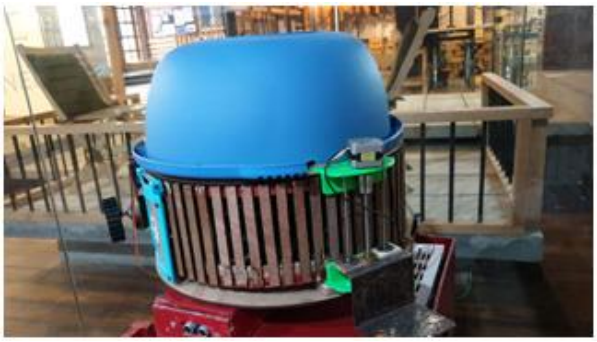
Current status:

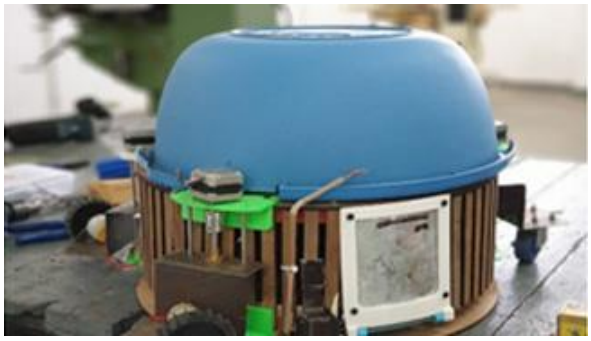
a. Two different versions of prototypes ready

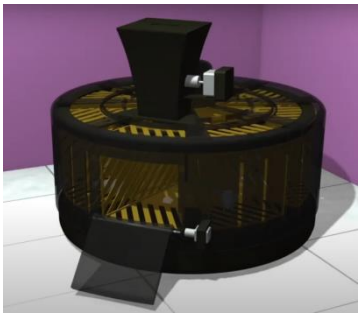
b. Patent has been filed

c. Participated in different national level competitions

Photographs:







11. **Team / Project Description**: Grain Paddy Drier

Project status at beginning of the Year:

It was an idea without PoC.

Interventions made:

a. Funding support in making a prototype

b. Both in-house and third party vendor support in machine/mechanical job using sheet metal.

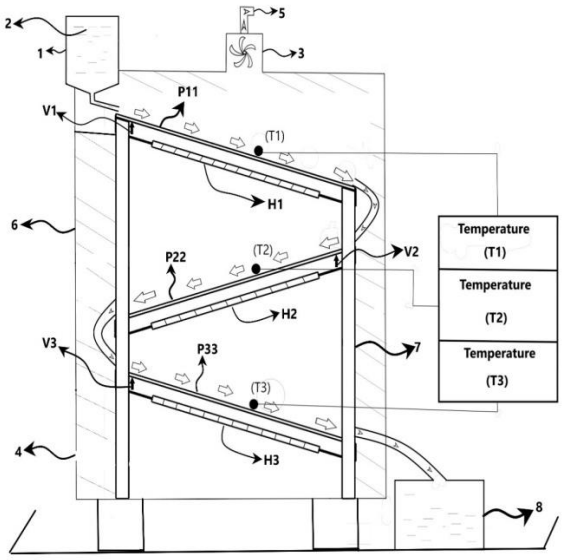
c. Support in filing a patent

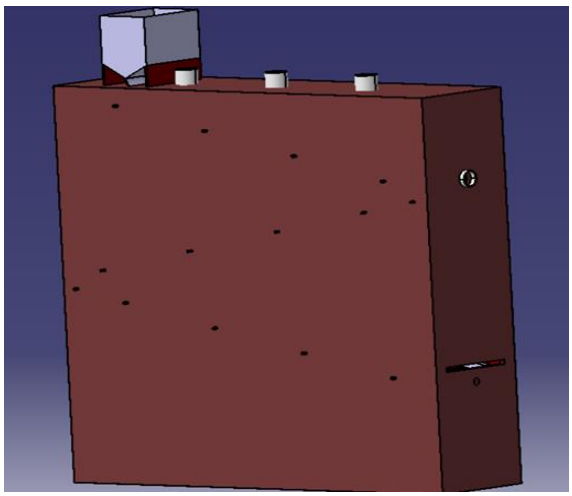
Current status:

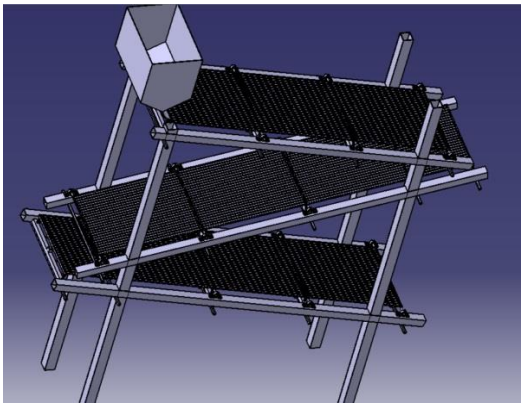
a. Fully-functional field prototype is being made.

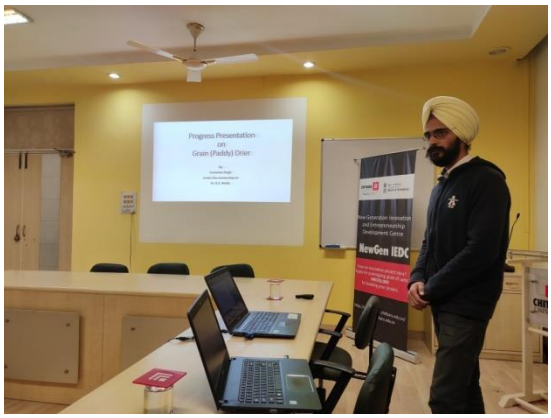
b. Patent has been filed

Photographs:









12. **Team / Project Description**: Driving Test Simulator

Project status at beginning of the Year:

It was an idea without PoC.

Interventions made:

a. Funding support from NewGen IEDC

b. Mentoring support from automobiles lab in making a body and cockpit of the simulator

c. 3D printing and 3D design support

d. Support in filing a patent

Current status:

a. Prototype is being made

b. Patent has been filed

Photographs:

13. **Team / Project Description:** Hybrix – low water consumption desert cooler

Project status at beginning of the Year:

Basic prototype was ready, needed support for making advanced level prototype for a competition.

Interventions made:

a. Funding support from NewGen IEDC

b. Mentoring and lab support

Current status:

a. Finalist in AAKRUTI 2019 a national level competition by Dassault Systemes.

b. Advanced level prototype is ready and submitted to NewGen IEDC

Photographs:

14. **Team / Project Description**: IoT and AI based tea vending machine

Project status at beginning of the Year:

It was an idea without PoC

Interventions made:

a. Funding support from NewGen IEDC

b. Supporting is designing and printing 3D parts

c. Support in filing the patent

d. Assigned mentor after progress review

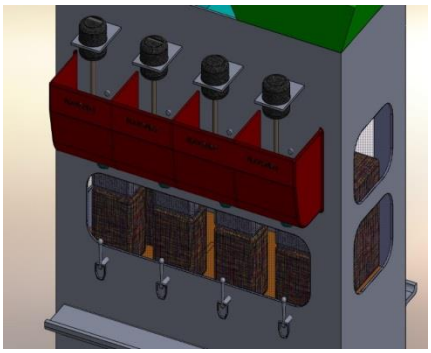
Current status:

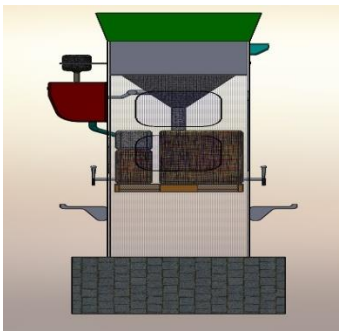
a. Filed a patent

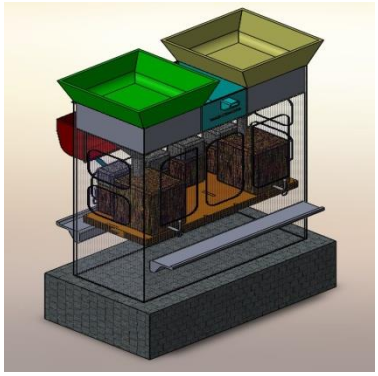
b. Made some modification in the design after the review.

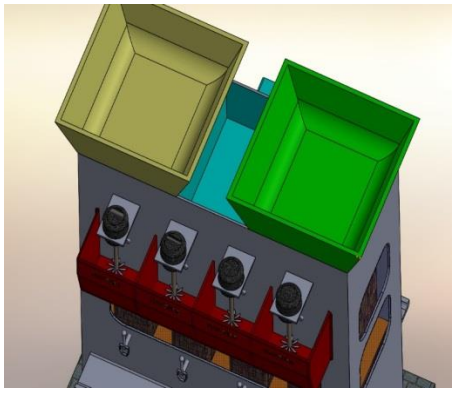
c. The prototype is being made.

Photographs:









15. **Team / Project Description:** Intelligent Urea Spreading Machine

Project status at beginning of the Year:

Basic level prototype was ready

Interventions made:

a. Funding support from NewGen IEDC

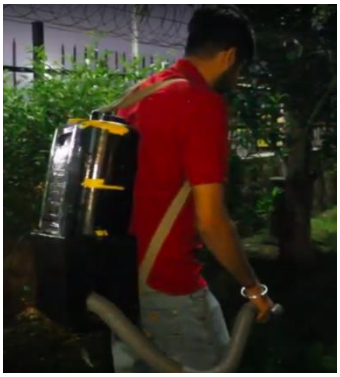
b. Mentoring and Lab support

Current status:

a. One prototype is already made and submitted to NewGen IEDC.

b. Working on larger volume prototype

Photographs:



ANNEXURE B

Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list.

Project Title -Intellights – 3D smart traffic light

1. Student team details (with contact information)

Member	Name	Email ID	Contact Number
Member 1	GauravGoyal	gauravgoyal0.rg@gmail.com	9910910439
Member 2	Karamdeep Singh	karamdeep.singh11@gmail.com	8558973131
Member 3	Rahul Goyal	rahulgoyal0.rg@gmail.com	9988866864
Member 4	Hardeep Singh	hardeeptpc@gmail.com	9463224324
Member 5	Karanveer Singh	karanveers068@gmail.com	7696143071
Member 6	RishabhMalra	malrarishabh@gmail.com	9417432736
Member 7	Sumit Kumar Patel	sumitskp16@gmail.com	7837363900

2. Brief description about the student start-up

InteLights is an “Edge based, deep learning powered”, Intelligent Traffic Management System that uses existing CCTV cameras, cutting-edge communication and processing technologies, optically isolated MOSFET switching and appropriate Machine Learning algorithms (in house trained Convolutional Neural Networks for traffic density estimation) to control and prioritize the traffic signals based on the current intensity of traffic at each lane of an intersection. With InteLights, a dynamic signal controlling and coordination mechanism is provided that reduces AWT (Average Wait Time) of vehicles at intersections. This, in turn, reduces the amount of harmful gases released from vehicles and also lower the consumption of fuel being burned by these vehicles standing idle at an intersection. A single node of InteLights is made of a processing unit with networking capabilities which could be interfaced with any kind of CCTV cameras & existing traffic signal controller systems. By laying out a network of InteLights nodes, traffic congestion can be reduced in an area drastically. A node analyzes the information gathered by the CCTV cameras in the form of images and estimates density of traffic & vehicle-type on-Edge, thus, de-centralizing the computation and reducing the constraint on bandwidth. The network is also capable of drawing patterns from the traffic information gathered at various intersections in an entire area/city and can be used to create “GREEN CORRIDORS” to ensure smooth vehicular movement. The application of “Deep-Q Learning” along with “Generative Adversarial Networks” makes a different InteLights nodes installed different sites coordinate with each other in real time and provide a smooth flow of traffic.

3. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs

Anukai comes from the word - 'Anunnaki', which was a group of deities who appear in the mythological traditions of the ancient Sumerians. Just like these deities brought a drastic change to our world, we at Anukai thrive to bring a change by solving real-world problems via Artificial Intelligence powered solutions that are exceedingly “Accurate”, “Appropriate” and “Affordable”. We work in the domain of Urban Mobility for Smart Cities, and provide “Integrated Traffic Management & Road Infrastructure planning” solutions that not only help to decongest traffic but also provide high quality & real-time traffic movement insights to potential businesses. At Anukai, we are unbiased towards the people we work with. We have students, employees with different backgrounds, experiences, and perspectives. From their exposure to a variety of different perspectives and contributions in developing the organization, a higher level of creativity is achieved. The idea of InteLights came from a day to day experience that we all face while waiting at traffic signals. InteLights was started back in June 2017, and it got its first validation in March 2018, when it won Smart India Hackathon 2018. Our reason for tackling this problem was such a common problem like this had solutions with loads of shortcomings with no new development happening in this area. Almost everyone one of us, some or the other day, has experienced being stuck in a traffic jam for long hours, cursing the road infrastructure, and getting time. To reduce these negative effects, there has been significant research on Intelligent Traffic Management Systems (ITS) to avoid congestion, ensure priority for emergency vehicles and cut the Average Waiting Time (AWT) of vehicles at

intersections using sensors. These types of sensors provide fixed-point or short-section traffic information that is extracted from vehicles passing the detection zone. But one of the main limitations of point detection technologies is that the traffic estimates are based on measurements taken at a specific location that might not provide an accurate representation of the traffic conditions over larger road segments. Since Anukai's inception on June 1st, 2018, Anukai is growing and exploring its potential to bring an impact in the world. Two MoU's have been signed by Anukai - First with Govt. of Punjab, to deploy InteLights in the city of Mohali (Punjab) and it's been 6 months since we are working actively with them. Second MoU is with NASSCOM foundation to work with them in RnD and solve congestion in the city of Bengaluru. NASSCOM has also awarded us an equity-free grant of Rs. 5 Lakhs for the same. Before that Anukai has raised equity free Rs 7.5 lacs from grants. We have also filed a patent for InteLights with application no: 201911045568.

GauravGoyal (middle) shaking hands with one of the investors after raising investment during India Fund Fest.

Team deploying their solution on a traffic light in Mohali

4. Contribution of NewGen IEDC in the same

a. NewGen IEDC grant helped us to purchase our first working model and gave us access to high class lab facilities to work.
b. It also helped in connecting with various experts.
c. It provides us platform like India Fund Fest, Punjab Innovation Summit to showcase our idea and get wide visibility.

5. Future plan

The future plan is to develop a self-sustaining solar powered model of our product that will be used in future smart cities.

Project Title -Briltab Edu-Kit-1

1. Student team details (with contact information)

Member	Name	Email ID	Contact Number
Member 1	VirenderKadyan	drvirenderkadyan@gmail.com	9992037007
Member 2	PuneetBawa	puneet.bawa@chitkara.edu.in	7986268917
Member 3	Gourav	gourav171267.cse@chitkara.edu.in	8950192557

2. Brief description about the student start-up

Founded in 2019, Dagriation (DAT) Solutions Pvt. Ltd. with an aim of providing education to millions of visually impaired people, yet has come a long way from its beginnings. When the startup first started out, their passion for "transforming the society for better education" drove them to do tons of research, so that Dagriation (DAT) Solutions Pvt. Ltd. can offer you "the world's most customary and affordable braille device". Further, one more product for farm tech innovation for "an intelligent urea spreading machine" was built and was equally important as the rest of society so the startup came up with upgraded latest technology with regards to precision farming.

3. Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs

The innovative excursion started when Dagriation Solutions Pvt. Ltd., saw a colossal customary gap in the market. There was anything but a solitary advanced moderate learning gadget for little children that taught them Braille language during their beginning stages of education. The team started with an idea with an aim of filling the gap. The idea was to develop such an innovative device with an objective of diminishing the torment purpose of low Braille literacy rate among the visually-impaired by helping them learn how to peruse and write in standard Braille language. Subsequent to inquiring about and almost prototyping the thought further, the team took some time and imparted their underlying model to the Patiala School for the Blind in Punjab Region. In the wake of getting the input, the following target was proportional down to another plan, which once caused us to return to the ideation board in light of stimulating new provokes identified with the structure and the size. However, soon a comparative effort was made and the underlying prototype for the product and armed with the learnings, the more participation and feedback at long last helped the team with an upgraded rendition of the prototype.

4. Contribution of NewGen IEDC in the same

The team was given the NewGen IEDC grant of INR 2,50,000 which has raised business visionary's inspiration, advancement and commercialization of our innovative considerations. Moreover, the NewGen IEDC has managed and helped the team on different parts of learning and trend setting innovation ideas with convenient companion review and progress meetings. Additionally, the NewGen IEDC award has empowered a decent path in building our startup's perceivability and validity.

5. Future Plan

a. Carrying out the vital and essential technical requirement of any product testing coordinating with the product development team upon the design cycle.
b. Monitoring, analysing and ensuring end-user relationships based upon the technical survey in order to ensure product feasibility.

NewGen IEDC

Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI / NewGen IEDC **:** NewGen IEDC Mar Ephraem

Name of the Chief Coordinator **:** Dr. A. Lenin Fred

Period under Review **:** January 2019 to December 2019

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	Orientation Programme on Entrepreneurship (Interaction with E-Cell Members)	The student members are able to recognize the scheme promoted from EDI (Entrepreneurship Development Institute), Government of Tamilnadu
2	One day workshop on Communication and Leadership Training	The students were able to communicate their creative ideas
3	Challenge Identification Competition – 2 nos	The students were able to express the challenges faced in the society
4	Seminar on Technology commercialization and business opportunities in different sectors	The students were able to understand technology commercialization and business opportunities in different sectors
5	Workshop on conducting "effective market research"	The students were able to conduct market research for their innovative product or ideas
6	Entrepreneurship and skill development workshop	Students were made aware of the scope of entrepreneurship
7	Entrepreneurship Awareness Camp	To create awareness among various facets of entrepreneurship as an alternative career option and also to highlight the merits of pursuing such an option

[B] To identify, develop & commercialize students‟ innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	Idea Pitching Contest	98 students pitched their ideas in the contest
2	Idea Scouting Competition -2019	The students were able to formulate solutions for given challenges
3	Business plan competitions	The students were able to prepare business plan
4	Robotics Competition	• Robots were displayed in 5 different sectors • Students (Visitors) were able to learn /improve the operations and working of robots
5	Science and Technology Expo	The students were able to develop and display their innovative & creative models for different societal challenges with commercial value
6	Hands on workshop on IOT and Creativity	Students were trained on IOT and creativity
7	Skill based training program to students	Students were trained on advanced technical skill for product development
8	Workshop on How to Identify a Great Business Idea	Students were able to analyze the societal challenges and come up with innovative ideas with commercial value

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1	Industry Institutional Interactive Program	Members were able to learn the various industrial practices
2	Interaction with Alumni Entrepreneurs	Students were motivated to develop their own startups
3	Training on identifying intellectual property in their project and provisional patent filing	Students were able to draft patent for the creative ideas
4	Seminar on IPR – Group 1	Students were able to understand the need for patents, awareness about patent procedures and acts
5	Seminar on IPR – Group 2	Students were able to understand the need for patents, awareness about patent procedures and acts
6	Start up visit to villages	Students visited Nirmal Caps and SA plastics – A successful startup in Kuzhithurai and Nagercoil

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

Sr.No.	Shortfall	Reason
1	Hackathons with active involvement of industry and alumni	Date for hackathon was postponed to next academic semester for the convenience of the industry
2	Solution for industries technology based innovation contest for students and faculties	Industrial problem identification will be done and the solution will be ready for communication in the next semester.

3. Other important highlights (new initiatives), if any:

- Creative ideas were converted to technical research papers and had been published in reputed journals, conferences and in Science and technology expos.
- Students participated in the competitions on Tamilnadu Student Innovators conducted by EDII, TN at Anna University campus, Tirunelveli.
- E-Cell Students were participated E-leaders workshop conducted by EDII, TN at University College of Engineering, Konam
- Planned to conduct online course on Entrepreneurship for the E-cell members in association with LEARNWISE Wadhwani Foundation.

4. Student Projects (Please provide the following details for each student project)

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
1	**Autoexpulsar- An Automatic Ape Repeller** **Mentor:** Mrs. Dayana. V. John, Assistant Professor/EEE **Mentees:** Dany Jaison Prakash, Vishnu. V, Tom. V. Saji and Alex Sasi.	Problem identified from field visit	Compact model fabricated	Prototype completed
2	**Henlock-Portable Automatic Lock System for Backyard Poultry Farming** **Mentor:** Mrs. M. Manjusha, Assistant Professor/EEE **Mentees:** Ron. P. Cherian, Prince Chacko, Unnikrishnan. S and Jestin Mathew,	Self-help group suggested the problem	Compact model suggested	Prototype completed
3	**Two Wheeler Black Box Security for Woman** **Mentor:** Shobhana.S,AP/CSE **Mentees:** Antony Jojo, Justin John, Karthik Vasudevan and Nivin Ninan Raju	Female students suggested the challenge.	Tested with real time demo	Prototype completed

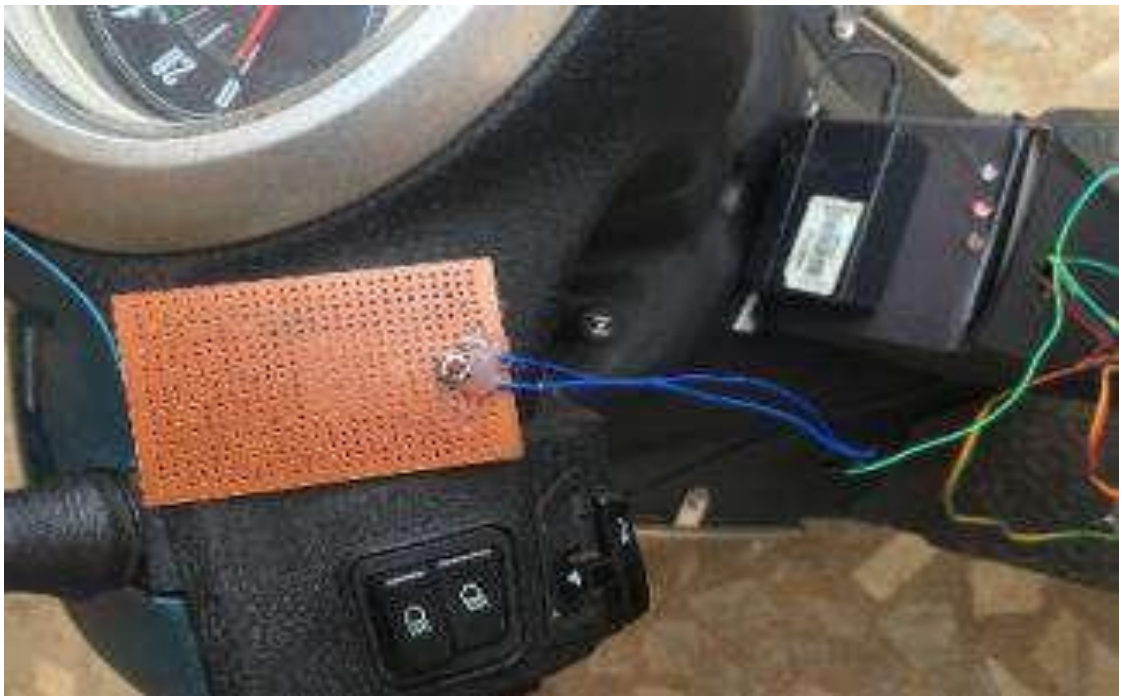
4	**Cling – A Mobile App for Locating Tree Climbers Nearby** **Mentor:** Mrs. L. T. Herlin, AP/CSE **Mentees :** Arun Kumar, Bensingh Joshua and Prince F M.	Coconut growers discussed this issue	Suggested for auto mobile fabrication	Prototype completed
5	**Automated Hydrophonic Cattle Feeder System** **Mentor:** P. John Thangam, Assistant Professor/Civil **Mentees:** Abin T Wilson, Aaromal Vijay V and Anson Abraham Mathew.	Idea was from animal farmers for feeding food	Revolving tray system for hydroponic feeder	Product completed Registered as a start up in MSME
6	**Home Care Smart Bed for Post Childhood People** **Mentor:** Dr.R.Benschwartz, AP/ECE **Mentees:** Justin Sam Jose, Rijil Raju and Jacob Kurian Ambat.	Identified in Field visit to hospital and old age home	Spontaneous sensing of patient fall and prevented using slider mechanism	Prototype completed
7	**Post Harvesting Traceability and Visibility System for Horticulture** **Mentor**: Shanmugha Priya R. K., Assistant Professor/CSE **Mentees:** Tibin Joseph Shibu, Febin K Jose, Nithin George Lorance and AshickNewbin A. C.	Problem identified from Thovalai flower market for grading of flowers	Bar Code & RFID tags are included	Prototype completed
8	**Semi-Automatic Tea Blender** **Mentor:** DANI.D, AP, Mechanical Engineering **Mentees:** Abilash, Abinesh, Alphin and Anish.	Discussion from small tea stall owners	The Average speed for blending process takes 10 to 15 seconds.	Prototype completed, Registered as a start up in MSME
9	**Smart Drip Irrigation System** **Mentor:** Mr. Babin T Praise, AP/ECE **Mentees:** Jestinsamjose and Arun Kumar	Identified from discussion of self Help group regarding irrigation problem on cultivation of organic crops	Spontaneous sensing of Moisture content. Auto controlled cost effective device	Product completed
10	Kicker Operated Coconut Dehusking Machine. **Mentor:** A. Jude Felix/ AP **Mentees:** Shijo Paul, Prabin G., Vibin jose V. and Prakash P.	Identified from discussion of self Help group	Dehusking the coconut with single pedal movement	Prototype completed

- Submit three/four high resolution (at least 300 dpi) pics in jpeg format showing the prototype/product along with the students and their mentor

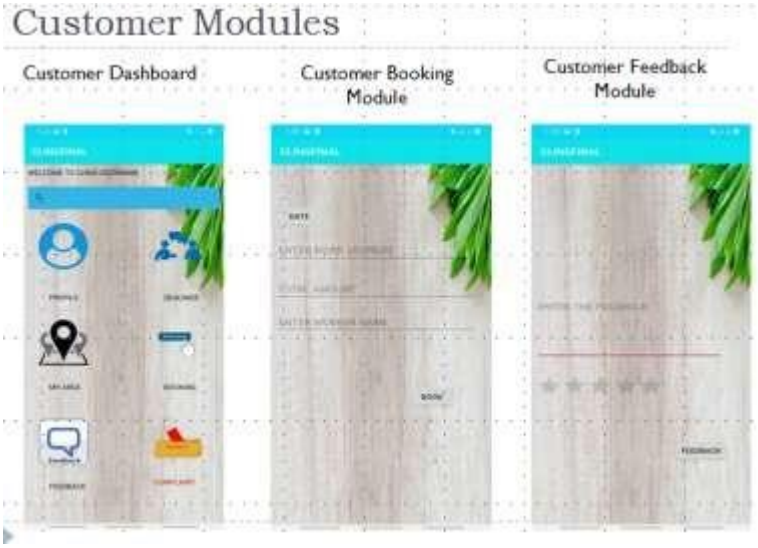
1. **Autoexpulsar- An Automatic Ape Repeller**

2. Henlock-Portable Automatic Lock System for Backyard Poultry Farming

3. **Two Wheeler Black Box Security for Women**



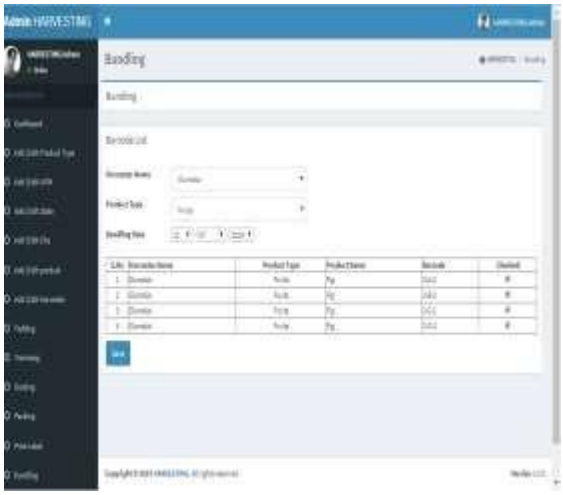
4. **Cling – A Mobile App for Locating Tree Climbers Nearby**

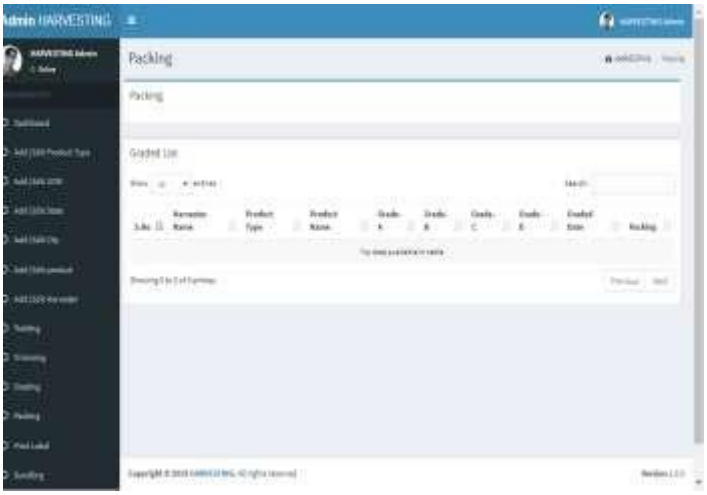


5. **Automated Hydrophonic Cattle Feeder System**

6. **Home Care Smart Bed for Post Childhood People**

7. Post Harvesting Traceability and Visibility System for Horticulture





8. Semi-Automatic Tea Blender

9. Smart Drip Irrigation System

10. <u>Kicker Operated Coconut Dehusking Machine</u>

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

1. Autoexpulsar- An Automatic Ape Repeller

Student team details (with contact information)

Dany Jaison Prakash, IV EEE
Vishnu. V, IV EEE
Tom. V. Saji, IV EEE
Alex Sasi, IV EEE

Brief description about the student startup:

The Ape repeller is an innovative and creative product to repel the monkeys. The monkey groups migrated from the dense forests to the highly populated areas in search of food and shelter in cities. These monkeys cause disturbances to the poor fruit sellers and also destroy the farm crops like mango, papaya, coconut, banana etc. of small farmers. This motivates to take a challenge to develop an ape repeller device.

The device should be portable and should repel the monkey without damaging them. The device should scare the monkeys and not to harm them physically. The proposed idea should be converted into a portable affordable device for shop keepers and small farmers. The prototype model of the ape repeller is successfully fabricated and tested in the real field and the product prototype can repel the monkey up to 8 meter square distance with a low power of 3 watts capacity.

Startups Entrepreneurial journey from ideation to prototype:

Farmers are facing a lot of difficulties because of animals in the Indian Agricultural land, among this monkey menace makes more losses to the society. The monkey menace causes huge losses to the farmers and society. The monkeys are also becoming a threat for public health, crop and belongings. To reduce these problems, the short range monkey repeller device with announcer has been developed. It can repel monkeys from causing harm and return back them to safe distance by producing ultrasonic sounds.

Ultrasonic sound wave generators and timers will operate at certain programmable delay times. It will produce ultrasonic sound waves of frequency which is only sensitive to monkeys. The monkeys have a hearing range of 8 KHz to 45 KHz. When they are disturbed by this sound they will go away from the specific range of the device. The device would be charged through solar energy system.

- **Contribution of NewGen IEDC in the same**

NewGen IEDC has provided necessary funding and resources to develop the prototype. Also a mentor was provided to guide us to developing idea, selecting the suitable components for our product etc. Various workshops and skill development programmes were attended .The lab facility were provided for our product development activities and travel expenses for the field testing and surveying.

- **Future plan**

After the completion of our degree we are planning to develop the product for commercialization. We will register in a government Scheme for start-ups. We are also planning to familiarise our product to the common public thereby increasing its demand. Bank loans can be arranged through NewGen IEDC and Mar Ephraem IEDC cell to do the business in large scale.

2. Henlock-Portable Automatic Lock System for Backyard Poultry Farming

- **Student team details (with contact information)**

Ron. P. Cherian, IV EEE
Prince Chacko, IV EEE
Unnikrishnan. S, IV EEE
Jestin Mathew, IV EEE

- **Brief description about the student start-up**

Now-a-days due to lack of time people are moving away from poultry farming. Our product Henlock is an automated system that has been developed for the village people to yield a little revenue without wasting time and labour. The facilities such as controlling of door, temperature monitoring, humidity sensing, counting of hen before locking the door and automated feeding of food and water has been provided.

- **Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs**

Firstly, we came across the price hike in country eggs and chicken. Even though broiler products are available at low cost it couldn‟t provide the organic and fresh nature of country products. From the day to day life, we came to notice it occurred due to the decline in backyard poultry farmers. We found that it was due to lack of time. So we thought for a solution for this problem.

We collected information about poultry farming procedures from various large scale as well as small scale farming units. And we developed an idea of an automated system for poultry farming which require less human intervention and reduces time and labour. We also attended entrepreneurship camps and various technical workshops to lead our idea into a prototype.

Then we started to convert our idea into a working model. Here we developed a product that could automatically do the tasks involved in the poultry farming. Also remote monitoring and controlling is enabled through IoT and android application.

Controller

Mobile application

- **Contribution of NewGen IEDC in the same**

  NewGen IEDC has provided necessary funding and resources to develop the prototype. Also a mentor was provided to guide us to developing idea, selecting the suitable components for our product etc. Various workshops and skill development programmes were attended .The lab facility were provided for our product development activities.

- **Future plan**

  After the completion of our degree we are planning to develop the product for commercialization. We will register in a government Scheme for startups. We are also planning to familiarise our product to the common public thereby increasing its demand. Bank loans can be arranged to do the business in large scale.

NewGen IEDC

Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC : Nehru Institute of Engineering and Technology, Nehru Group of Institutions, Coimbatore, Tamil Nadu
Name of the Chief Coordinator : Dr. S. Prakash
Period under Review : 2019-20

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

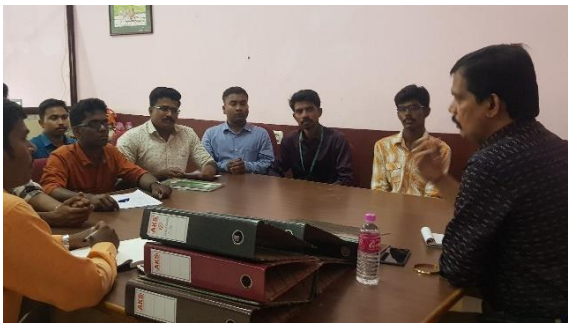
[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome / Achievements
1	Orientation Programme on NewGen IEDC	An Orientation Programme was organised by Nehru Group of Institutions NewGen IEDC for nearly 300 Students to create the awareness on Entrepreneurship as Career option. Dr. S. Prakash, Director-Research & CEO NGI TBI, Nehru Group of Institutions, Coimbatore addressed the Students that their Innovative Idea will be supported with Start-up Grant-in-aid of Rs.2.5 Lakhs.  Many Students came out with innovative ideas to apply for the funding. He told that the Scheme is Supported by NSTEDB, Department of Science and Technology, Government of India, New Delhi.

		Students from First to Final year pursuing Science and Engineering Degree at Nehru Group of Institutions can avail. The main motive of NGI NewGen IEDC is to "Encourage the Students to be a Job Creator and Not Job seeker". He explained that a sum of Rs.2 Lakh will be given for prototype development and consultancy and Rs.25,000 for Mentor & Rs.25,000 as Student stipend.
2	Awareness Programme on Entrepreneurship	Nehru Group of Institutions organized the Awareness Programme on Entrepreneurship during 27th, 28th & 29th January, 2020. The Chief Guest of the programme was Shri. G. Anna Durai, Auto Driver & Entrepreneur, Chennai. He interacted with student's participants, similar like a Q&A session. He said, the difference in our works, is something that makes us stand special, to the eyes of our competitors. He added, to succeed, know to sacrifice time and energy, ensure Time Management, between work and family. He suggested, to maintain good rapport with customer. He advised students to study well, shining and excelled, in whichever they do.  This enhanced the Students on how to develop the business based on Market Research.

3	Interaction with Successful Technology Entrepreneurs	Antony Deepak A, Founder & CEO, Cindan Technologies, Coimbatore shared Technical knowledge gained through his Start-up. He shared his skills in Industrial automation in Research & Development division of Automotive Manufacturing industry & looked forward in Internet of Things sector. He works in open innovation driven by open source technologies. Cindan Technologies in Industrial Internet of Things domain envisioned to provide affordable high end data analytics solution to Indian industries to enhance their business and digitally magnify their conversion cost & keep machines error free.
4	Workshop on Idea Generation	NGI NewGen IEDC organised Workshop on Idea Generation and Design Thinking on 03rd February, 2020. The Chief Guest of the Programme was Dr. Srimathy Kesan, Founder & CEO, "Space Kidz India" (SKI), Chennai.  She told that the "Space Kidz India" was launched in 2011. SKI is a leading Science and Technology incubator which is helping children reach out to the stars, quite literally. SKI is "Creating Young Scientists and Young Leaders for the Country". She explained how SKI is promoting innovations in the field of Science and Technology for high school

		and University students, apart from hand picking the core team of Young Scientists, they are then mentored, funded to create path breaking live projects.
5	TBI-CEO Talk Shows / Guest Lectures	Dr. A. Thillai Rajan, Director, YNOS Venture Engine, Chennai explained them that NewGen IEDC supporting for pre incubation and prototype development. TBI is for Incubation and Scale up of a business. 
6	Entrepreneurship Development Programme	A team of Students attended the programme Entrepreneurship Development Programme. The student team is very eager to run a business. They were motivated to apply for NewGen IEDC fund in the upcoming year.
7	Faculty Development Programme	The Faculty from Nehru Group of Institutions attended the programme. They were initially motivated to develop a product to seek Grant from NewGen IEDC. 

8	Visits to industries of successful entrepreneurs & TBIs in the region	Students visited KINFRA Industrial Park to Interact with Entrepreneurs and learn the newer technologies. The project on Conversion of Biowaste to fuel had its market research in Bannari Amman Institute of Technology. The Testing and validation for the same product was done at Tamil Nadu Agricultural University, Coimbatore.
9	Mentor Development Course-Kick-Starting Ventures	The Faculty Members of Nehru Group of Institutions were addressed on Importance of NewGen IEDC. They were given full detail on how to develop an innovative idea into a prototype in their own thrust area. They were also addressed on how to become a mentor for a Start-up.
10	Seminar on Sources of Funding	Dr. S. Prakash, Director-Research & CEO NGI TBI, addressed the Students on schemes like NIDHI Scheme supported by Government of India and NIDHI PRAYAS supported through TBI. 
11	Workshop on Entrepreneurship startup	The NewGen IEDC Student start-up team were explained on Entrepreneurship and Start-up. 

12	Training & Hands on Experience	Students were given hands on experience on Internet of Things. A student team named Measurey had tested his product with Kerala State Electricity Board and received permission for further Testing and Validation.
13	Seminar on Patent Registration	Dr. Lipika Sahoo, Founder & CEO, Lifeintelect Consultancy Pvt. Ltd., Bangalore addressed on Patent Registration and its importance. Two of the Team is under the preparation of Provisional Application for Patent. 
14	Workshop on Company Registration	Shri. G. Karthikeyan, Founder Director & Chartered Accountant, GKM Tax Advisor, Coimbatore & Former President, TiE addressed the students on Registration of a Company. All the student team under NewGen IEDC is registered under MSME.

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Achievements/Outcome
1	Idea Contest / Pitch Fest	Call announcement for NewGen IEDC was announced in the month of April, 2019.
2	Obtaining Project Approvals	The Project approval was given in the month of July, 2019.
3	Business Planning and Training Workshop	Business Planning and Training Workshop was given by Shri. Abhimanyu Bhardwaj, Founder, 21ID – Design Thinking for Business, Bangalore. 
4	Preliminary Market Research	All the NGI NewGen IEDC Student Team have made a Preliminary Market Research and submitted a report before release of Fund.
5	Preparation of Preliminary Project Report	A Preliminary Project Report based on the market survey and feasibility study made was submitted by the Student Team of NGI NewGen IEDC.
6	Mentor Assigning	NGI NewGen IEDC Student Team was given a freedom to choose their Mentors internally. Incase of further need of any assistance, mentors and experts from outside were arranged according to the teams. An IoT Expert was connected with the Student Team of Kaliru Technologies.

		
7	Funding from NIET, DST-NewGen IEDC	The Funding from NewGen IEDC to the Student Team was released from September, 2019.
8	Development of the project (Hardware/Software)	The Student took a minimum of 6 months to develop the prototype. All the projects are Hardware based and very few required software developments. 
9	Prototyping & Infrastructure facilities and Technical support	Nehru Group of Institutions has 20 Educational Institutions offering many courses whose Laboratory facilities could support the prototyping and Technical facilities. Moreover, NGI NewGen IEDC provides a dedicated space for the Student Team to work. 

10	Testing & Validation	Students have tested their product with support of NGI Laboratories. Few students had tested and validated with External Universities and State Government. One Team Measurey had tested and validated with Kerala State Electricity Board. The other Team Brahmastra Bioenergy had tested and validated with Tamil Nadu Agricultural University, Coimbatore.
11	Market Survey	Each and every student team had done Market survey for their product and submitted the report.
12	Preparation of Final Project Reports	The Student team of NGI NewGen IEDC 2019-20 had submitted all their final project report by March, 2020.
13	Commercialize the products with Licensing or Technology transfer	The NewGen IEDC Team had developed their Product. They have not yet Commercialized their products.
14	Incubation opportunities at Nehru Group of Institutions - Technology Business Incubator (NGI-TBI), Palakkad, Kerala	The Student of NewGen IEDC Team are in the stage of completing their Prototype. There is possibility for them to Incubate at NGI TBI in the upcoming year.
15	Patent filing facility and support facility from NGI IPR Cell	The NewGen IEDC Student Team have been given training through Workshop on need of IPR during December, 2019. They have been motivated to prepare Provisional Application.

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Achievements
1	Implementation of Industry Institute Partnership Cell	An Industry Institute Partnership Cell was established at Nehru Group of Institutions, Coimbatore
2	Signing of MoUs with Companies	Nehru Group of Institutions has MoU with many companies, to be specific with NewGen IEDC we have • SEINE Group of Companies, Mumbai for expertise support • Coimbatore Industrial Infrastructure Association (COINDIA) for Testing and Validation • Infosys, Coimbatore for expertise support • Mahendra Pumps, Coimbatore for Industrial consultancy The following MoUs are in pipeline • Bharathiar University, Coimbatore • TCS Innovation Lab, Mumbai • Sri Venkateshwara College of Engineering, Bangalore • NMAM Institute of Technology, NITTE, Udupi
3	Consultancy and developmental Activities with Industries	NGI NewGen IEDC has consultancy and development activities with Almech Enterprises, Coimbatore and Lifeintelect Consultancy Pvt. Ltd., Bangalore
4	Product development centre and Testing facility centre established at the Institute	Nehru Group of Institutions has inhouse Laboratory Facilities for Testing and Product Development. Student are availing facilities such as Texas Instrument Lab, Intel Innovation Lab and etc.
5	Staff training programmes for the Industrial Enterprises	Staffs are motivated to visit Industries to understand the Problems faced by them and address that among students to provide solution as an innovative product.
6	Industrial Research and Development Program	The students and staffs are encouraged to work in R&D with Industries with Almech Enterprises and Ampere Vehicles Pvt. Ltd., Coimbatore.
7	Exposing to newer technologies and engineering methodologies of the Industry	Antony Deepak A, Founder & CEO of Cindan Technologies, Coimbatore exposed his technology and skills in Industrial automation for three years in Research & Development division of Automotive Manufacturing industry to the Students and Faculty Members. CINDAN TECHNOLOGIES in Industrial Internet of Things domain envisioned to provide affordable high end data analytics solution to Indian industries to enhance their business and digitally magnify their conversion cost & keep machines error free.

8	Marketing Assistance	Students of NGI NewGen IEDC have done a Pre Market Research before developing the prototype. Each team has done another Market Research after prototype development.
9	Joint R&D Projects	There are two Joint R&D Project is a) Measurey with Kerala State Electricity Board b) Brahmastra Bioenergy joined with Almech Enterprises.
10	Technology Commercialization	The Projects of NGI NewGen IEDC is under prototype developed which is not yet ready for commercialization.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

The Proposed activities of NGI NewGen IEDC was organised as per the Action Plan submitted for the year 2019-20. There was no deviation in the Action Plan.

3. Other important highlights (new initiatives), if any:

- The project named Overhead Distribution Line Fault Detection System done by the students has been explained and interacted with KSEB and elucidated the effectiveness of the product. In-turn they got Permission to do it as a pilot project and tested in real time environment. The product identifies, locates and inform fault present in the power distribution line caused by various natural or manmade forces at the exact time and interrupt the power through line to avoid accidents in a cost effective manner.

- The project 'Automated Portable Vertical Solar Stacker' has taken a new initiative to develop the product for those people who have less amount of space or lack of open terraces in their respective homes, this innovation can change the way people think and see about solar panel's energy harvesting. In Innovation terms, the space efficiency is enhanced.

- The 'Advanced PCB printing technology without etching'- this project lowers material wastage, creates low pollution, and is fast and cheap. As PCB is much required for every gadgets in today's use. So, this is a new initiative in printing and etching process.

- One of our incubate (Mr.Subash- Brahmastra Bioenergy) visited NASSCOM design4India summit-2019 Embed 3.0 – Unleashing The Power Of Design Disruption for 3 days at Bangalore and learned many aspects regarding his project area. Design4India is an open platform that enables the design and technology ecosystem to come together and drive design adoption at scale-up. This summit was to connect with design through leaders and groundbreakers from across the world. The summit delved into areas of cognitive, emotional and behavioural design that play a massive role in building consumer trust, boosting product/service adoption and nurturing loyalty**.**
  This summit proffered an intense networking to the student, and came out with angel-investor and developed many technology transfer link, which yielded to modify his prototype to a better strand.

- NGI NewGen incubate has attended Bangalore Tech summit-2018 for 3 days. This event had been a strategic platform for industries to understand and leverage the latest technical innovations. The theme of the 2018 edition of the summit was 'Innovation and Impact'. The event offered knowledge, networking, and business opportunities. The event had exhibition, tech tutorials, product launches, and speaking engagements. The Tech summit accorded the Incubatee with product scale-up, and paved way for many industry connect, which impacted his project to preferable state.

  Events like the above induce the Incubatees to do projects with innovative ideas, and indulge them in new creations which uplifts the society.

4. Student Projects (Please provide the following details for each student project)

Sr. No	Team/Project Description	Project status at beginning of the Year	Interventions made	Current status
1	Automated Portable Vertical Solar Stacker	The team was in Idea stage at the beginning of the year and they proceeded with the literature study about the project.	Working on patent documentation.	The prototype is under development and the students are in the assembling stage of the components
2	Advanced PCB Printing Technology Without Etching	The project was initiated with feasibility study and assigned for developing the prototype.	e-ink was developed by the students after many literature study	Prototype has been developed and is being in its test version.
3	Overhead Distribution Line Fault Detection System	The project was initiated with feasibility study and assigned for developing the prototype.	Has overcome many challenges in developing prototype	Testing and working process completed of 1st prototype. 3D modeling and supporting programs are completed for the second prototype.
4	Sowafis (Soap Water Filtration System)	The team was in Idea stage at the beginning of the year and they proceeded with the literature study about the project.	Working on patent documentation.	First prototype is in under evaluation.

5	Portable Dual Screen Attachments for Laptops	The team was in Idea stage at the beginning of the year and they proceeded with the literature study about the project.	Making a 3D sketch of the product in order to manufacture the Portable Dual Screen attachments for Laptops was a challenging thing.	The prototype has been evaluated by system experts and users.
6	Semi-Automatic Harvesting Equipment	The project was initiated with feasibility study and assigned for developing the prototype.	The model of the Equipment has been designed in software.	Model of the Equipment has been developed and is being tested.
7	Smart Number Plate	The team was in Idea stage at the beginning of the year and they proceeded with the literature study about the project.	Working on patent documentation	The prototype has been evaluated by system experts and users.
8	Quadcopter Based Lidar for Mining and Exploration	The team was in Idea stage at the beginning of the year and they proceeded with the literature study about the project	The students are developing prototype which is a challenging thing.	The prototype is being developed and it is in process.

9	Dual - Axis Tracking System Based Floating Solar Panel for Energy Harvesting	The team was in Idea stage at the beginning of the year and they proceeded with the literature study about the project	To produce high efficiency of electricity with low-cost using dual-axis tracking system was challenging.	The prototype has been evaluated by system experts and users.
10	RE-CHAR-GE (REcycled HydroCHAR GEneration) BIOMASS	The team was in Idea stage at the beginning of the year and they proceeded with the literature study about the project	The main aim is to convert the Bio waste into a fuel	The prototype was developed and is in testing and development stage.

- **Submit three/four high resolution (at least 300 dpi) pictures in jpeg format showing the prototype/product along with the students and their mentor.**

1. RE-CHAR-GE (REcycled hydroCHAR GEneration) BIOMASS.

Prototype under Development

Product under Testing

Product Developed

Brahmastra Bioenergy is a futuristic Bio Renewable energy company funded by Nehru Group of Institutions New Generation Innovation Entrepreneurship Development Centre, Supported by NSTEDB, Department of Science & Technology, Government of India. Brahmastra Bioenergy mainly concentrates on the Municipality Solid Waste Management, Bio Renewable energy, Pollution control and Reduction of Greenhouse Gases emission from Landfills of the country. The Main product of the company is Bio renewable Hydrochar. Hydrochar is highly calorific value containing product equal to the brown coal. The main innovation of the company is Compact HTC Bioreactor plant, which converts Municipality Solid Waste into Hydrochar. Mr. Subash is the Founder of Brahmastra Bio Energy doing his project under NGI NewGen IEDC. The above given are the Photos taken during Prototype development, Testing and Validation.

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

PROJECT: 1

i) Student team details (with contact information)

S. No.	Name, Residential Address Email& Mobile Number	Degree	College	Year	Aadhar Number
1	Cyril Joseph S/O A.K Joseph Alumgal (H), Chenthamara Nagar Thathamangalam P.O, Palakkad Pin:678102 cj85471@gmail.com 8547127716	B.Tech	Nehru College of Engineering and Research Centre	2016-2020	776009712944

ii) Brief description about the student start-up

Automatic power line fault detection is a device that detects, identifies and locates the fault present in the power distribution line caused by various natural or manmade forces. This project mainly focuses on the section of power line that connects the transformer with customers. These faults are directly affects the customers so that it must be found out and rectified as fast as possible. This is done by placing individual measuring/monitoring units on certain points of the power line which consists of set of load cells. Using sensor values the system checks whether there is any fault present on the line, If fault exists identifies the location using GSM and disconnect power flow through the line.

- **Empathize -** The idea came into mind by reading the newspaper article by KSEB about the death of peoples due to line breakages.

- **Define –** The student analyzed through the competition opened by the Kerala government to solve the above mentioned problem and identified the major competitors.

i). Mr. Rishikesh fromMuhamma, Alappuzha
As per the news report from TOI on July 30 2019 the tested report was submitted to KSEB by 66kv sub-station engineer
Short come: KSEB is still looking for more effective product

ii). Mr. Akhil C Aniyan- Graduated from Carmal Polytechnic college Alappuzha on 2018 MrAkhil and his team mates last year project on 2018 was related to overhead line fault detection and line man safety by using Bluetooth modules each of the module is connected to each pole

Short come: Each pole consist sensors and Bluetooth modules, that's make more costly

Prototype - Components Details

1. **Radio Transceiver -** Used for the purpose Telecommunication by means of radio waves about the line faults with the frequency of 433Mhz. It's coded for security with the help of HT12E&D IC

2. **Arduino -** Arduino Uno is an open-source microcontroller board based on the microchip ATmega328p for controlling operations used to control the communication and monitor the line condition. One UNO is enough to control 1 transmitter, Power supply and communication with GSM

3. **GSM Module** - SIM800 is a complete Quad-band GSM/GPRS solution in SMT type for communication with respective authorities used for secure communication between respective authorities. This method is still used by KSEB when fault occurs in medium voltage transmission

4. **Load cell** - Load cell is a type of transducer, specifically a force transducer to detect line fault by calculate sag

5. **Solar panel -** Solar panel which convert sunlight into electricity, here it's used to power the transmission circuit

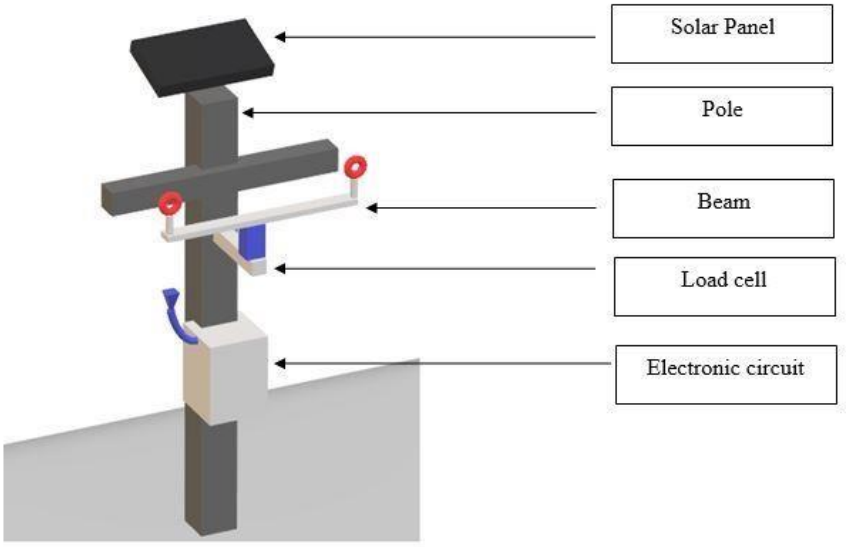
iii) Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs

Entrepreneurial Journey of

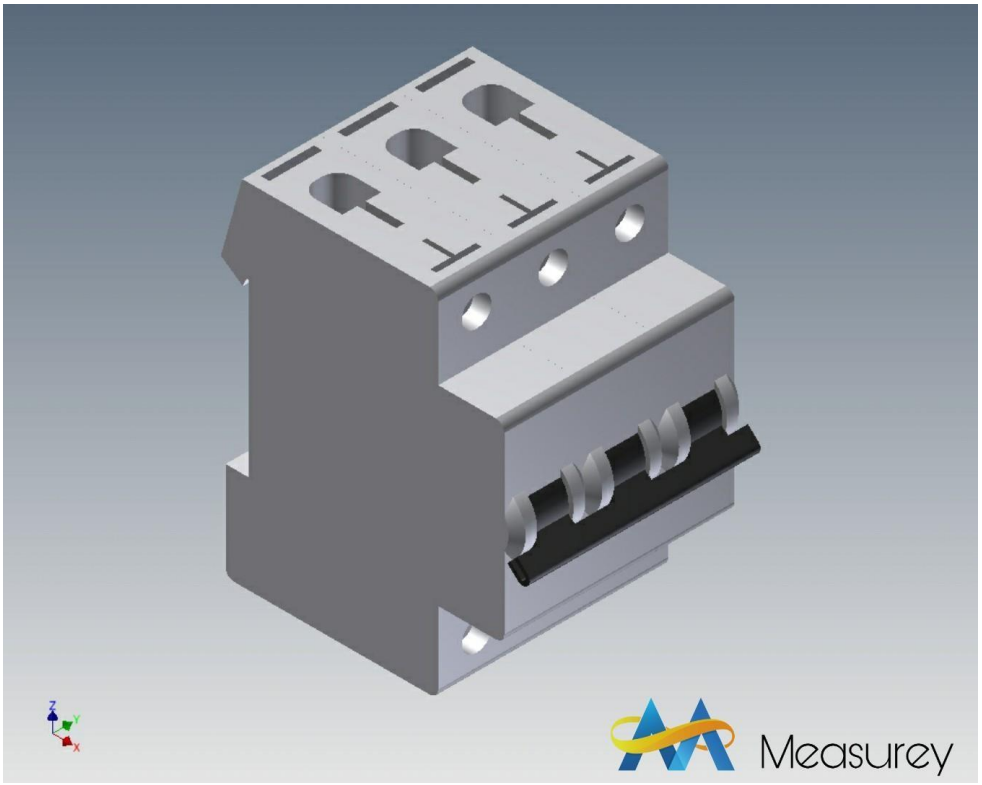
Measurey LLP- Overhead Distribution Line Fault Detection System

Sr. No.	Entrepreneurial Journey	Outcome	Remarks
1	Collection of Journals and Articles related to the Project.	Articles Collected	Process Done
2	Review and Consolidation of Articles related to the Project	Consolidated and Identify the Innovation	Process Done
3	Preparation of Quotation based on the Project	Quotation prepared	Process Done
4	Submission of Quotation to various companies and receiving the estimation from them also is checking the feasibility for purchasing the components.	Comparison table prepared	Submitted to the NewGen IEDC centre and receive money.
5	Ordering the components from the company	Order Placed	Process done
6	Identifying Industry for Develop & Commercialize the Students Project/Product	Identified for Industry-Academia Interaction	Obtained Permission from KSEB
7	Implementation of the Project/Product	Product under development	On going
8	Testing and working of final alternation of the project	Testing and working process completed of 1st prototype	Processing
9	Prototyping	Evaluated by system experts and users.	Completed
10	2nd Prototype	3D modeling and supporting programs are completed	Under development
11	Report submission	Ongoing	Ongoing
12	Applying for patent	Ongoing	Ongoing

A cost effective prototype is designed and tested as pilot project by Kerala Government.



3D view of arrangements over a Pole.



3D View of Breaker

iv) Contribution of NewGen IEDC in the same

NGI NewGen IEDC had provided Facilities, Technical knowledge and Financial support for developing the product NGI NewGen IEDC Office at Coimbatore.

1. NGI-NewGen IEDC provided a Workspace (A separate cubicle), Laboratory Space, and Internet for developing a Prototype. A separate storage cabin to store the components.
2. NGI NewGen IEDC shared the experiences of successful entrepreneurs through Boot camps, Mentoring through expertise from Industries.
3. NGI-NewGen IEDC provide me a high end computer (Workstation) for programming.

v) Future plan

- To implement in Overhead transmission lines in rural and hilly areas to identify the breakage and avoid the accidents.
- To reduce the electrical accidents happening all over the country.
- To contribute the major part in the power line protection of the country.

PROJECT: 2

i) Student team details (with contact information)

S. No.	Name, Residential Address Email & Mobile Number	Degree	College	Year	Aadhar Number
1.	M Karthik (Founder) 1/164, Muthuramalinganar street, Kasimajorpuram Courtallam Tenkasi - 627802 Phone no : 9566993875	B.Sc. Physics	Nehru Arts and Science College	III	405245150075

ii) Brief description about the student start-up

Innovation

The innovation in this project is simple smart system which will replace or reduce the human work. The idea is integrating license, RC and Insurance details into a single RFID tag which can be read by the RFID scanners in the traffic signals. This technology can be implemented in both the two-wheeler and four-wheeler in a smart way. It is easy for the police and other departments to identify which vehicle has the proper documents. And also, it will lead to reduce the crimes happening.

Demand of the product

Definitely there will be a demand for this product. As said above, people often forget their license and insurance while driving. It will be rectified by this product. And also, this product will definitely create the demand for the government agencies. Since it can be accessible by both literal and illiberal people it will create a huge demand for this product.

Social benefits of the product

It shall enhance the Transport department of India. Then people won't forget to bring their license and insurance. Offering and getting bribes will be completely eliminated thus this pave the way for corruption free agencies.

Regulatory standards of the product

This product will be sent to Central Motor Vehicle Rule – Technical Standing committee, Automotive Research Association of India (ARAI) and International Centre for Automotive Technology (ICAT).

Interaction Process completed and Memorandum of Understanding Process Ongoing.

Industry Identified Based on our project:

Silicon systems

15/29, Mahaliamman nagar,

Kalapatti, Coimbatore - 641 048

iii) Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs

Stage 01: Identify

In first step, the Student has compiled a list of possible stakeholders to be involved in the decision-making process. He prepared interview questions with the intention of understanding which main features should be enhanced or eliminated, such that he could quickly build a new version that responded to the needs of our users. The group was organized to carry out the interviews remotely, following a scripted set of questions;

1. How do RFID number plates actually work?
2. Is Smart Number plate reliable and powerful enough for my vehicles?

The first results of the interviews were encouraging, as the interviewees were open to providing feedback on the weaknesses and the strengths of the system. After iterating and changing some of the questions, and thanks to some users willing to interview more than once, he was ready to define the user base more clearly.

Stage 02: Define

He had a sufficient database to understand what the real problems were. After this, he had selected the common client User Personas and had a finished set of data coming from interviews and surveys. At this point in the project process, he had completed brainstorming sessions around our users, hypothesized solutions, and kept an open mind to every possible innovation.

Stage 03: Ideate

Using the above information, here the team ideates solutions. One step further from the definition is the Ideation phase, where the key is forming real concepts and solution, not just abstract definitions. So in this stage our team was collecting articles related to the project from various reputed journals and reviewed properly. After consolidated the articles our team was identifying the innovation of the project.

Stage 04: Prototype

During the prototype phase, it was finally time to make our definitions and ideas come to life. A prototype is the first, original model of a proposed product, and this is exactly what was set

out to build. By design thinking standards, the prototype stage is where you create an inexpensive, scaled down versions of the real product to investigate solutions from the previous stages.

Stage 05: Test

After a definition, ideation and a prototype phases it was finally time to see if our product actually worked in real life. In design thinking terms, testing means putting the complete product to trial using the best solutions created in the prototyping phase. In our case, the testing phase did not only take place at the end, but it was a constant loop of feedback and iteration whenever it was possible. Once the prototype was completed, it was time to test it with the widest possible audience and check with them how effectively it met their needs, understand their perception, and understand if it accomplished their goals. He made two reviews of the work in progress at the end of each sprint and one final release review at the end of the path, before the product was finally put into production. He used the last sprint to prepare the infrastructure needed to run and launch the product.

Process through NewGen IEDC

Phase 01: Preparation of Quotation based on the Project

Phase 02: Submission of Quotation to various companies and receiving the estimation from them also is checking the feasibility for purchasing the components.

Phase 03: Ordering the components from the company - He had checked the feasibility of the components and get help from NewGen IEDC centre for purchasing the components from the company and bills for the same is submitted.

Phase 04: Identifying Industry for Develop & Commercialize the – He had Identified two Industries related to our project and had an Interaction about our Innovation. Memorandum of Understanding Process is taking place and progress going on with the help of NewGen IEDC centre.

Phase 05: Implementation of the Project/Product

This project is "**SMART NUMBER PLATE**" and title itself explains about the core idea of this project. It can be made in two types. License, these details have to upload in a computer to check the above criteria. By this way, the student finds out the drivers who are having license or not. RC and insurance can be uploaded in a number plate of a vehicle (Four and two Wheelers) which can be easily scanned by RFID Scanner. RFID scanner is to be fixed in Traffic light signal to scan whether a vehicle has license with all the necessary documents or not.

First, a number plate in a vehicle (two wheeler) has to be fixed with the facility of storing our RFID tags with suitable frequency range and our license, registration certificate, insurance, pollution certificate and other vehicle documents can be uploaded to that smart screen. Then, with the support of government, the student can make RFID tag as mandatory in all the vehicles to identify whether the vehicle has all the vehicle documents or not. If a vehicle does not have any documents, it can be easily picked out. The data collected from vehicles are to be collected and will be sent to LAN (Local Area Network)**.** Then, it will be into main server of our government.

3D Design of Prototype with Student and Mentors

iv) Contribution of NewGen IEDC in the same

NGI NewGen IEDC had provided Facilities, Technical knowledge and Financial support for developing the product NGI NewGen IEDC Office at Coimbatore.

1. NGI NewGen IEDC provided a Workspace, Laboratory Space, and Internet for 24×7 access.
2. A separate storage cabin to store the components.
3. NGI NewGen IEDC provide access to Computer (Workstation Desktop) & Prototyping facilities.
4. NGI NewGen IEDC facilitate networking with Professional Resources, Advisors, Consultants, Rich pool of Industry Practitioners and Mentors.

v) Future plan

- Wireless technologies such as LoRA and Wireless sensor Networks.

NewGen IEDC
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of the College/Institution hosting NewGen IEDC	SRM Institute of Science and Technology		
Year of starting NewGen IEDC	2019		
Name of the Head/Principal of the Institution/College	Dr. C. Muthamizhchelvan		
Name of NewGen IEDC Coordinator	Mr. Nikunj Panchal		
Contact Details of NewGen IEDC Coordinator • Mobile Number • E-Mail ID	+918148606827 nikunjpr@srmist.edu.in		
Financial Details	Sanction Order No./ Date		Amount Sanctioned
Previous Sanction Order Details	1.	EDII/DST-NewGen IEDC/18-19/08 Date: 13/11/2018	60,00,000 Rs
	2.		

Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	**Creative Arcade (Date: 7/9 2019 Participants :50)**	A GFX and VFX workshop conducted, in association with **Perfect Shades**. It focused on the appropriate use of photo editing and video editing software.
2	**101 workshops on Lathe (Date: 7/9 2019 Participants :15)**	A series of certified workshops to give hands-on experience to efficiently use the top-of-the-line equipment at fablab.
3	**React with SRMKzilla (Date: 8/9 2019 Participants :80)**	**SRMKZILLA in collaboration with GatsbyJS** conducted an interactive web development workshop, Future O'Web. Future O' Web provided the platform for web divers to upgrade their gear. The budding developers were exposed to the promising scope of React, HTML5, CSS3 and even got to create their own blogs. The participants were ignited with new ideas to take their first step towards the Future of Web.
4	**Innovation Day (Date: 15/10 2019 Participants :60)**	This was an event held in tribute of the birth anniversary of **Dr. A P J Abdul Kalam** and his vision of innovation in India. In the same spirit it was an exhibit of all the latest innovations done by students and startups in SRM showcased at Fablab. The teams had projects ranging from unmanned aerial vehicle to 3D Printers and everything in between. The Chief Guest of this event was **Dr. Sivanandi Rajadurai, Director Research, Sarada Motors Chennai.**
5	**API Development Workshop with DSC SRM (Date: 2/2 2020 Participants :50)**	A workshop to teach the students advanced NodeJS concepts and use it to develop API's hands-on.

Sr. No.	Activities	Outcome/Achievements
6	**MarchBytes with MSPC (Date: 14/03-15/03 2020 Participants :75)**	Workshop on Application Development using Android Studio. Day One- Participants learnt to make with their very own note-taking application. Day Two was in partnership with **Neur Industries**, workshop on Augmented & Virtual Reality.
7	**Triumph Talks- I (Date: 25-02-2019 Participants :70)**	Triumph Talks with **Prof. Sandeep Sancheti, Vice Chancellor, SRMIST** Inspiring interactive session by professor. He motivated students with stories and have given valuable suggestions to follow their passion.
8	**Triumph Talks- II (Date: 13-03-2019 Participants :90)**	Triumph Talks with **Prof. C. Muthamizhchelvan, Director E&T, SRMIST** Inspired students with his experience and his stories. Guided students to adopt best practices and shared about collaboration, teamwork & leadership.
9	**SRMKzilla Game Design Workshop (Date: 8/9 2019 Participants :60)**	A GFX and VFX workshop conducted, in association with **Perfect Shades**. It focused on the appropriate use of photo editing and video editing software.

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	**Entrepreneurs Community Meetup-I (Date: 09-02-2019 Participants :60)**	First open house for entrepreneurs, we aim to connect likeminded people and create open friendly environment where ideas and about their execution discussed with others. We have Invited alumni entrepreneurs; they have shared their experience.
2	**ShowTime-I (Date: 12-04-2019 Participants :80)**	Showtime hosted for "**CREED MOTOR WORKS**" where they have launched their product "**Prelude Bike**" & shared about their journey of making Prelude bike and inspired students to follow their passion.
3	**Entrepreneurship Awareness Camp (Date: 27-06-2019 to 28-06-2019 Participants :35)**	EAC organized primarily for Faculties, it was about various opportunities, problem solving approach, writing business model canvas, doing market research, intellectual property, fund raising and various case studies.
4	**Smart India Hackathon (Date: 8/7-15/7 2019 Participants :80)**	We have hosted **SMART INDIA HACKATHON'19 -** Hardware Edition finals at Fablab. The Finalists from Universities across the nation attended this event. Every day consisted of a morning fitness routine, working hours and a cultural show in the evening. The Chief Guest was **Dr. Abhay Jere**, **the Chief Innovation Officer of MHRD**. The last day consisted of a video conference held with the MHRD and AICTE.
5	**Kingston University Bootcamp (Date: 22/7-23/7 2019 Participants :60)**	We have organized 2-day Entrepreneurship Bootcamp in collaboration with **Kingston University, London**. It was centric to
		Entrepreneurship Awareness for student entrepreneurs of SRM. Both the days, activity-based learning session by **Prof. Phil Hudson.** It also had a Pitch fest included within it to bring out the best business plans ideas from the attendees.

Sr. No.	Activities	Outcome/Achievements
6	**Techmux Hackathon (Date: 23/8 2019 Participants :40)**	In association with Aakaash Research Labs we have hosted Hackathon **Techmux 3.0 at FABLAB, to** solve real world issues ranging from rural development to environment. Students have to come up with a viable solution in a continuous stretch of 24 hours.
7	**Gen Y Inception 4.0 (Date: 7/9 2019 Participants :150)**	Gen-Y Inception 4.0, an ensemble of impactful workshops consisting of Android App Development, Web Development, Machine Learning and UI/UX.
8	**ShowTime-II (Date: 7/9 2019 Participants :50)**	#Showtime, **UAV SCRO and Team Spars** technical teams of SRM showcase their latest projects and prototypes. It serves as an inspiration for other students to pick up newer skill sets, projects and try something out of the ordinary.
9	**Entrepreneurship Bootcamp based on BMOE (Date: 13/9-15/9 2019 Participants :80)**	An **Entrepreneurship Boot Camp in association with Sutardja Center of Entrepreneurship and Technology, UC Berkeley.** based on the Berkeley Method of Entrepreneurship to understand general concepts through practice, observation, and critical thinking. It combines the key approaches of Inductive and Journey based Learning to help & discover the next milestone on entrepreneurship journey to becoming a successful entrepreneur.
10	**Design Bootcamp (Date: 11/10-13/10 2019 Participants :40)**	Design Bootcamp is to experience Design thinking to develop a creative process where one can build empathy for users or customers, define a problem so that one can know what one's working towards, ideate to come up with possibilities, prototype and test the best ideas. It revisits steps throughout the process, learning and iterating as one go.
11	**POC Funding Screening Session (Date: 43719 Participants :80)**	A PitchFest for innovators and makers, Students from various disciplines have applied for support to develop POC of their ideas. With the help of expert panel all projects got reviewed and best projects were recommended for further support.
12	**SIH Internal Hackathon (Date: 19/01-21/01 2020 Participants :150)**	The SRM SIH Internal Hackathon for both, the software and hardware edition were conducted simultaneously and was open to all students of SRMIST. The aim was to shortlist teams that will be attending the national rounds.
13	**Demo Day of Open Projects (Date: 1/2 2020 Participants :45)**	An exhibition, as well as the judging of all the finalists of the Open Projects taken up by students and startups in SRM, showcased at Fablab.
14	**Showtime - IV (Date: 7/2 2020 Participants :80)**	Showtime hosted for "**KREATOR 3D**" where they have launched their product "Kreator A1 3D Printer & Mini CNC" & shared about their journey of making it and inspired students to follow their passion.

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1	**Workshop on "Resident Mentors in Innovation and Incubation Centre" (Date: 14-3-2019 to 17-03-2019 Participants :25)**	Hosted workshop for Resident Mentors in association with School of Design Thinking, Design Intellect. Dr. Anbu and Mr. Ramakrishnan had trained mentors. Workshop has helped mentors to learn designing thinking tools and how they could help students to ideated and help them to solve problem as an Entrepreneur.
2	**Tech Talks -I (Date: 02-04-2019 Participants :35)**	Tech Talks with **Mr. Kannan Doss, Director, Food for Life India Pvt Ltd** interacted with the students and faculty on the Food and agriculture related opportunities that require technology to innovate current practices.
3	**Triumph Talks- III (Date: 04-04-2019 Participants :45)**	Triumph Talks with **Mrs. Vandhana Ramanathan, CEO WSquare** Inspiring and an interactive session with the students and the speaker shared her entrepreneurial journey, the challenges and the ways to sustain in the business world.
4	**Triumph Talks - IV (Date: 22-04-2019 Participants :90)**	Triumph Talks with **Dr. Ikhlaq Sidhu, Founder and Director of Sutardja Centre of Entrepreneurship and Technology, UC Berkeley,** He shared his experience and about Silicon Valley startup ecosystem.
5	**Tech Expo (Date: 29/9 2019 Participants :150)**	An exhibition of the latest and greatest achievements and projects of all the technical teams in the campus of SRM IST. **The Chief Guest was Dr. Ramesh Pokhriyal, MHRD Minister.**
6	**Tech Talk - II (Date: 30/9 2019 Participants :40)**	Tech Talks with **Mr. Sameer Rawal - Social Innovation Evangelist DISQ**, has inspired students and shared his experience about innovative thinking and encouraged students to solve complex societal challenges
7	**Five Day FDP on " Flexible and RF Printed Electronics" (Date: 9-10-2019 to 13-10-2019 Participants :40)**	FDP has attracted Industry innovators and academic researchers who are working in Flexible electronics devices. This workshop has given overview about Flexible Displays, Flexible Antennas and sensors on surfaces such as glass, Plastic, paper, cloth etc.
8	**ML/AI Workshop by DSC (Date: 12/10- 13/10 2019 Participants :100)**	An event conducted in collaboration with Google by its AI/ML facilitator, to give students a hands- on experience in understanding machine learning models.
9	**DSC-X (Date: 17/10 2019 Participants :80)**	DSC X is DSC SRM's flagship event where proficient speakers are invited to share their expertise in certain fields as well as to conduct activities that indulge the students to pick up new, relevant skills. The speakers were Muthu Ramakrishnan Viswanathan(Google), Akshay Saini (Uber) and Nikhil Raichur(Google).
10	**Tech Talks - III (Date: 19/10 2019 Participants :50)**	Tech Talks with **Dr.Ramesh Kandadai,** he has shared his experience of Unmanned aerial systems and discussed few topics in depth. And guided students to practice industrial way of managing project and team for efficient output
11	**Triumph Talks - V (Date: 11/1 2020 Participants :80)**	Triumph Talks with **Mr. Chandran Krishnan**, angel investor and CEO of The Chennai Angels, interacted with the students and our incubatees to motivate them and shared the perspective of investors.

Sr. No.	Activities	Outcome/Achievements
12	**Big Data Analytics Workshop with MSPC (Date: 1/2 2020 Participants :65)**	A workshop to teach the students the basics of Big Data and how to use it in effective product modelling as well as data analytics.
13	**Startup Story by SRMKZILLA (Date: 8/2 2020 Participants :60)**	3 eminent startup personalities namely **Mr. Balaji S, cofounder of Chai Kings, Mr.Arun P, cofounder of Guvi and Mr Abheek T**, **Head of engineering at Commutatus**, had shared their journey story and interacted with the students on the fundamentals and challenges of their startups.
14	**Engaging for Excellence: Embracing Health Innovation (Date: 43954 Participants :40)**	In collaboration with Energica we have hosted "Engaging for Excellence: Embracing Health Innovation", Panel members were Mr. Ramesh Somasundaram, Mrs. Devakshi Dhawan, Dr Biju Jacob, Mr. Nikhil Chandwadkar & Mr. Vikram Viswanathan.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any: No

3. Other important highlights (new initiatives), if any:

1. **Maker Space-FabLab**
2. **Tech – Entrepreneurship courses**
3. **Design Centre in collaboration with Design Intellect**
4. **Institute Ambassador Program**
5. **Institute Innovation Council (IIC)**

4. Student Projects (Please provide the following details for each student project)

Sr.No.	Team/Project Name	Description	Project Status Beginning of the year	Interventions Made	Current Status
1	**NIS0001 Monkwish**	A platform for employers to improve the organization performance and capabilities by identifying employee skill gap and help them to become more competent.	Proof of Concept Stage	Application developed and have successfully run first pilot with Swiggy for product validation.	Currently they have developed the final products with all interactions. They have adopted subscription-based model. Currently they have 5 Paid users.
2	**NIS0002 Rizel**	Developing Electric Vehicle Powertrain	Digital Cad designs and simulations were ready.	For First prototype to test their technology, they had retrofit KTM bike, made electric version with integration of Motor, BMS, Drive etc. To understand the performance and efficiency. After learning, they have successfully completed digital design of battery pack and Motor, and also started working on first prototype.	They have completed 2nd prototype of Motor with all iterations, currently it's in testing phase.

Sr.No.	Team/Project Name	Description	Project Status Beginning of the year	Interventions Made	Current Status
3	**NIS0005 Smart Attendance System**	A platform to provide access to premises by Face Recognition	Ideation Stage	They had created a desktop application to run the test, Which was able to do face detection and recognition in milliseconds, easily it could detect 5 faces at a time, but needed more computation power to detect more faces and also the system was not easily expandable.	Currently they are working to make stand-alone system by moving on to Jetson platform or through Cloud server.
4	**NIS0006 Development of EV retrofitting kits**	EV retrofit kit for converting existing gasoline vehicle to electric.	Digital Cad designs and simulations were ready.	To make first prototype they have converted one auto-rickshaw into electric and made test run to understand performance and efficiency. Based on that learning they have made second prototype with standard industrial grade components and connected over internet to wirelessly control and study the performance.	Currently they have completed final version of prototype with all possible iterations and its on pilot run. Its study is going on to see performance and efficiency.
5	**NIS0008 Bio 3D printer**	Desktop model BIO 3D Printer.	Ideation Stage	They have fabricated first prototype to test and learn the properties of biomaterial while printing. For its first run they have used Aloe Vera gel as it has similar viscosity as another biomaterial.	Currently based on learning they had created 2nd prototype of extruder. They will be doing further test with Alginate biomaterial.
6	**NIS0007 Metal 3D Printer**	Desktop model of Metal 3D printer	Ideation Stage	They have tried using different composition to test sintering process to make first metal printed model they had used existing furnace to get output. They have planned to create an extruder to bring all process at single place.	Currently they have bought new furnace to do deep research on different composition and based on that they will be making second version of metal extruder prototype.
7	**NIS0013 MetaWear**	A miniature device to monitor remotely body temperature, heartbeat & Glucose.	Digital Cad designs and simulations were ready.	They have tested first prototype on Breadboard, to test heartbeat and temperature. After testing they have finalized components, made first prototype of pcb board for measuring heartbeat, and run test again. Also made an online portal where device push all data over internet to server, which could be seen at Mobile/Web App.	After successful testing of heartbeat over PCB board, team have started working on Glucometer to test Glucose level by sweat. They have ordered required chemicals and accessories to test it.
8	**NIS0014 Conversion of plastic waste to fuel oil via enhanced pyrolysis with hydrogenation**	Conversion of plastic waste to fuel oil via enhanced pyrolysis with hydrogenation	Ideation Stage	To test their theoretical assumptions, they have made first prototype to test the characteristics of output oil/gas from processed waste plastics. They have studied output and its falling in category of petrol/diesel.	Currently, they are working on refining output by adding catalyst in process. And doing research for efficient output.

Sr.No.	Team/Project Name	Description	Project Status Beginning of the year	Interventions Made	Current Status
9	**NIS0015 Fabrication and parametric evaluation of modified cooling scheme in a bench scale OTEC system.**	Design and development of a bench scale Ocean Thermal Energy Conversion facility which co-generates power and desalinated water at the same time. This system has a wide scale application in industries and can also be used for desalination of seawater to meet the water demands.	Ideation Stage	A first prototype of this project was developed, which helped as a proof of concept. After that they have fabricated second prototype which is highly precise system, able to get satisfactory result.	Currently, they are ready with second Prototype, and further research, analysis & optimization work is going on.
10	**NIS0019 Tactical Smart Scope Using Encoder Decoder Based Scene Segmentation**	Design and development of Tactical Smart Scope based on Scene Segmentation. Their aim is to display over the scope human body map, and surrounding environment and object.	Ideation Stage	To test their concept first they have integrated all major components camera, screen, lens, tried experiment. There were able to do human face recognition, creating dynamic map of human body, able to recognize surrounding objects and environment.	Currently they have started working on second prototype, where they are designing stand-alone board system, which could be installed directly above the gun.
11	**NIS0020 Light weight concrete Canoe**	A lightweight concrete canoe of 6-meter span	Proof of Concept Stage	They have prepared first prototype by using concrete of density 855kg/m3 and the reinforcement carbon fiber. The mold for construction is prepared using Styrofoam which is engraved using a CNC machine. First prototype was unsuccessful, it got vertical crack after drying up.	Currently they have started to prepare second prototype, they have prepared the reinforcement and completed 70% of the mold construction, they are only left with final construction.
12	**NIS0021 Self Reconfigurable Modular Mobile Robots for Uneven Terrains**	The project aims to develop shape-shifting modular reconfigurable robots that undergo autonomous morphogenesis i.e. structure formation based on current environmental situation and task assigned to the robot. The quintessential modular robots are not designed to do any particular task but are a versatile system that develops into various forms to execute a variety of tasks.	Digital Cad designs and simulations were ready.	Followed by a comprehensive CAD and PCB design, a 3D printed prototype of the modular robot was made to test and verify its economic feasibility, technical viability, and real-world deploy ability. Preliminary testing exhibiting locomotion, magnetic docking, and lifting of a module was carried subsequently.	Currently, they plan to work on the self-reconfiguration section, which would result in broadening the deploy ability of such modules in remote, hostile, and human inaccessible environments. The novel modular robots are equipped with sufficient exteroceptive as well as proprioceptive sensors, required for complete autonomy.
13	**NIS0022 Design and Development of system module to measure the variation in micrographia and speech for Parkinson's Disease.**	Design and Development of system module to measure the variation in micrographia and speech for Parkinson's Disease.	Ideation Stage	They have made first prototype by using WACOM and studied the output by drawing various shape. They have run pilot with 3 patients, based on feedback, they have modified application.	Currently, they have completed second prototype and software to do testing with more patients

Sr.No.	Team/Project Name	Description	Project Status Beginning of the year	Interventions Made	Current Status
14	**NIS0023 Non-Invasive Bilirubin Sensor for Continuous Monitoring and Automatic Control of Phototherapy for Infant Jaundice Treatment**	To design a compact size Non-Invasive Bilirubin sensor which continuously monitors bilirubin level of jaundice in neonates and to automatically start the phototherapy treatment process using Iot technology	Ideation Stage	They did Testing with colour chart (diff yellow colour chart) - to prove that designed sensor shows variation among diff level of colour charts. Measured with 75 adults with three different skin tone such as fair, dark and brownish skin tones - To prove how far the designed sensor shows variation among diff skin tones at diff location such as Forehead, ventral palm, ventral wrist, dorsal palm and dorsal wrist. Testing with 10 volunteering neonates - found 50% correlation with existing jaundice meter.	Currently, Second Prototype designed and fabricated of non-invasive bilirubin sensor and phototherapy set up is ready. They will be starting pilot run.
15	**NIS0024 Design and development of a Crop Quality Monitoring and Classification System using IoT and Blockchain**	Design and development of a crop quality monitoring system with aim to a) Sensing the various parameters on-field and warehouse to determine the crop quality. b) To update this data into the blockchain. c) To enable a secured transaction between the distributor and the farmer.	Ideation Stage	The sensors were calibrated to obtain better accuracy and first implemented in the horticulture department for testing purposes. For real-time data, 6 bags were taken, and seeds sown with the soil containing fertilizers as well. The crop was monitored throughout the growing stage and tomatoes were obtained. The sensor data was recorded and stored in the database for classification of quality. The private Ethereum blockchain network was built initially to visualize the working efficiently.	Currently they are working on second prototype for big area of agriculture land and setting up their device at various location to understand characteristics of soil at various position, accordingly they will notify to farmer through mobile/web app.
16	**NIS0025 Design of wearable full duplex Digital Transceiver for underwater optical wireless communication**	A wearable full-duplex digital transceiver based on blue LED for high speed data communication such as audio/video Under working condition.	Ideation Stage	They have created digital model to test their all ideas, all the simulations have been completed and the results have been verified, analyzed and tabulated.	Currently they have procured all the required resources for development of their first prototype to experiment and check the results in real systems.
17	**NIS0028 Faby**	A mobile robot, which could autonomously move around premises. Which should be able to supervise and control premises over the network.	Digital Cad designs and simulations were ready.	They have fabricated first prototype with the features of controlling premises over the network and do autonomous movement around. and added feature to talk back, to give tour to guests.	Currently they are working on second prototype improvising, autonomous mode of robot, and adding with feature to control over web and mobile application.
18	**NIS0029 Fablab UGV**	An Unmanned Ground Vehicle	Proof of Concept Stage	First prototype, they mainly work on movement of UGV based on geolocation and also sensor integration to avoid obstacles.	Currently, they are developing second version of their prototype with integration of industrial grade components for better performance.

Sr.No.	Team/Project Name	Description	Project Status Beginning of the year	Interventions Made	Current Status
19	**NIS0033 Design Development and Implementation of parallel drivetrain for 3 wheelers**	Design Development and Implementation of parallel drivetrain for 3 wheelers	Digital Cad designs and simulations were ready.	To test their concept, they had created digital model and run all the simulation to study the performance. Results were convincing based on that they have finalized all components for their first prototype.	Currently, they have procured all the required components and have finished all CAD designs of mechanical parts and PCB board designs.

- **Please Submit three/four high resolution (at least 300 dpi) pictures in jpeg format showing the prototype/product along with the students and their mentor.**
    - **Link:** *https://drive.google.com/drive/folders/1IOEgs1kphZCaKTSE_EvLztiUM0oB_m_X?usp=sharing*

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

- Student team details (with contact information)
- Brief description about the student start-up
- Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs
- Contribution of NewGen IEDC in the same
- Future plan

Link: Project 1: *https://docs.google.com/document/d/1nAQimqAVdYZHuQ3yfLEdk1raey9B6QV_ATEH58igLPM/edit?usp=sharing*

Project 2: *https://docs.google.com/document/d/18sW_eJbRklkFYleLxrnjRwuuQLtqwE0qN3rs20Rt9AE/edit?usp=sharing*

NewGen IEDC
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC : CVR College of Engineering

Name of the Chief Coordinator : P. Viswanath

Period under Review : 1st Jan. 2019 to 31st Dec. 2019

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	**Entrepreneurship Awareness Camp**: The camp organized by our college was sponsored by EDII under DST- NIMAT scheme from 26-28 Sept 2019.	Seven Entrepreneurs delivered sessions on various Entrepreneurial topics. It has helped the students to develop entrepreneurial mind set, learn enterprise initiation and develop entrepreneurial skills.
2	**Entrepreneurship Development Programme**: 20 students from our college are undergoing "Technology Entrepreneurship development programme" under ISB and Telangana TASK for a period of three years.	The students are able to recognize the innate entrepreneurial competences within them. They are able to recognize and assess opportunities in the environment. They understand the role that entrepreneur can play in enhancing their lives and lives of others.
3	**Business Plan Competition**: 18 students from our college as well as from other colleges participated in Business Plan Competition on 23-24 January, 2019.	Students got a better insight on issues such as novelty and competitiveness of idea, marketing, financial projections and other aspects to make a compelling argument for their business idea.
4	**Research and Development Showcase**: 10 faculty members and 40 students from various branches of B.Tech had attended the R&D showcase, 2019 at IIIT, Hyderabad on 23rd and 24th February, 2019 where 200 research projects were demonstrated and where some of the most recent developments in research and innovation in technology at IIIT-H were represented.	The students got awareness on the latest developments in research and innovation in technology through the research projects that were displayed and demonstrated at IIIT Hyderabad.
5	**Startup Event:** A two-day Annual Entrepreneurship Summit [E- Summit], was organized by IIT, Mumbai at the campus of IIT Mumbai on 19 & 20 January, 2019. Ten students from B. Tech III year participated in the E-summit	Students got an opportunity to interact with students from other colleges and it gave them a platform to share their views, ideas with mentors and experts.
6	**Entrepreneurial games:** These games are conducted atleast twice every month during regular Entrepreneurship classes for III year B.Tech students in their first semester.	These games have helped in developing social and cognitive skills.

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	**Smart India Hackathon 2019:** It was held on 1 & 2 March, 2019. In SIH 2019, the students had an opportunity to work on challenges faced within the private sector organizations and create world class solutions for some of the top companies in the world, thus helping the Private sector hire the best minds from across the nation.	30 students from our college participated in this hackathon. Our college has won 4 prizes : 1. Nodal Center Best Prize-Rs 1,00,000 2. Nodal Center Third Best prize, Department Level First Prize(Rs 50000) 1. Nodal Center Level Runner-up 1 2. Nodal Center Level Runner-up 2 The management of CVR College of Engineering, honored the winning teams with matching cash prizes amounting to a total cash award of 2 lakhs across all the winning teams
2	**Smart India Hackathon 2019:** The third edition of the Smart India Hackathon-2019 was conducted by the MHRD Innovation Cell from 8-13 July,2019.	Team Enigma 99 from our college won Smart India Hackathon 2019. The team had developed a smart sensor based fuel tank guard alarm to give protection against theft and siphoning. The team received a cash prize of one lakh rupees and further opportunities from the Government of India to extend their product under Ministry of Coal. Our college Management felicitated the entire team (4th year ECE students, Rohan Vamshi, Robin Wilson, Santhosh Kumar, Rohit Patil, Sahithi Ammana, TRasgana) and the mentor of the team (Dr. Gaurav Sharma) and gave a cash prize of one lakh rupees to the winning team. One more team won Rs, 50,000/-.
3	**RURATHON:** CVR College of Engineering conducted 'RURATHON', (Rural development Theme), a 36 hours Hackathon (League level) on 27th &28th December, 2019 in the campus, in association with JHUB – JNTUH. In this Rurathon, 90 teams (each team consisting of 2-4 members) from 13 colleges participated. The total number of participants was 327.Out of 327 participants, a majority of students were from CVRCE (231) and the rest of them were from other colleges.	**First Prize winners**- P Renu, Kandukuri Ratna Prakarsha, Tenneti Srimanth, Rajoli Valli Nikhitta from ECE, CVRCE. They presented the idea of Silicon Farming. This system identified a region where crops canbe grown. It could also predict the quality of growth of a selected crop in a selected region under the prevailing conditions there. **Second Prize winners**- Garine Akhil & Varagani Hemanth Kumar from IT, CVR College of Engineering. Their idea Farmway worked on updates and the ways to improve farming techniques.
4	**Vervethon**: J HUB Hackathon. Theme was Monitoring and controlling the solar plant. 189 students (63 Teams) participated. The Hackathon was held on 11th & 12th Jan.	Students from our college won second prize

Sr. No.	Activities	Outcome/Achievements
5	"**Design thinking" course**: The course was conducted for 200 students of our college for 14 days.	The students got an in depth knowledge on • The five practices that enable innovation • Steps involved in design thinking • Scaling Design Thinking • Critical success factors while implementing Design Thinking • Possible Applications of Design Thinking • The Innovation triangle • Design Thinking Mindsets • Methodologies for Design Thinking

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1	**One day Workshop on Entrepreneurship** on 11 July, 2019. The guest speaker was Mr. Rakesh Munnanooru, Founder and CEO of Whistle Drive.	The guest speaker delivered a talk on the qualities of successful entrepreneurs and his experiences as an entrepreneur.
2	**One day Workshop on Entrepreneurship** on 25 July 2019. The guest speaker was Mr. Vijaya Ramaraju, Founder and CEO of Instagreen .	The guest speaker delivered a talk on his journey from ideation stage to commercialization stage of his product.
3	**One day Workshop on Entrepreneurship** on 13 August, 2019. The guest speaker was Ms. Sravani Ramisetti, Consultant, McKinsey, USA.	The guest speaker delivered hands-on-session on the steps involved from idea generation stage to product prototype development stage. The students gave positive feedback on the workshop.
4	**Internship in Companies:** 142 students pursued internship in 33 various companies during the year 2019. Some of these companies are - Cleartrip, Value Labs, GGK technologies, Quikr, Kony Labs, Byjus, Edwisor, Tech Mahindra Pega Internship , Integrhythm, Sap Labs, Amazon Sde, Modak Analytyics, Persistent, Seamless – SDS, Maq Software, Servicenow and Aspire Systems-SN.	These students have undergone long term internship program in these companies which were for 6 months to 1 year duration. During this internship period, the students had got in-depth knowledge and skills which are essential to develop their entrepreneurial capabilities.
5	**Conference:** Eighteen students from B.Tech III year of our college participated in the "Start Entrepreneurs, 2019" a conference and a grand Pitching Summit for start-ups**,** on 24 January, 2019 which was organized by Indian Chamber of Commerce at Radisson, Gachibowli, Hyderabad.	Our students got to interact with 80 Start-ups from Edu-Tech, Agro based sector and Health Sector who pitched their start-ups in front of the Venture Capitalists, Angel Investors and some financial institutions.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any: Nil

3. Other important highlights (new initiatives), if any: Our college is implementing Design Thinking course which was not there before in order to bring out the innovativeness among the students and faculty.

4. Student Projects during 2019-2020 (Please provide the following details for each student project) :

Sr. No	Team/Project Description (2019-20)	Project status at beginning of the	Interventions made	Current status
1	Centralized Water Distribution System for Communities	Idea stage		Prototype is ready
2	Fast curing of Cement Bricks	Idea stage		80% of Project completed. Prototype will be completed by end of July, 2020
3	Automobile Vehicle Security & driver	Idea stage		Prototype is ready
4	Smart Traffic signaling System	Idea stage		Prototype is ready
5	Remote Control of Agriculture Pumps	Idea stage		Prototype completed in November 2019. Six units made and deployed in college campus
6	Detecting Poisonous Gases in Sewage Lines	Idea stage		Prototype is ready
7	Virtual Training system for Mentally Challenged	Idea stage		Final Product is ready and customer acceptance awaited
8	Jute Branch Cutter	Idea stage		Prototype is ready
9	Automatic Drying & Protection of Clothes from rain	Idea stage		Final product is ready and trying to market the product
10	Smart Aqua Culture System	Idea stage		Final Product is ready and trying to market the product
11	Efficycle	Idea stage		Prototype is ready
12	Corporatz App	Idea stage		Prototype is ready
13	Solar Panel Cleaner	Idea stage		80% of Project completed. Prototype will be completed by end of July, 2020
14	Corn Removal Machine	Idea stage		80% of Project completed. Prototype will be completed by end of July, 2020
15	Smart Trolly	Idea stage		Prototype is ready
16	Drone Project	Idea stage		Final product ready and trying to market the same
17	All Terrain Vehicle	Idea stage		Prototype is ready

- Submit three/four high resolution (at least 300 dpi) pics in jpeg format showing the prototype/product along with the students and their mentor. **Refer Enclosure 3**

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include: **Refer Enclosure 1**

ENCLOSURE-1

Two Case Lets on Two Best Student Projects from the above list are:

1. Density Based traffic Signaling System

2. Jute Branches cutting machine

Case-Let on "DENSITY BASED TRAFFIC SIGNALING SYSTEM"

Student Team					
S.No	Name	Roll No	Dept.	Phone Number	Aadhaar Number
1	K.V. SHASHANK	16B81A1058	EIE	9381468423	335231510547
2	P.V.S.S.SHRAVAN	16B81A1046	EIE	8978177400	6961 3959 2544
3	S.HARSHITHA	16B81A1010	EIE	7893666796	568771684832
4	M.MEGHANA	16B81A1019	EIE	8179720712	7794 0765 6788

Mentor		
Name	Designation	Dept
G. VENKATESWARLU	ASSISTANT PROFESSOR	EIE

Patent of the Idea:

This idea has been applied for Patent at Chennai Patent office titled "ECO-Transport System for Smart City". CBR No: 22502, Application number: 201641030050. Invention was published in India Patent Official Journal and examination is going on.

Problem identified:

The problems facing in these days with traffic are wastage of time, power and natural resources. So the need for simulating and optimizing traffic control is necessary. There have been many proposed works such as, IR sensors, image processing, ultrasonic sensors and Google maps.

- **Traffic control using IR sensors**: The drawback of this system- even though N number of vehicles passes through the IR sensors at a time, the count of the vehicles is taken as 1 which is not accurate.
- **Traffic control using ultrasonic sensors:** In this system the ultrasonic sensors are placed on a bar of a maximum height across the road in a series pattern. The drawback of this system- it does not specify the class of vehicles.
- **Traffic control using image/video processing:** This methodology requires more image/video analytics to produce dynamic traffic signal timings. It will be complex for development of algorithm than ladder programming. This approach doesn't cover curve roads with single detector.
- **Traffic density measurement using Google Maps**: Google Maps check the traffic by tracking moving of android phones on roads. This approach produces less precise calculation for heavy vehicles with passengers and without passengers.

Product Specifications:

- Specially designed "vehicle density sensor" doesn't requires any external power supply.
- Green signal timing of traffic signalling system dynamically changes with respect to density of the vehicles.
- 55 sensors are required for 30 feet road.
- Failure of sensors cab be easily recognized through GUI (Graphical User Interface) unit
- Each sensor can sustain up to 500Kg weight
- It produces 92% to 94% accuracy of density calculations.
- Max 256 sensors can be communicated with the controller.
- GUI unit for operators(Traffic Police)
- Easy trouble shooting & maintenance.

Solution provided by the product:

To overcome the drawbacks of the above discussed systems we proposed an idea of density based Traffic Signaling System with **specially designed Sensors.** This project focuses on the main idea of switching the traffic lights according to the traffic density on the lane thereby reducing the traffic congestion and saving the time.

Faulty detection, Trouble shooting & Maintenance will be very easy for this product. This product produces user friendly nature with the graphical operating terminal.

The switching of traffic lights is controlled by using a Digital Controller-PLC. Array of sensors are placed across the road with mechanical shielding. These sensors are working as push buttons and output of which are easily calibrated into the density of the traffic with simple ladder programming. Further this density will be calibrated into traffic signaling lights.

Market Research:

- Mainly we approached observation method and questioneer method to find the exact problem statement of traffic signaling system.
- Studied various research articles to know the existing methodologies & demerits of density based traffic signaling systems

Blue Print of the product:

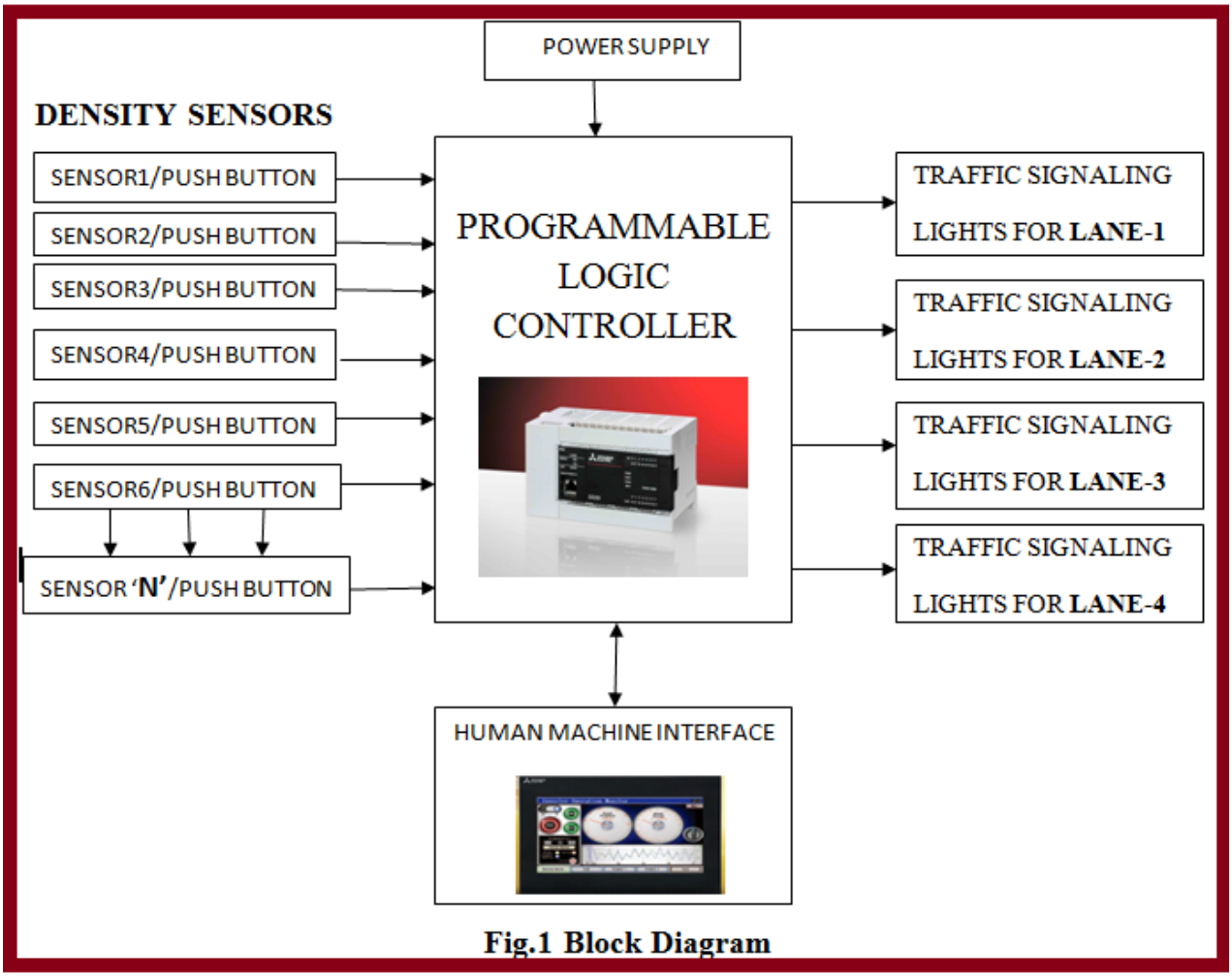


Fig.1: Block representation of product:

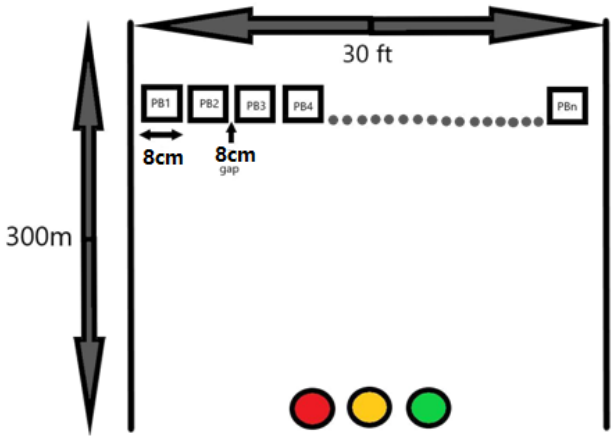
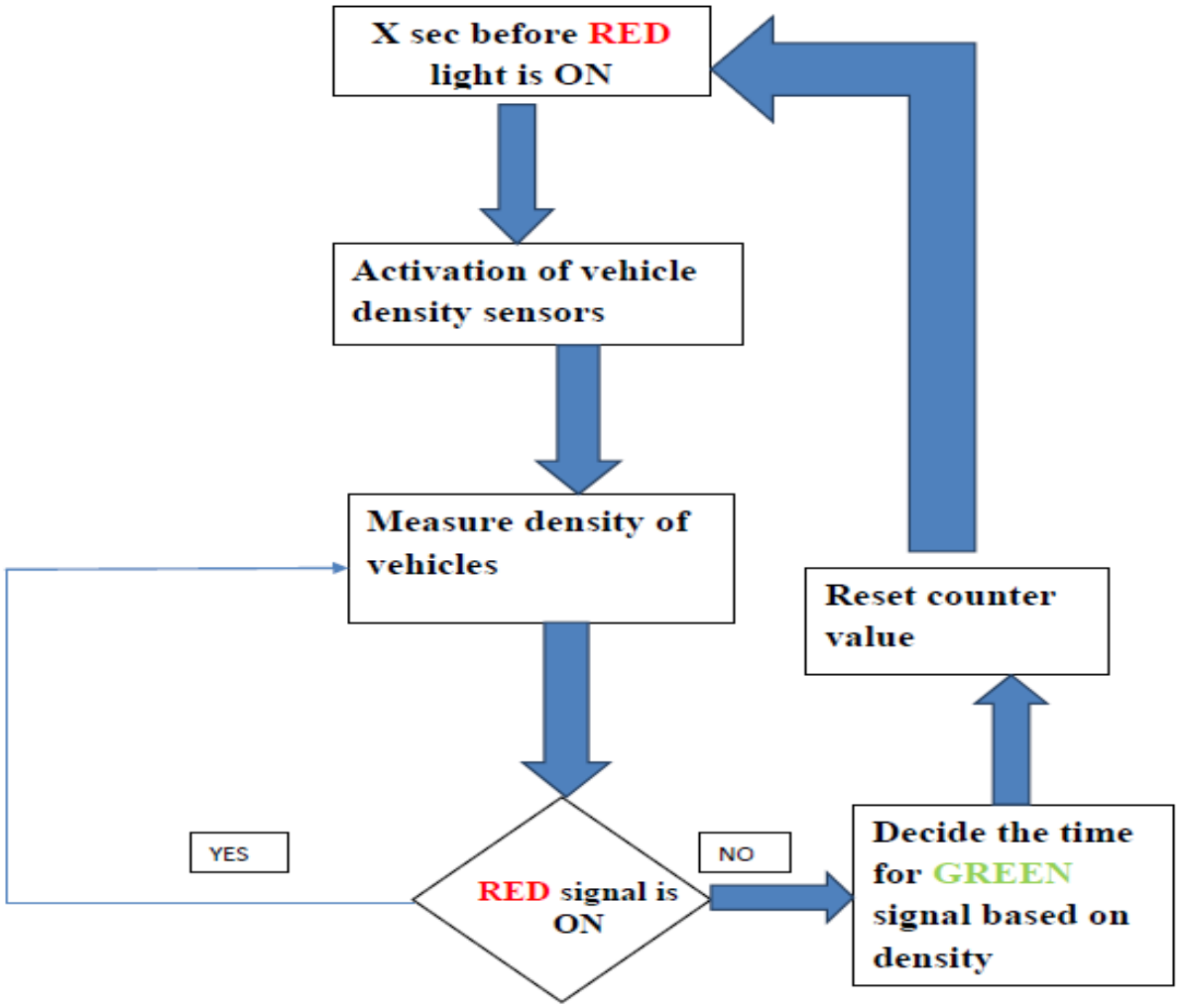


Fig.2: Placing of sensors over 30feet road

Following flow chat describes how green signal timing get changes with respect to vehicle density:

FLOW CHART:



Product developing stage:

Traffic Density Definition: The amount of area occupied by the vehicles over the selected area of the

lane is defined as traffic density.

Initially level of this product development, dimensions of various classes of vehicles were collected and decided the gap between sensors. Finally we designed special sensor with specified dimensions.

Specifications (dimensions) of various classes of vehicles:

Table1. Amount of area occupied by various classes of vehicles on the lanes.

S.NO	CLASS OF VEHICLE	AREA OCCUPIED BY THE VEHICLE
1.	BIKE	1380mm * 200 mm
2.	CAR	4380mm * 1680mm to 5260mm*1720mm
3.	TRUCK & BUS	5380mm * 1880mm to 7480mm * 2360mm

Table2. Wheel width of various classes of vehicles

S.NO	CLASS OF VEHICLE	WIDTH OF THE WHEEL
1.	BIKE	110mm to 140mm
2.	CAR	180mm to 195mm
3.	TRUCK and BUS	205mm to 295mm

Placing of sensors & various levels of traffic densities:

In this proposed work, we have come up with a new innovative means of measuring the traffic density which is quite simple, easy to understand and implement. Here we are using an array of sensors/push

buttons (S1, S2, and S3…Sn) across the road as shown in below Fig.3, when ever vehicle passes over a road these sensors generates the pulses, which are connected to the PLC (counter function) as shown in the above Fig.1, number of count is proportional to the area occupied by the vehicles and these Count will be used for further decision of GREEN and RED light timings of traffic system.

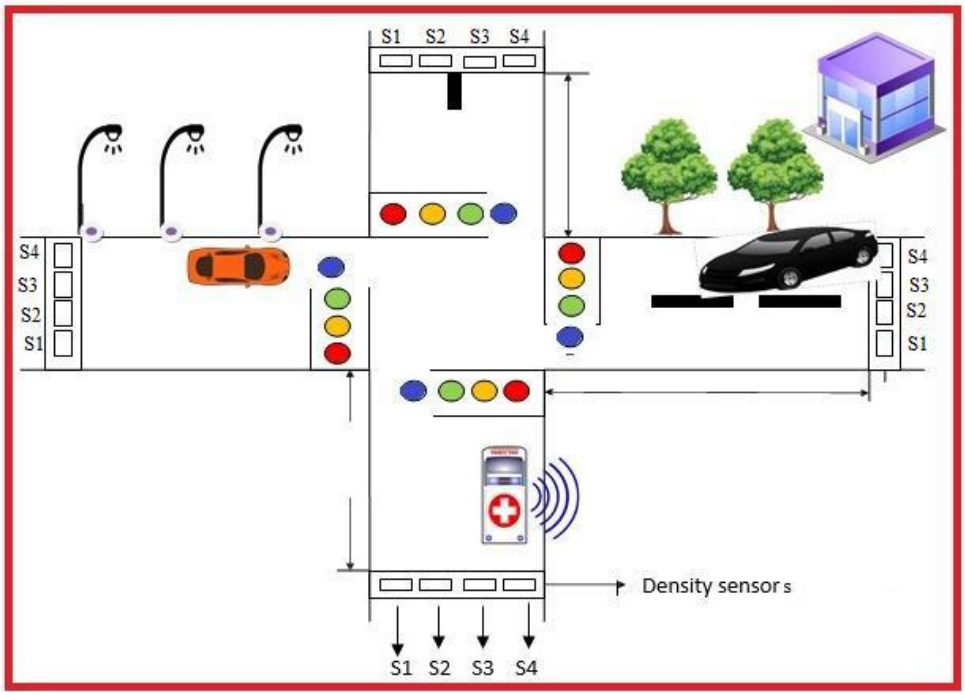


Fig.3 conceptual drawing of placing the sensors

Requirement of no. of sensors for 30feet road:

Width of the sensor**: 80mm**

Gap between the sensors**: 85mm**

Width of the road: **30feet**

Placing of the sensors away from the signals**: 300m**

The Push Buttons are placed on each lane as shown in the Fig.2 Each Push Button (PB) is of 8 cm width and the gap between each PB is 8.5cm.

30ft *30.48 =912 cm = 9.12m

912 / 16.5=55 sensors

55 sensors are required for 30feet road .The above calculations were made for 80mm * 80mm dimensions of a push button.

The following figures represent the various traffic density levels.

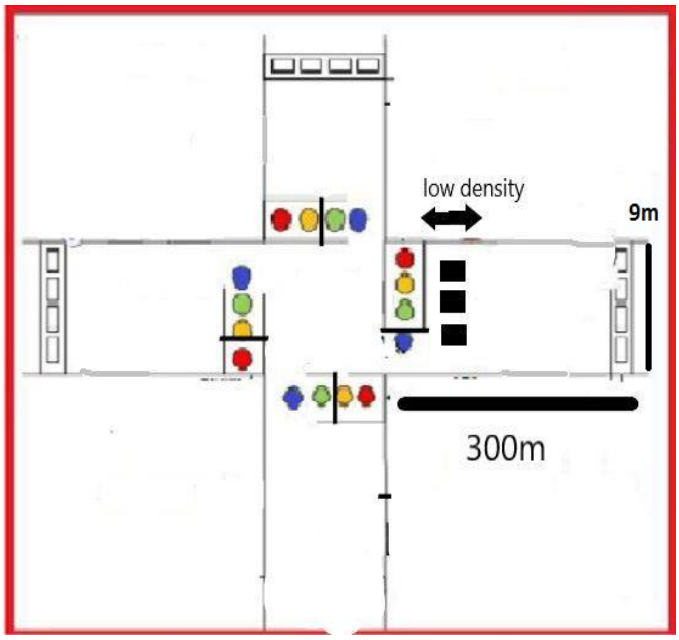


Fig.4 Lower density of traffic

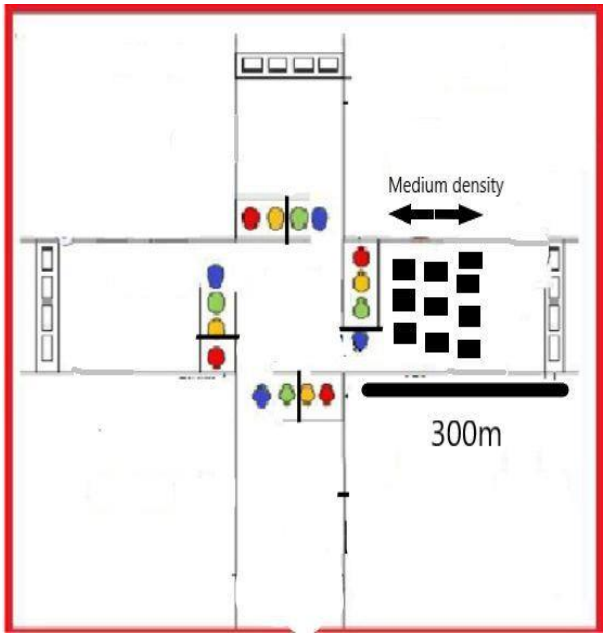


Fig.5 **Medium density of the traffic**

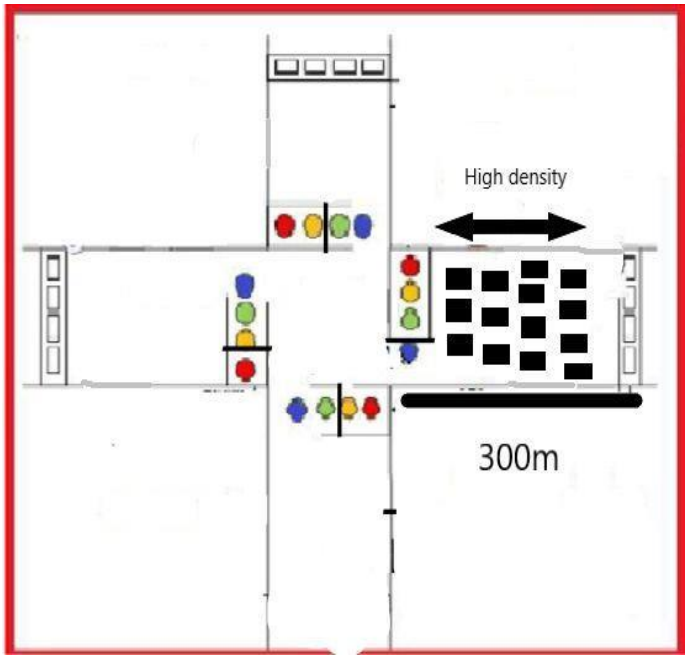


Fig.6 **High density of the traffic**

Density Sensor (Push Button) Specifications:

Sensor Type: Displacement type Diameter (shown in below fig): 80mm

Mechanism: Push button (through spring).

Height: 300mm.

Fig.7. Vehicle Density sensors

Working & Example of Density calculations for 30feet road:

The selected area for the above lane from the signal light to push buttons is 300m*9.12m = 2736 m^2.
Each push button is connected to each counter and all the counters are connected to addition function.
If a bike passes over the bush buttons then front & back wheels are counted as two in the addition function through the counters.

Count 2 is equal to 1.2m^2 area occupied (bike occupies 1.2m^2 area).

Count 1 is equal to 1.2m^2/2 =0.6m^2 area occupied.

If 6 bikes pass (one by one or at a time) over the bush buttons then front & back wheels are counted as 12 in the addition function by adding the all counter values.

12 count equivalent area occupied = 12* 0.6m^2 = 7.2m^2

If a car passes over the bush buttons then front & back wheels (Each wheel covers two push buttons) are counted as EIGHT in the addition function through the counters.

Generally car occupies 4.6m^2 to 5.2m^2area.
One car =8counts=4.6m^2
1count=4.6m2/8=0.57m^2
Bike 1count equal area (0.6m^2) =Car 1count equal area (0.57m^2)

So in calibration programming for the bike or car each count can be taken as 0.6m2area occupied.

If 5 cars pass (one by one or at a time) over the bush buttons then front & back wheels are counted as 40 in the addition function by adding the all counter value.

Space occupied by 5cars= 40* 0.6m^2

=24m^2 (approximately)

If 5 cars and 6 bikes pass (one by one or at a time) over the bush buttons then front & back wheels are counted as (40+12) 52 in the addition function by adding the all counter value.

Space occupied by 4cars and 6 bikes= 52* 0.6m^2

=31.2 m^2 (approximately)

If the addition function output (all the counters combination) is 850 counts then area occupied by the vehicles is approximately equal to 510m^2.

% of density= (510/2736)*100=18.8(Total area from signal to sensors 2736 m^2)

If the addition function output is 2250 counts then area occupied by the vehicles is approximately equal to 2250*0.6m^2= 1350m^2.

% of density= (1350/2736)*100=49.3(Total area from signal to sensors 2736 m^2)

***The above occupied % of density is calibrated into GREEN signal timing of that lane.

NOTE: These calculations can produce only 92% to 94% accuracy.

Specifications of Controller & HMI unit:

PLC:

1. TYPE FX5U-32M, Command processing time: 34ns,
2. Maximum I/O range(including network) : 256(512)
3. Output type: Transistor
4. Service power supply(24V DC) 400 mA
5. Software used: MELSOFT Gx Works3 software.

Fig.8. Fx 5U PLC.

HMI UNIT:

1. Processor Type: PLC CPU
2. Model: MITSUBISHI GS2107.
3. Supply Voltage: 24 V DC.
4. Port Type Ethernet: RS232, RS422, SD Card, USB.
5. Software used: GT Designer3

Fig.09. GS2107 series HMI

Test marketing:

This product has been tested at Mangalpally, Vastunagar roads for two wheeler & four wheeler vehicles. This product produced satisfactory output response. The density sensors could be able to work properly for two wheeler and four wheelers in the real time environment.

Fig.10 placing of sensors at Mangalpally,Vastunagar roads

Product Photos:

Fig.11.Density sensors with control panel communication

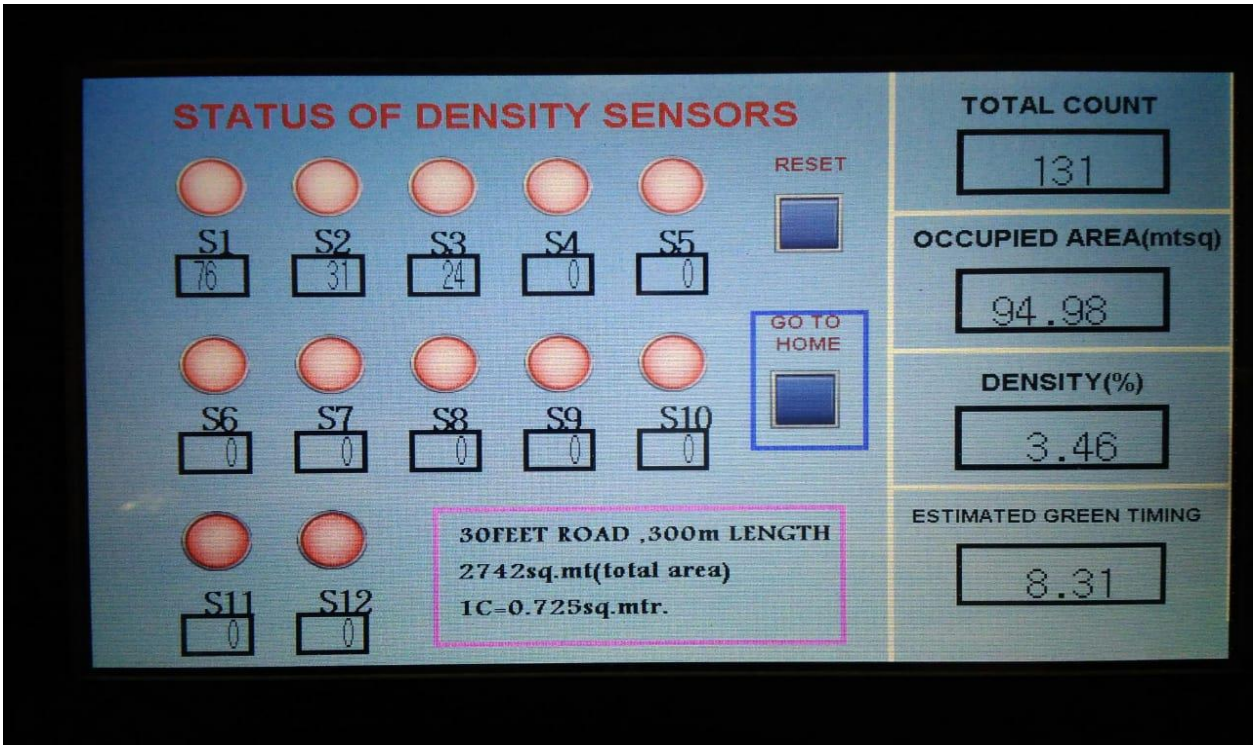


Fig.12 GUI for Density calculations and estimated green timing**.**

Product Cost: Rs.1,13,570/-
Remuneration for Mentor: Rs 25000/-
Remuneration for Students: Rs 25000/-

Contribution of NewGen IEDC in the same: Rs 1,63,570

Demonstration: This product has been demonstrated at E-summit 2020, Business Model Canvas on 8th Feb,2020 at IIITA Info Communication and Incubation Center aka IIIC.

CASE – LET on "Jute Branches cutting machine"

Mentor		
Name	**Designation**	**Dept**
PathanYasin	**Asst. Professor**	**Mechanical engineering**

Student Team				
S.No	Name	Roll No	Dept.	Year
1	NAYAN SANGAWAR	16B81A0396	**Mechanical**	4 th year
2	JAYANTH MAHURKAR	16B81A0362	**Mechanical**	4 th year
3	PRAMODH ARUN	16B81A03A8	**Mechanical**	4 th year
4	V. JAGADEESWARA REDDY	16B81A0361	**Mechanical**	4 th year
5	KARTHIK VUTHUKAM	16B81A0366	**Mechanical**	4 th year

Sl.No.	Patent Title	1st Applicant	Patent status published /filled/granted	Patent Number	Date of Filing and request for examination
1	**Jute Branches Cutting Machine**	**CVR College of Engineering**	**Filed and published, currently under examination**	**201841037739**	**05/10/2018 and 05/10/2018**

A). Goals / Purpose of the Machine

1.Main goal is to fabricate a machine tool whose function is to separate the branches of jute plants containing seeds, from main stalk. The main stalk obtained then can be used for the extraction of jute fibres, which traditionally crushed and wasted.

2.another goal is to facilitate easy feeding of the main stalk with branches, into the cutting chamber, in any direction perpendicular to cutting plane.

3.further goal is to build a machine which can cut the branches grown at any point along the length of the main stalk.

C) Introduction:

[1] Jute plants are harvested for production of both fibres and seeds. Currently, the application of the jute fibres can be found in sanitary napkins, yarns, twins, ropes, hessian cloths, burlaps, gunny bags etc. The Jute seeds are generally used for further harvesting of fibre crops.

[2] Usually, jute harvesting carried out on wet lands is used for fibre extraction. The main stalk in these plants usually grows in about 120 days (approximately) to a height of nearly 7ft-12ft. They are cut at this stage for fibre extraction from the skin, as the skin of the stalk is not going to be in vegetative phase after this period.

[3] If these plants are further grown beyond 120 days and up to 180 days, then seeds will be ripened to the branches of main stalk. But usually, this is not carried out on the wet lands due to long crop period. The changes in the agro-climatic conditions in this long span of time can infect the ripening seeds. Eventually, end up in decreasing the yield of good quality seeds

[4] In recent trend, jute is harvested in dry lands, entirely for seed purpose which gives higher and good quality seed yield in short period of time compared to wet land plants. Jute seeds produced in southern part (Andhra Pradesh and Karnataka states) are used in eastern part (west Bengal, Odisha, Bihar) of India for fibre production, can be considered as a good example which reflects the importance of this trend. In jute, use of good quality seeds can increase the yield of fibre crop by additional 15-20%.

[5] The jute plant harvesting for seed production, contains main stalk with many side branches having seedpods, along the length of main stalk. For seed extraction, entire plant i.e. main stalk and side branches containing seedpods are crushed in a combine harvester (currently) and the reject is thrown as a waste and only seeds are used for future harvesting.

[6] Authors' survey of literature suggests that, there are no existing processes or methods for using the main stalk of plants grown for seed production. However, it will be of great advantage, if the main stalk of plants grown for seeds is also put to use for fibre production, for dry land farming as they are mainly seed yielding crops. This might decrease the shortage of raw jute fibre, which is one of the main problems in India, currently. Thus, through this process, the bio waste, currently generated in case of dry land jute farming, can be eliminated.

Figure 2

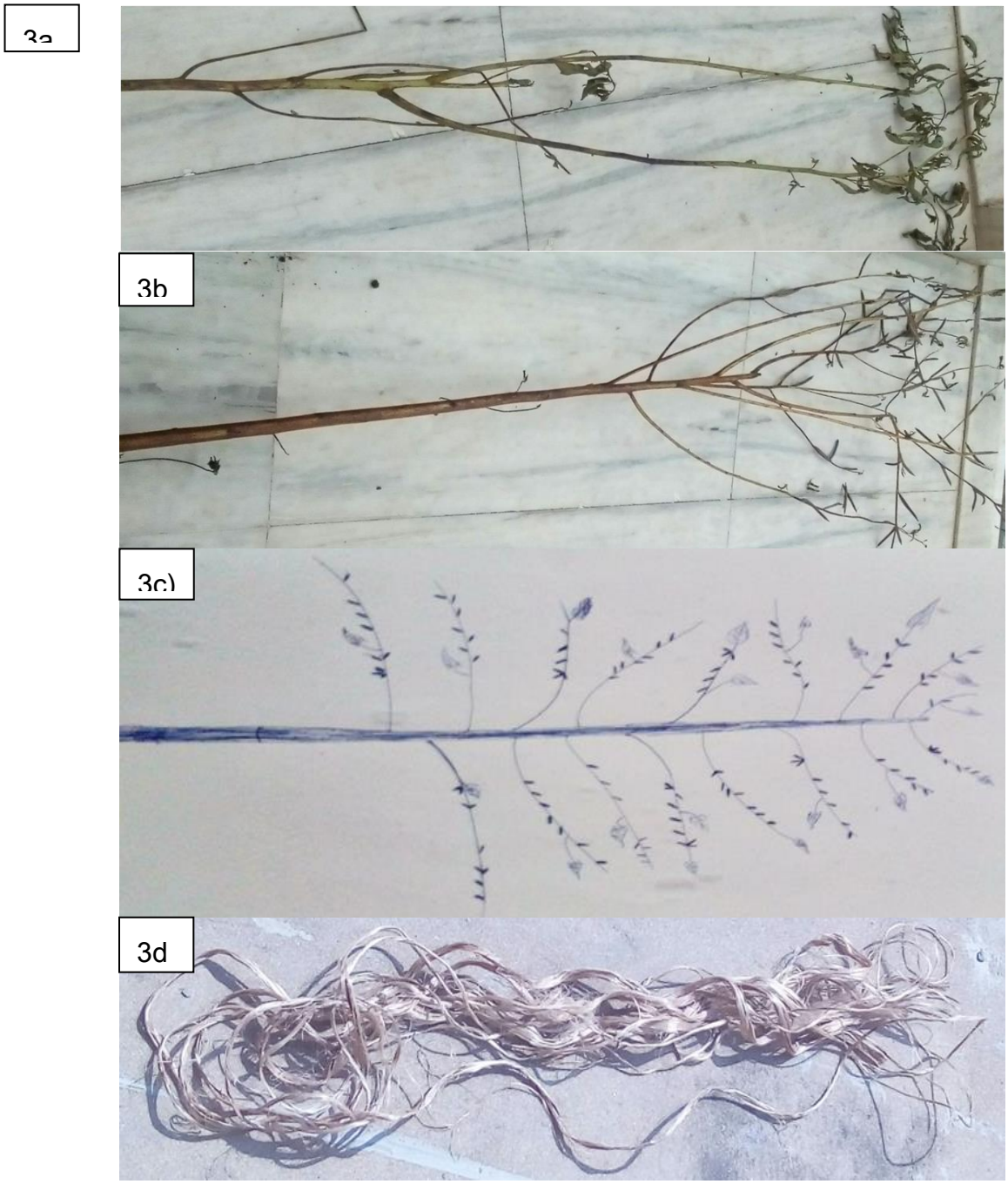


Figure 3

E) New process:

JBC machine and a flexible tarp addition to the traditional process of jute seed's harvesting:

a) Figure 5 illustrates that 'how JBC machine and a tarp addition will change the traditional process for Jute seeds' harvesting into a process for extracting both seeds and fibres from one jute crop'.

b) As shown in Figure 5, the first step of the invention process is to follow the traditional process to grow or harvest jute seeds' crop till cutting the plants at the base. As discussed herein before, this is step

comprises of: 1) sowing of seeds, 2) removing weeds and sizing of jute plants, 3) using fertilizers, to supplement the required elements found naturally in the soil to the jute field, 4) topping or clipping the main stalks when they grow to a height of 3 to 5ft, and finally 5) leave the plants till the ripening of seeds. If the jute seeds are earthed for producing seeds in dry lands, will give good results as farmers will cut the top (head) about 2 inches when the plants grow a height about 3-5ft. Cutting of the top of plants will strengthen the branches and increase the number of branches. Further it increases the number of seedpods. Approximately, a total of 150 days will be required for this process and authors have found that, most of the main stalks of plants consists the TD-5 or TD-6 grade fibres.

c) As shown in Figure 5, the second step of the invention process is to cut the main stalks of the plants, at the base. The cutting needs to be in the early morning from 6 to 10AM (mid-November to December ending), like in the traditional process so that the fall down of the seeds due to shaking, can be minimized.

d) As shown in Figure 5, the third step of the modified new process is to spread out the general purpose thicker tarpaulin or tarp on the empty surface and then placing the JBC machine approximately in the centre of tarp. It must be wide enough (about 10m*10m or above), so that the cut branches having seeds will fall within the tarp (One JBC machine typically occupies 1.5m*0.75m, needs to be placed at the centre).

e) As shown in Figure 5, the fourth step of the modified new process is to Pass the root ends of main stalks firstly, through the JBC machine and get the branches to be cut. JBC machine can also be called as Jute stalk extraction machine, which simply cuts the branches of main stalks. It has four circular cutting blades rotated by power machine, will cut the branches which are grown in 360 degree direction to the main stalk, from top to bottom. The feed is manual with 2 degrees of freedom viz., one is translation and the other one is rotation. The JBC machine is described in detail in the following sections. At the end of this step, main stalks and branches will be separated.

f) As shown in Figure 5, one branch of the fourth step of the modified process is to take away the separated main stalks and extract the fibres using the decortication machines like patented as WO2004088006A1 or CN201209173Y etc., followed by microbial (water) retting for 15 days. The fibres extracted from these stalks are either TD-5 or TD-6 (as per the authors' investigation, most of the tests resulted for TD-5 or TD-6).

g) As shown in Figure 5, another branch of the fourth step of the modified process is to Sun-dry the branches for 10-20 days, like in the traditional process. This span makes the jute seeds dry enough to get extracted, like the lentil.

h) As shown in Figure 5, the step after the sun-drying of branches for 10-20 days, of the modified process is to gently drop the branches into the harvester for the extraction of seeds, with the help of buckets, preferably. Buckets can be made of low density materials like plastic and must have a convenient open top

to sweep or grab the branches in and drop off into combine harvester.

i) As shown in Figure 5, the last step of the modified new process is to drop the branches in the harvester, which are left on the tarp. For this, tarp needs to be folded from four corners and the branches of it simply need to be dropped into harvester for completely extracting seeds from crop.

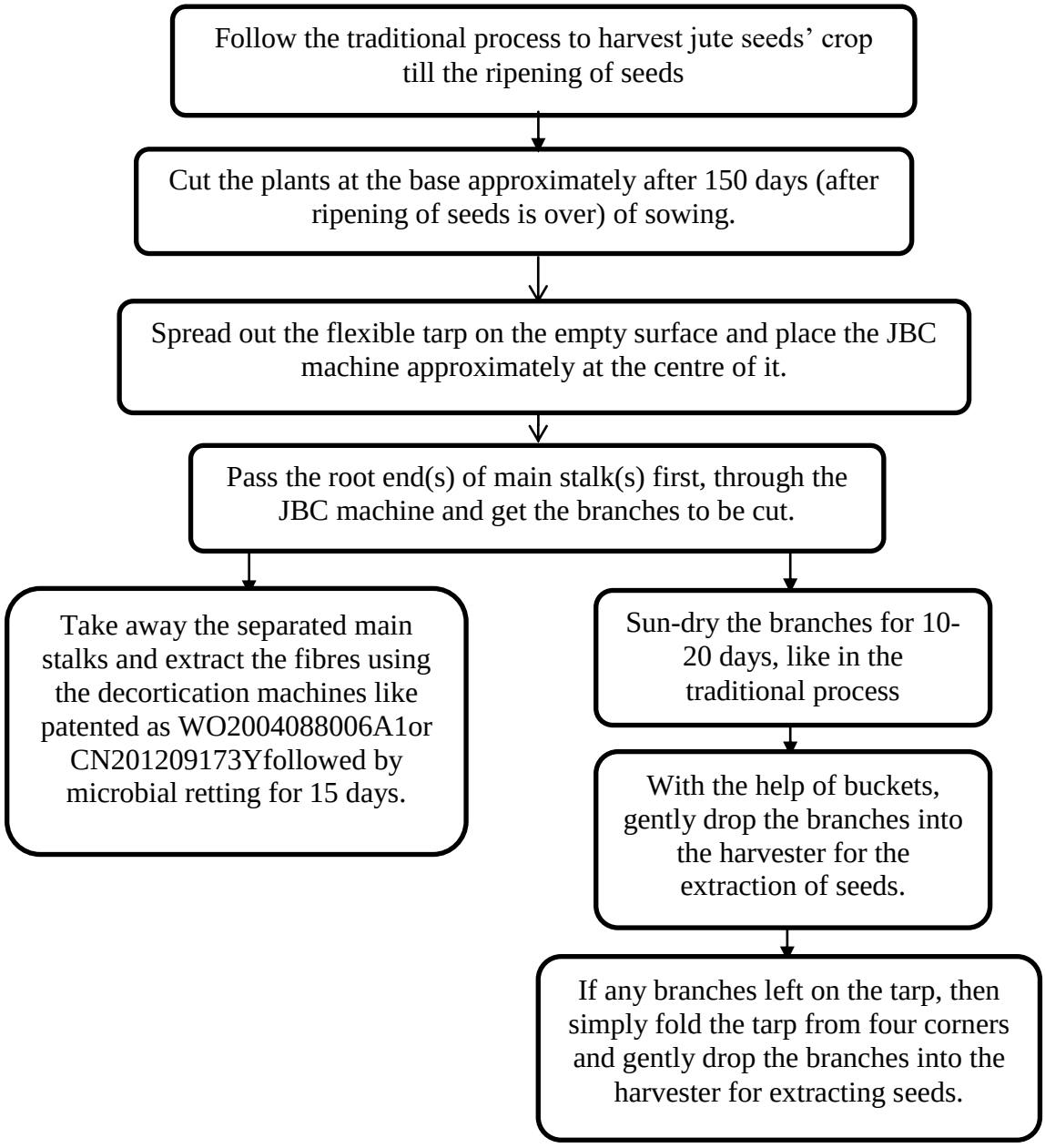


FIGURE 5

F) Working of JBC machine:

The jute branch cutting machine is used to separate the branches (consists of seeds) from the main stalk by passing it through the cutting chamber. The cutting chamber consists of set of circular saws which are 12cm apart and a fixed pipe of 8cm diameter placed in between these two blades. The jute plants are inserted manually from front end through the fixed pipe. The powered circular blades through belt drives

and motor, will cut the branches along the main stalk as another person from the rear will pull the inserted jute plant. The fixed pipe at the front end is blunt in a fashion like which pushes the branches (which are not cut directly by blades) towards the rotating blades.

G) Power requirement for JBC machine & Key Assumptions:

- Main factors are influencing the cutting of wood are depth of cut, wood density and feed direction [1].
- Konishi [2] stated that the more specific gravity was, the more the cutting force, and this trend is evident in the case of the same species.
- From simple Archimedes principle based experimentation, one can easily find the Jute stick density and conclude the Jute stick density (0.18gm/cc) is lesser than commercially available woods (0.5gm/cc) like soft wood, hard wood. So, lesser cutting force required to cut jute sticks or parts of jute plants in comparison with regular woods available in the market.
- A simple machine consist single circular saw for cutting grass and weed plants is wire brush cutter. From investigation, One permanent-magnet DC motor with 350 W (0.466hp) is used as the mechanical power source is required for cutting weeds.
- From experimentation one also can conclude the densities of both weed plants and jute sticks will be same.
- Hence 0.5 hp motor is adequate for producing the required cutting force to cut jute stalks or branches with a circular saw.
- As the jute branches are spread over in all 360^0 directions, 90% seeds are growing only to branches and shortest distance of jute main stalk and seed is 8-15cm, 2 circular saws with equal diameter of 10cm are finalized as a cutting tool.
- This motor is required to rotate two blades which are parallel, horizontally/vertically aligned and 10-15cm apart
- Key Assumptions: From observations, it can be concluded that 90% jute main stalks are straight. The machine is designed more flexible for cutting the branches of main stalks which are straight.

H). Geometrical description of JBC Machine:

[038] Figure 2is a component diagram in the top view of JBC machine in accordance with present invention; the components identified in this view are 20.Stop for the stool and 21.Fixed stalk receiver stool.

[039] Figure 3is an Isometric view of JBC machine along with tarp and jute plants feeding, in accordance with present invention; The components identified in this view are 22.tarp, 23.jute plants (23a).bottom of jute plants, 23b).branches of jute plants and 23c).top of jute plants).

[040] Figure 4is a 3-D model of the JBC machine along with tarp (22), extracted jute stalks and fallen jute branches (23b)), in accordance with present invention and the part identified is 24.JBC machine without temporary stool(17).

[041] Figure 5is a 3-D model of the JBC machine with additional blade placed on the tarp, for cutting the branches or main stalk, which are grown like shown in figure 3a), in accordance with present invention and the part identified are 25.Additional blade and 26.Jute plants grown like shown in figure 3a).

[042] Figure 6is the cross section of L-channel rod and figure 7is the cross section of hallow rectangular channel rod.

[043] Figure 8 is the side view of rectangular cutting plane formed with the diameter of the vertically aligned circular blades to be greater than the diameter horizontally aligned circular blades and Figure 9 is the side view of rectangular cutting plane formed with the diameter of the vertically aligned circular blades to be greater than the diameter horizontally aligned circular blades.

The cutting tool described and showed till here, has the diameter of all blades to be same (All the blades (13)(25) are having equal diameter of 10 or 12cms).

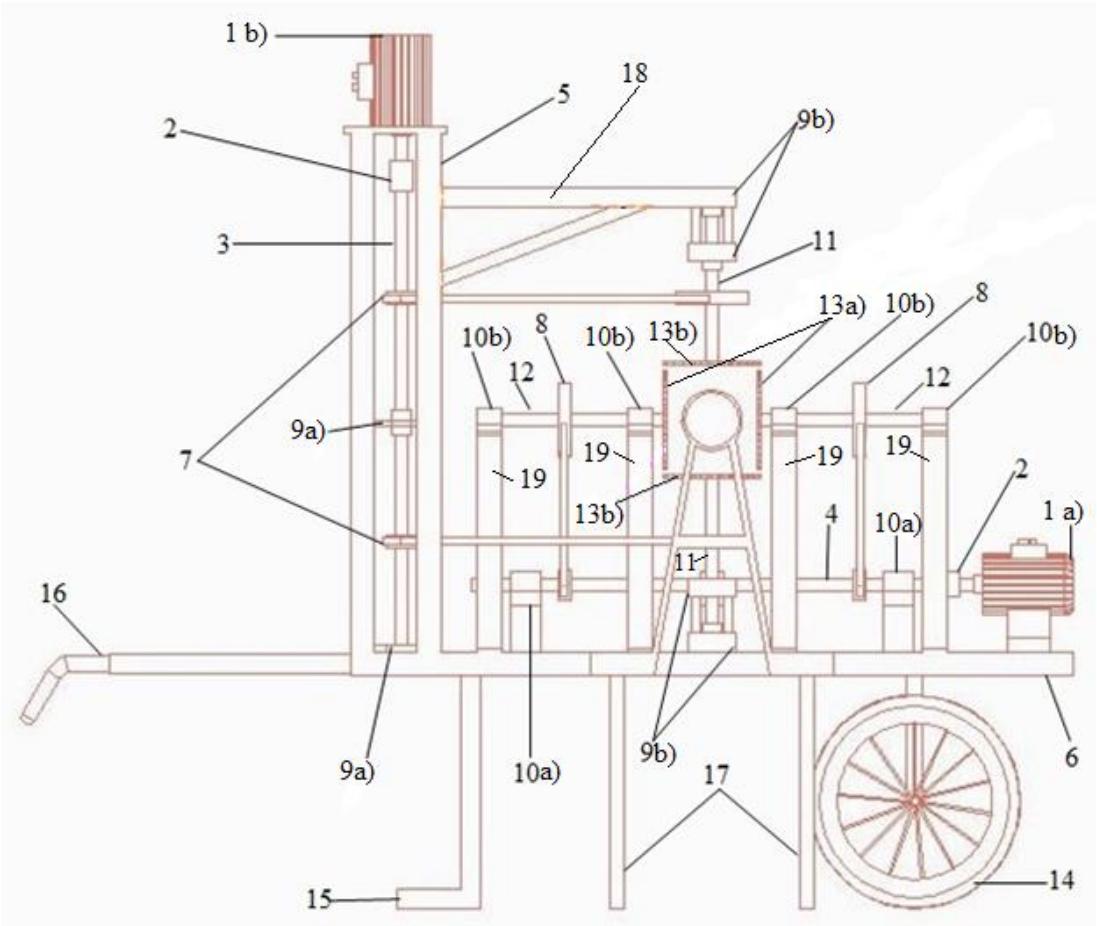


Figure 1 front view

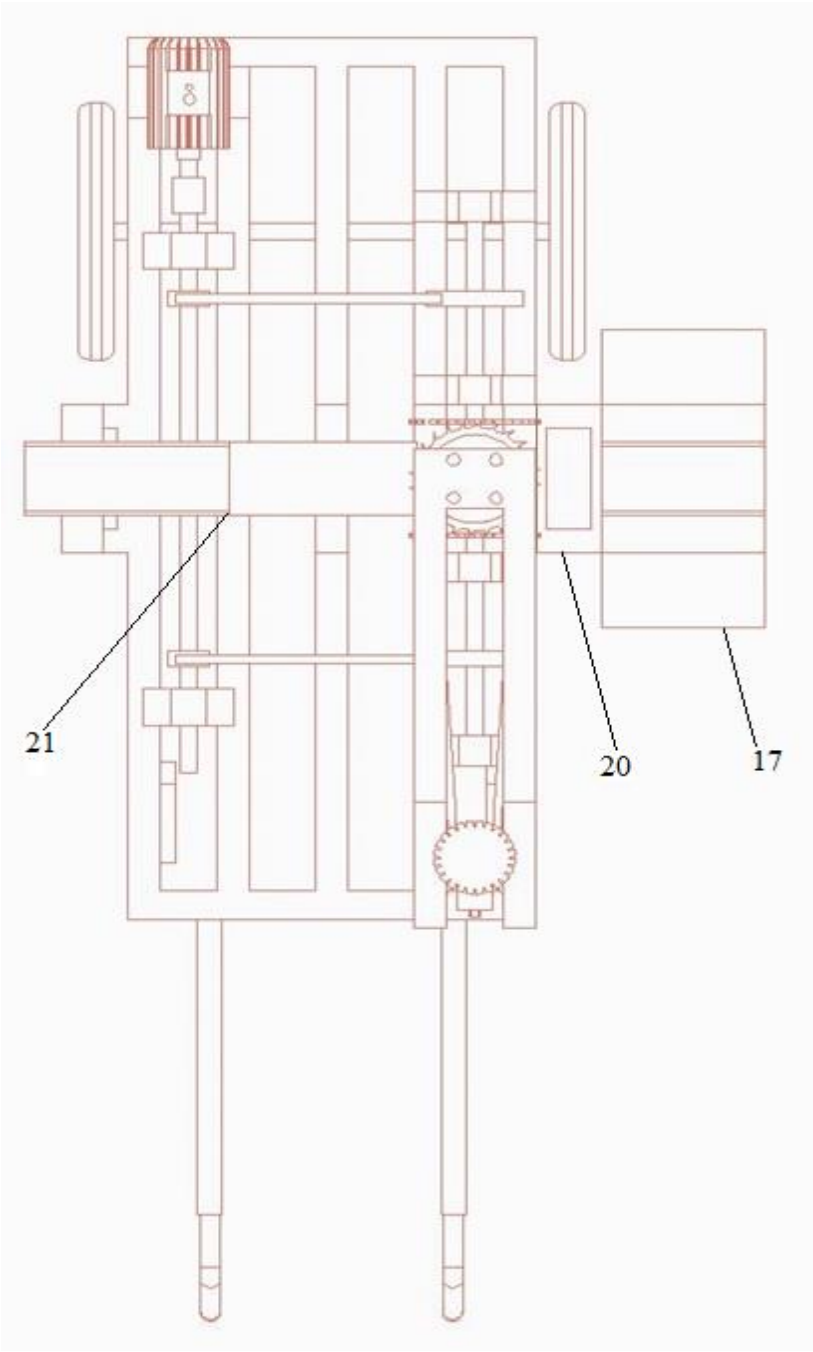


Figure 2 top view

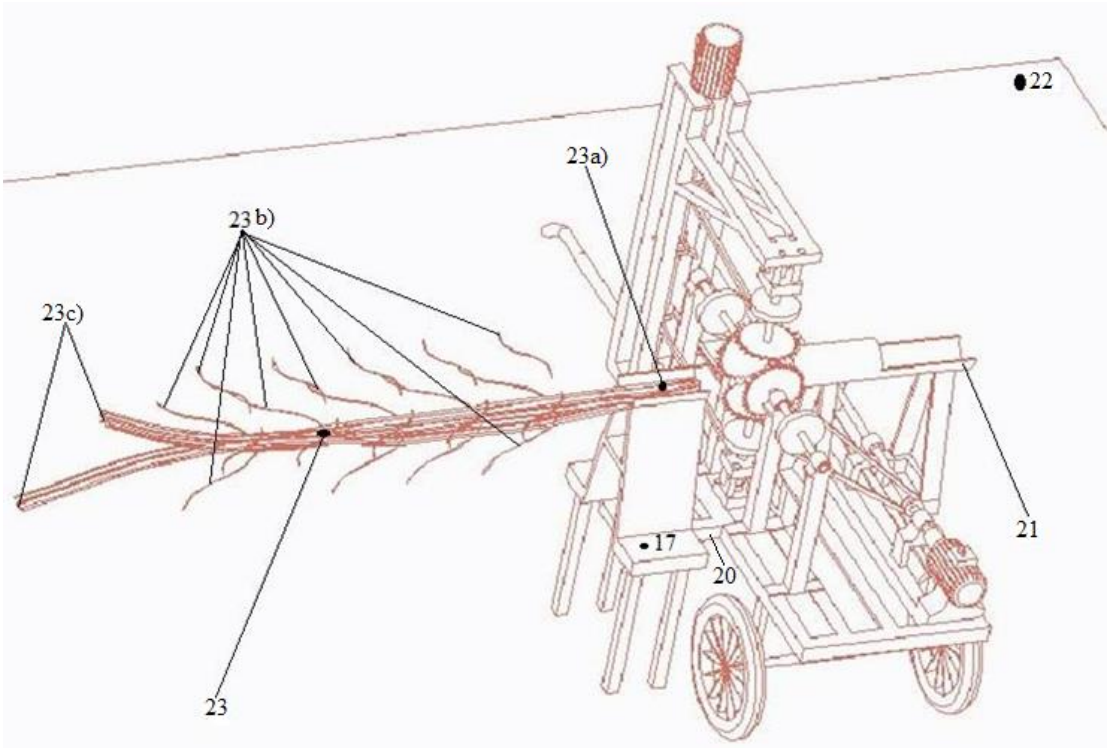


Figure 3 isometric view

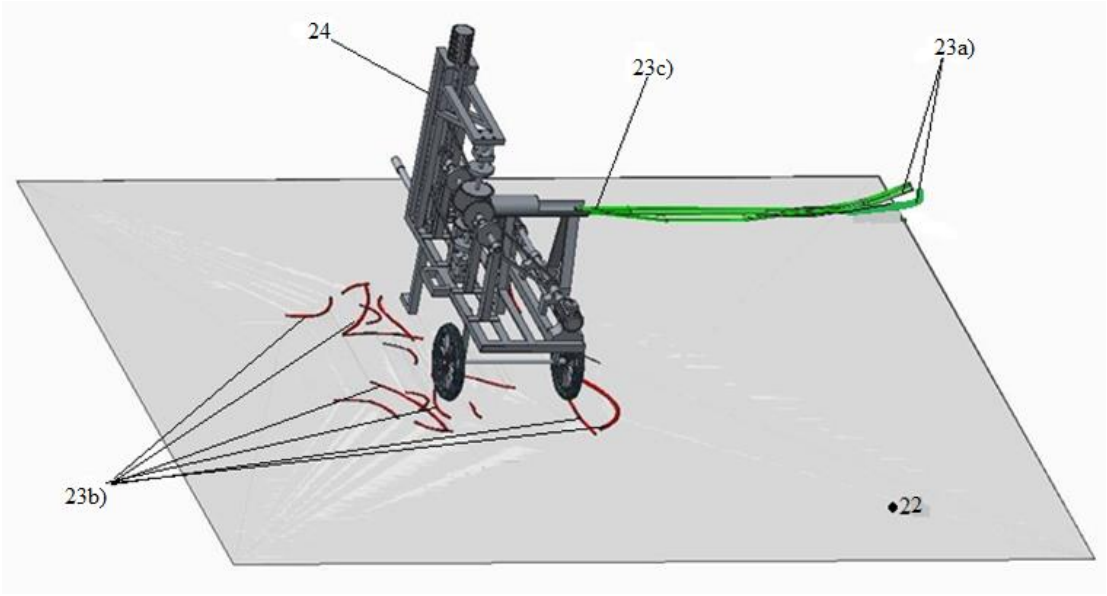


Figure 43-D model of the JBC machine along with tarp

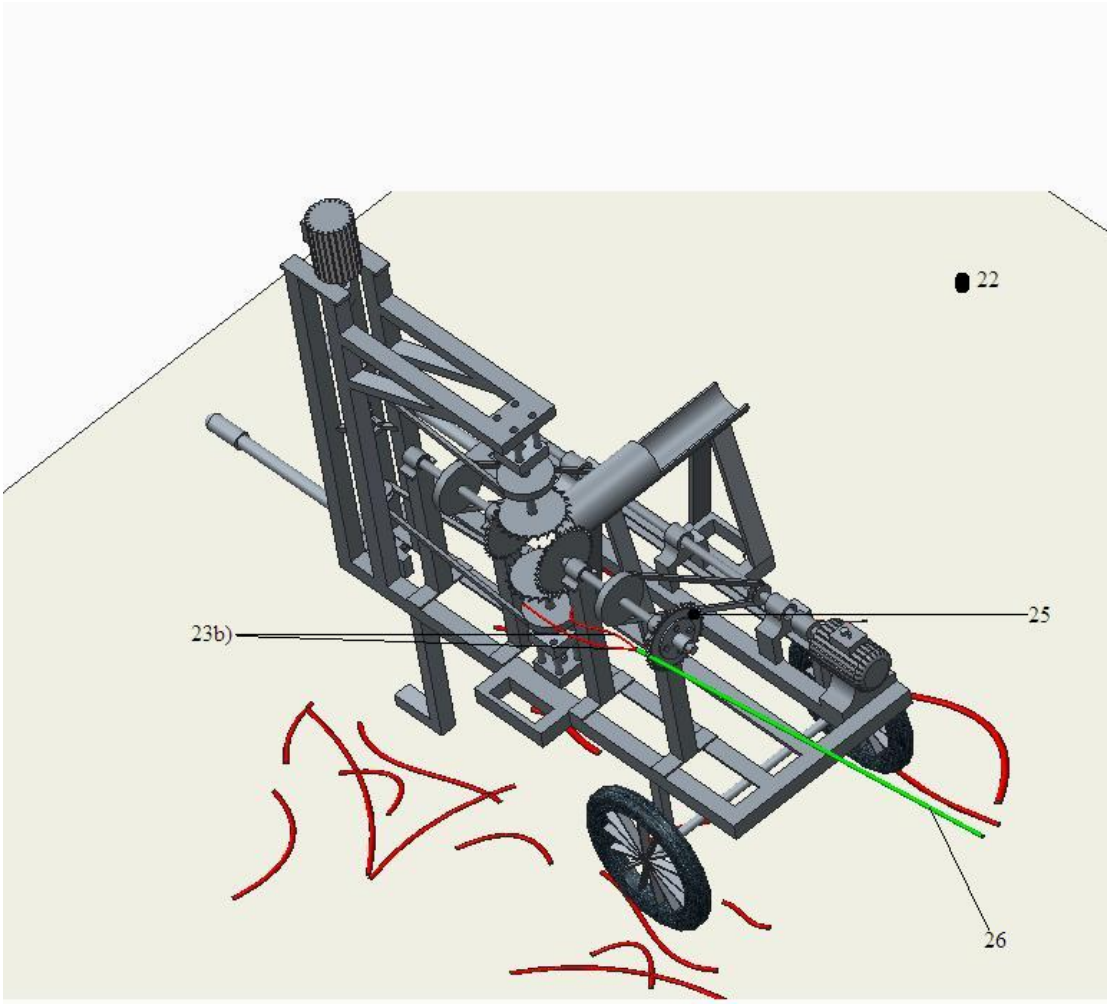


Figure 53-D model of the JBC machine with additional blade placed on the shaft

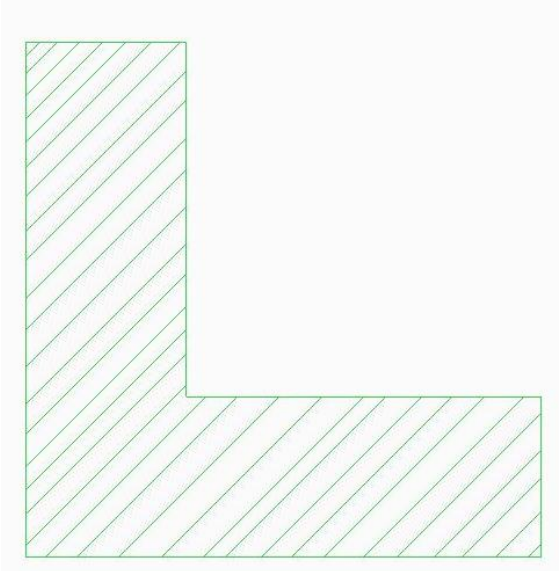


Figure 6cross section of L-channel rod

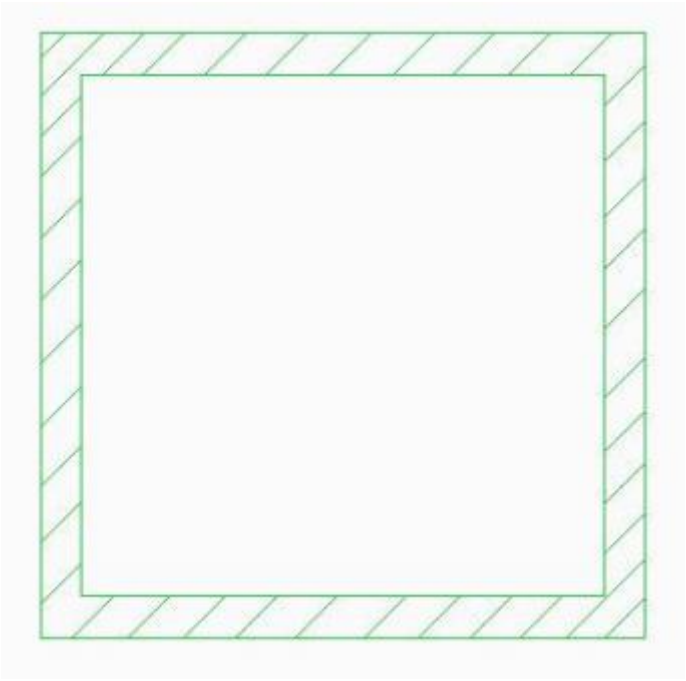


Figure 7cross section of hallow rectangular channel rod.

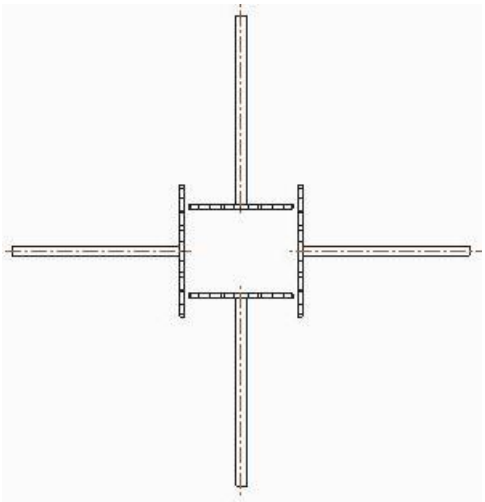


Figure 8side view of rectangular cutting plane case-1

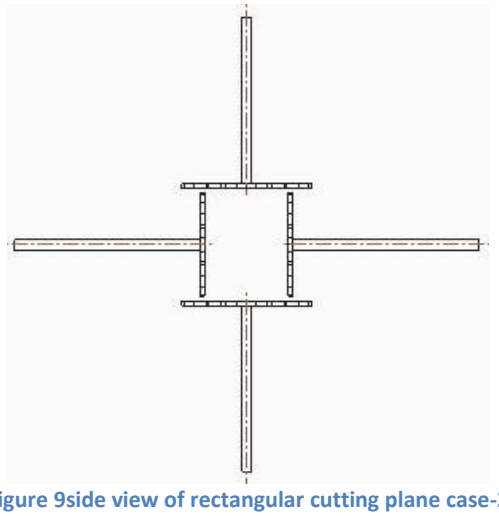


Figure 9side view of rectangular cutting plane case-2

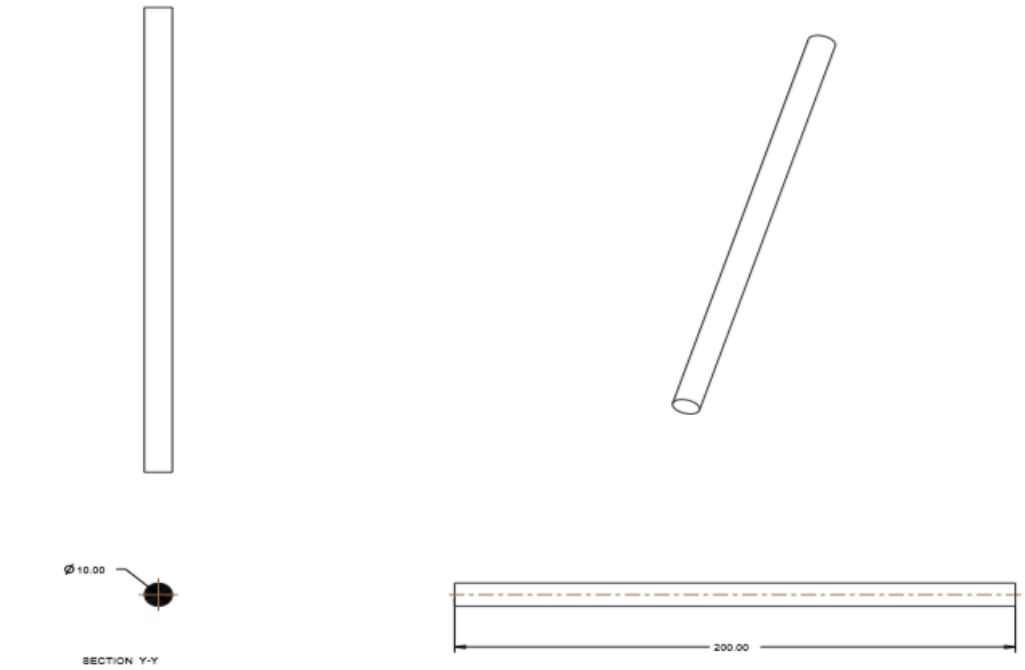


Figure 10 driven shaft

I) Assembly

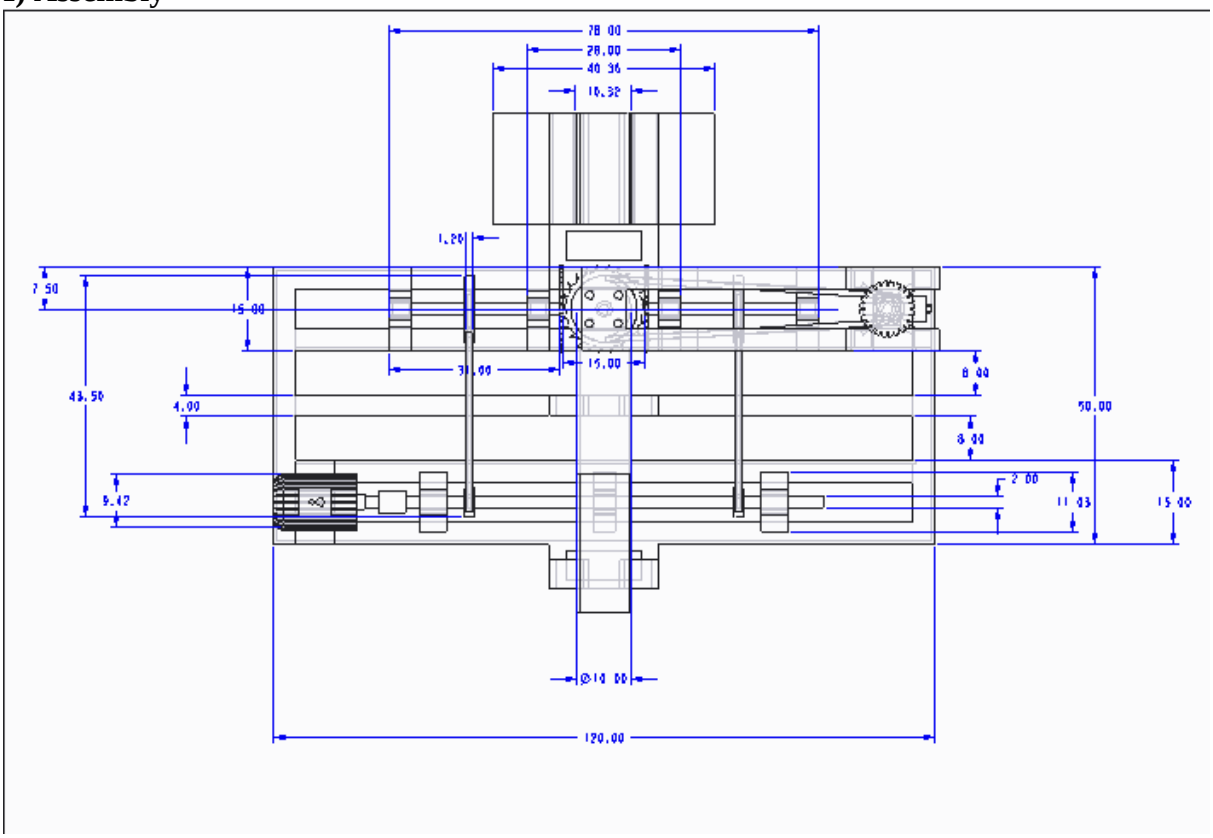


Figure 11 Assembly

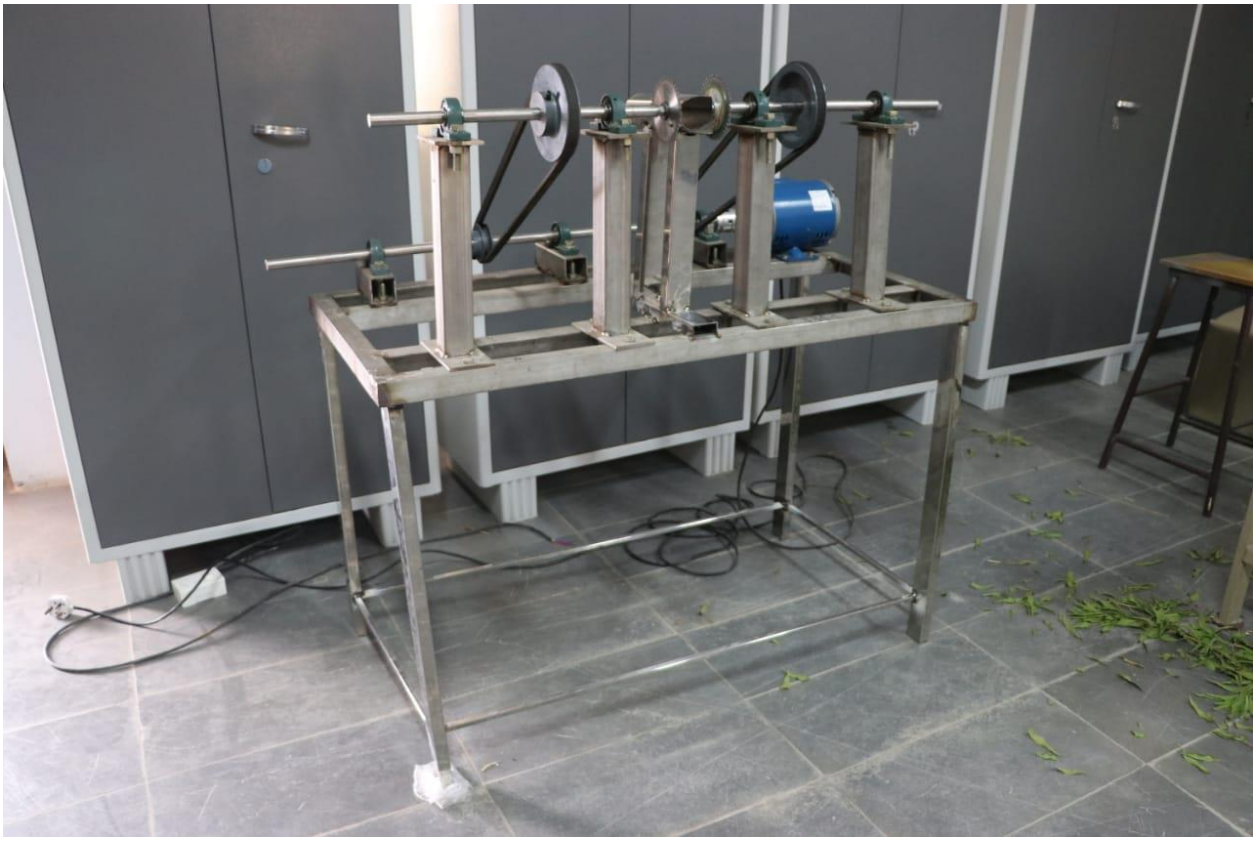


Figure 12 jute branches cutting machine

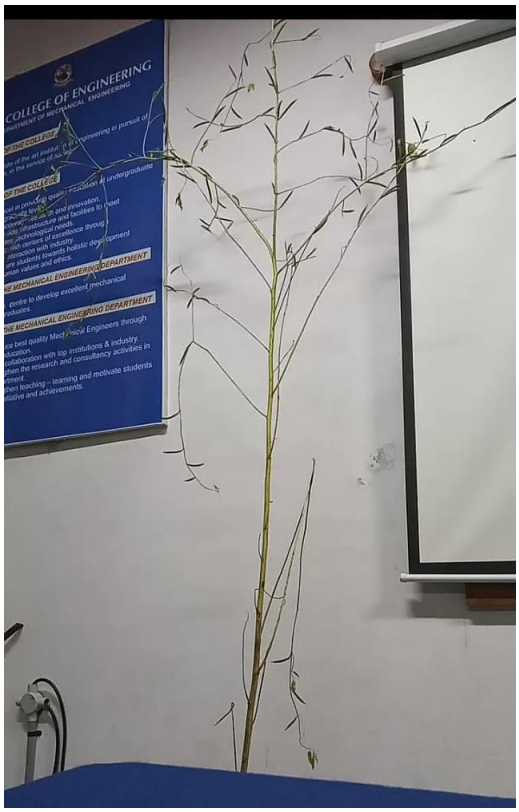


Figure 13 Jute plant

Figure 14 cut branches and stalk

Figure 15 stalks free of branches after feeding

K) Total Development Cost: Rs.61,200/-

Sl.no	Component number in the drawing and name	Qty
1	1.Motor	**1**
2	2.shaft coupling	**1**
3	3.vertical shaft	**2**
4	4.horizontal shaft	**2**
5	5.Vertical supporting frame	**1**
6	6.Base frame	**1**
7	7.Pulleys	**4**
8	8.b-type V-belts (horizontal& planar)	**2**
9	9. Flange bearing	**6**
10	10.Plain journal bearing,	**6**
11	11.Vertical blade shaft,	**2**
12	12.horizontal blade shaft	**2**
13	13.Cutting blades,	**3**
14	14.Wheels,	**2**
15	15.Support stand,	**1**
16	16.Push handle,	**1**
17	17.Temporary stool,	**1**
18	18.horizontal frame	**1**
19	19.vertical supporting rod	**2**
20	20.Stop for the stool	**1**
21	21.Fixed stalk receiver stool	**1**
22	22.tarp,	**1**
23	23.jute plants	**--**

L) Results

1. The fabricated machining tool has seperated (atleast 80%) branches (contains seedpods) of from main stalk of jute plants by cutting/shearing.

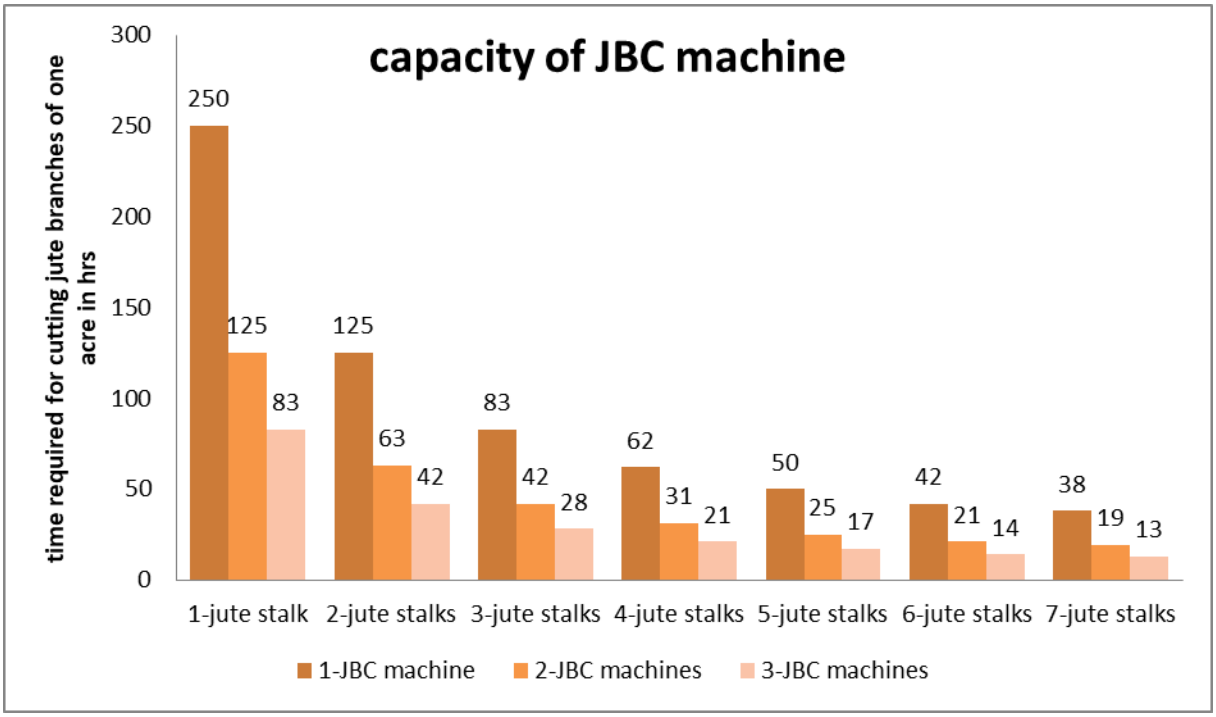
2. The feeding platform was successful for passage of main stalk, into the cutting chamber, perpendicular to cutting plane.

3. A successful mechanism has been developed for cutting of Branches built by set of novel circular arc sawsand fixed pipe at the front end of the machine.

4. A successful belt driven mechanism has been developed for driving circular saws with only one power source (motor).

5. A rigid base (Table) has been fabricated to hold the components in positions/locations.

6. The following bar graph has been prepared after testing



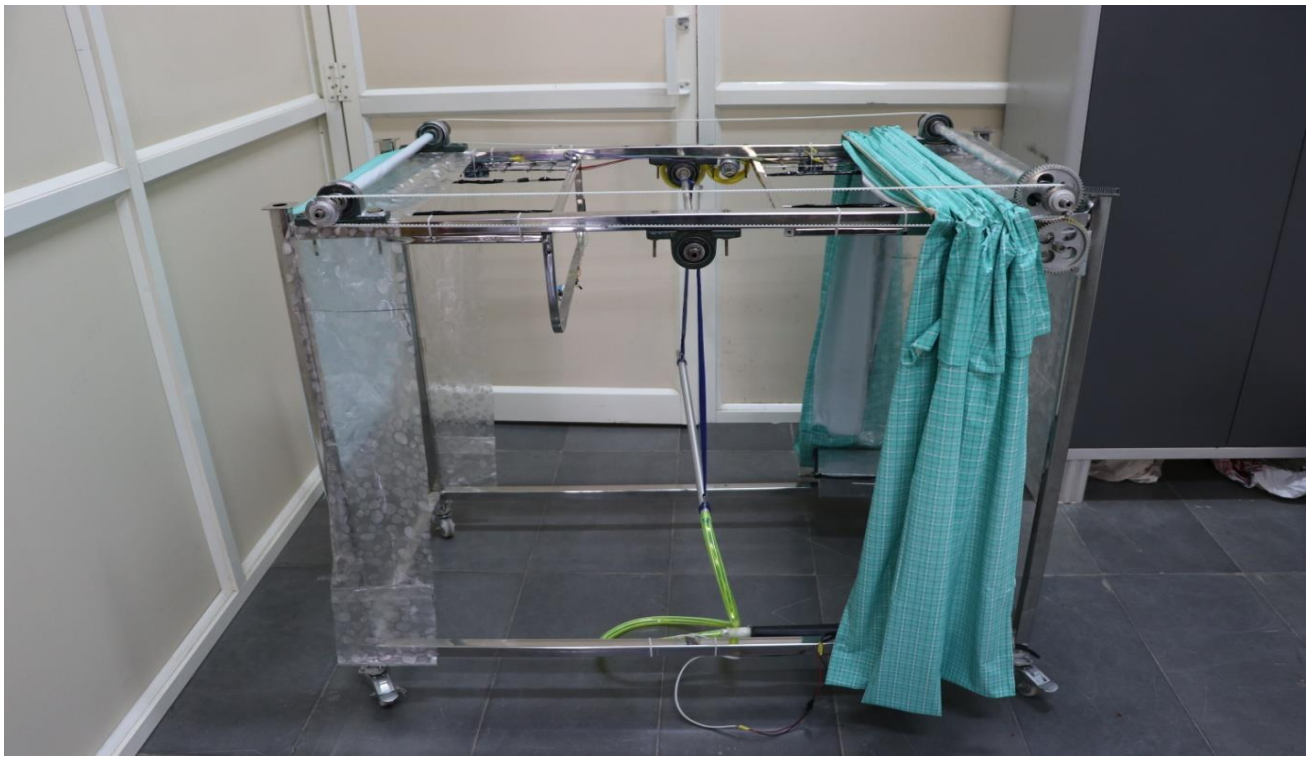
Overall Project Cost: Rs 1,11,200

Contribution from NewGen towards same: Rs. 1,11,200

ENCLOSURE 3

Pics of the Prototype Products Developed during the year 2019-2020

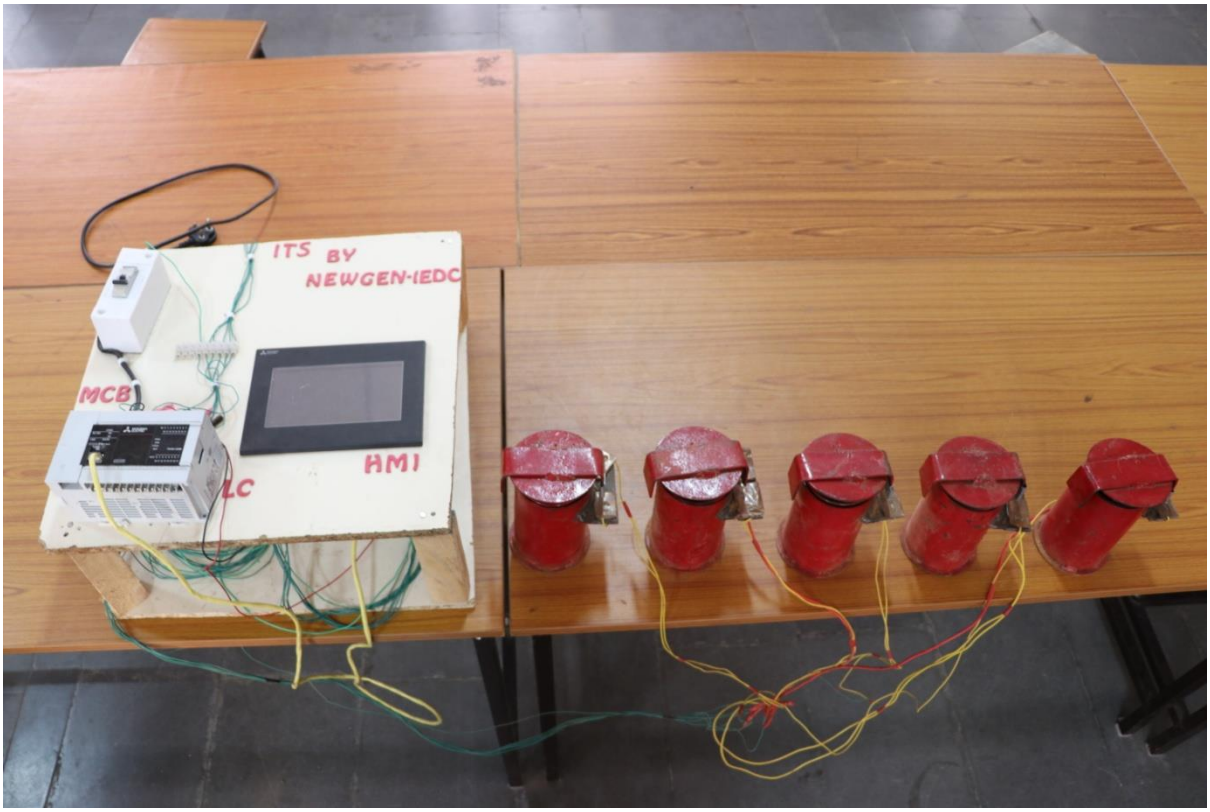
1.Automatic Drying & Protection of Clothes from rain



2. Smart Trolly

3. Efficycle

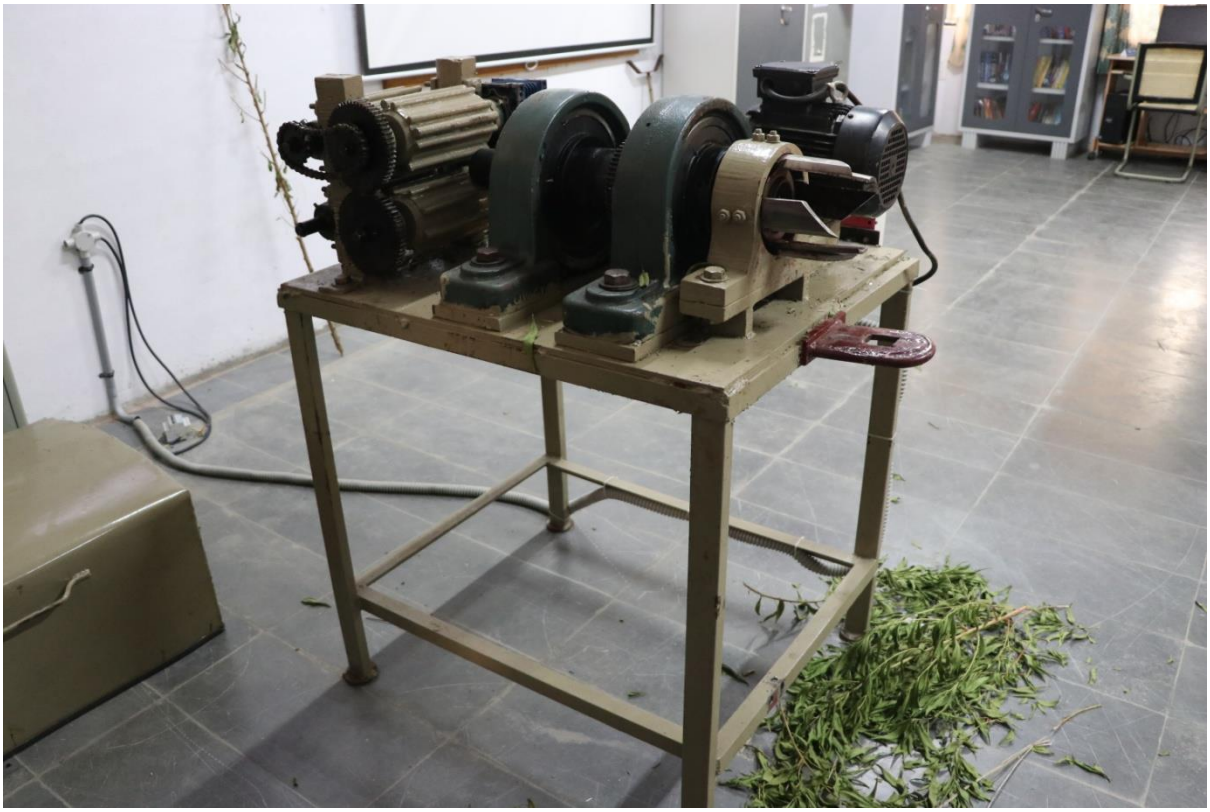
4. Smart Aqua Culture System



5. Smart Traffic signalling System

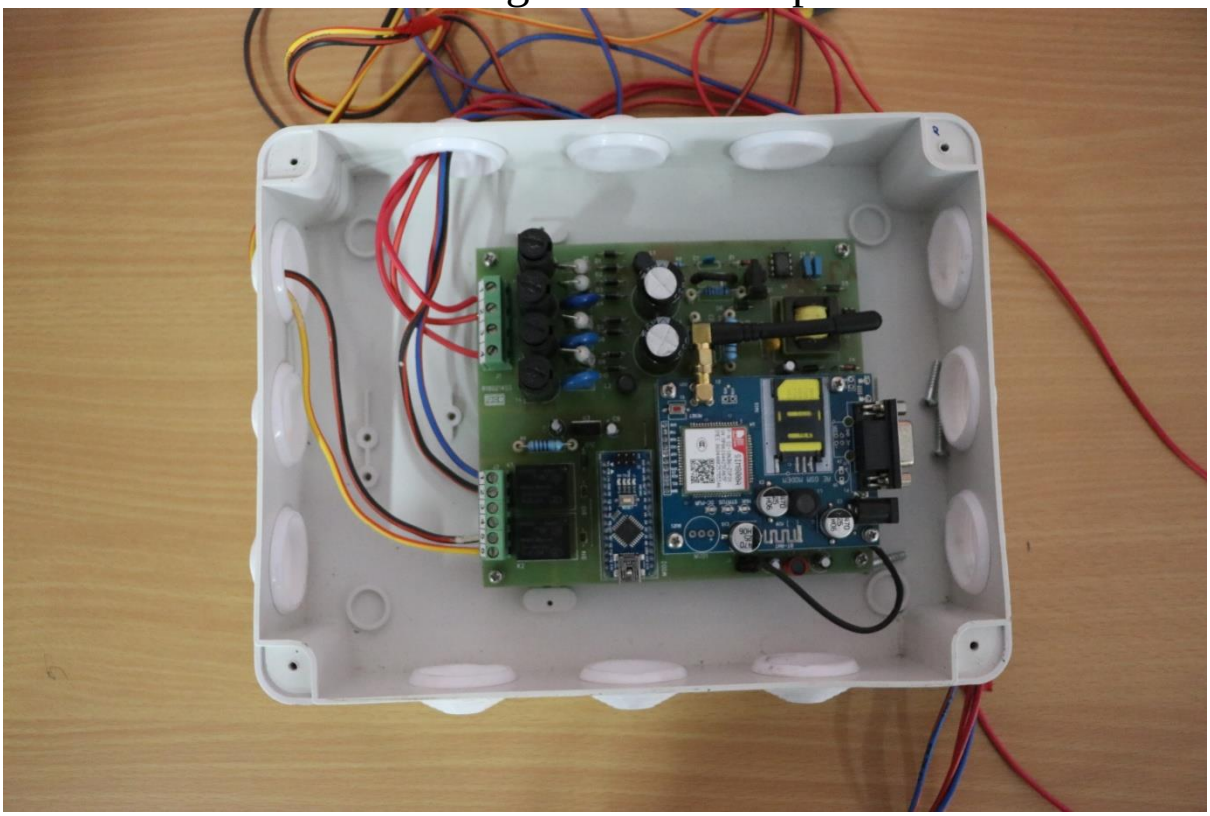
6. Jute Branch Cutter

Jute Branch Cutter



7. Corn Removal Machine

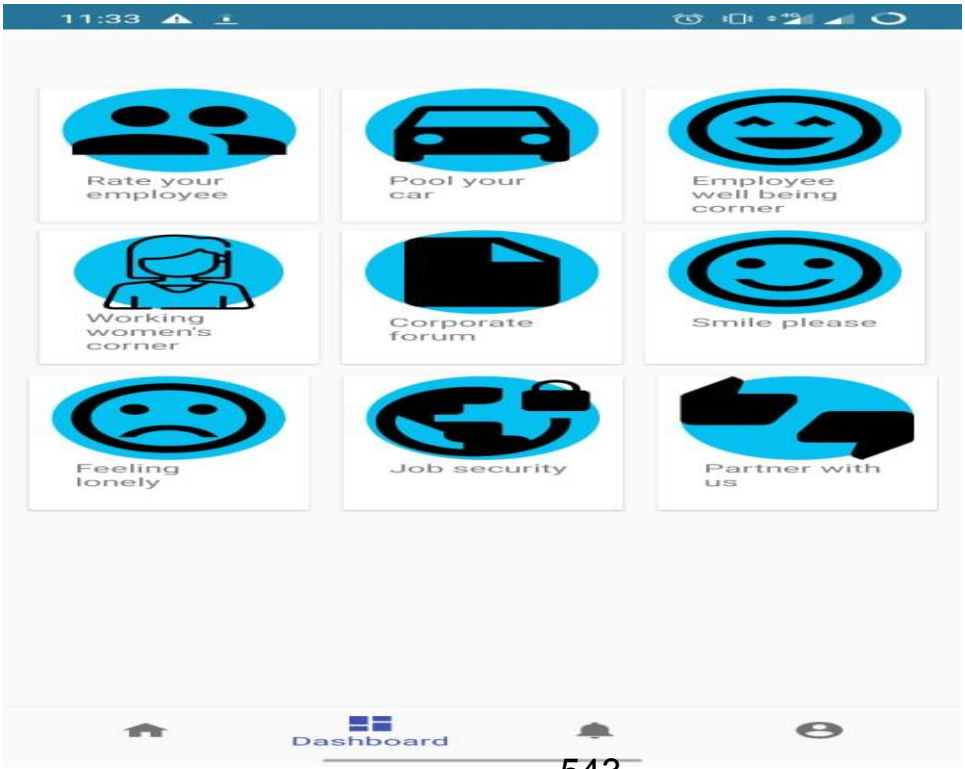
8. Remote Control of Agriculture Pumps



9. Centralized Water Distribution System for Communities

10. Automobile Vehicle Security & driver profiling unit in the car

11. Corporatz App



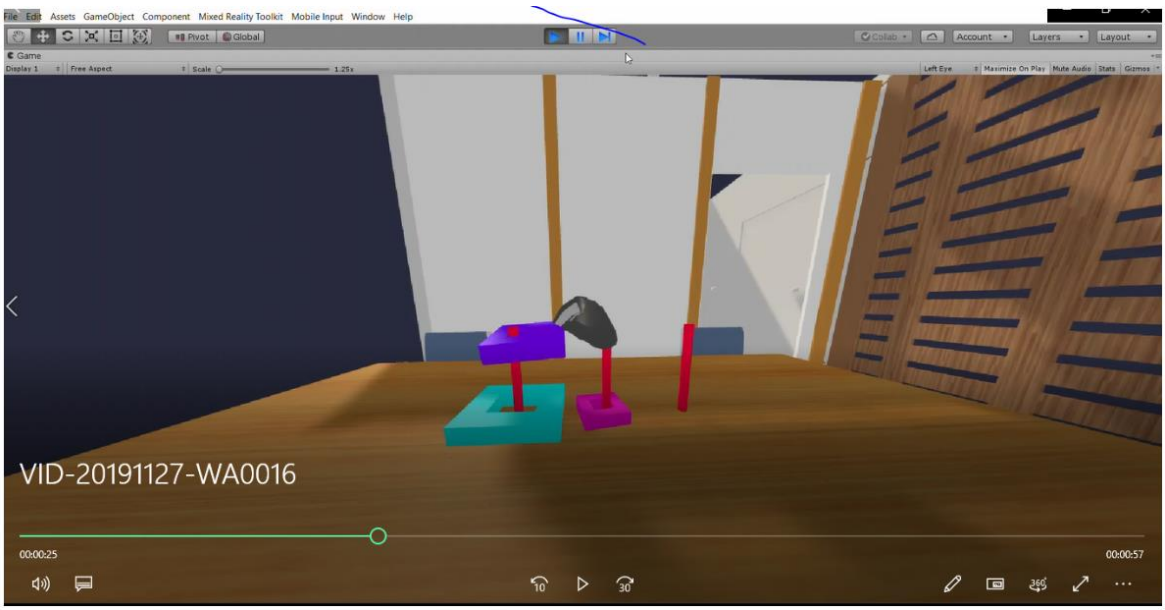
12. All-terrain vehicle

13. Solar Panel Cleaner

14. Fast curing of Cement Bricks

15. Medium Range Payload Copter

16. Virtual Training system for Mentally Challanged



17. Detecting Poisonous Gases in Sewage Lines

ENCLOSURE 4

Entrepreneurship Development Activities at our College during the year 2019-20

Winner of Prize-Rs1,00,000 at Smart India Hackathon 2019 conducted by MHRD Innovation Cell from **8-13 July,2019**.

Nodal Center Best Prize-Rs 1,00,000 at Smart India Hackathon 2019 held on **1 & 2 March, 2019**. In SIH 2019, the students had an opportunity to work on challenges faced within the private sector organizations

Nodal Center Third Best prize, Department Level First Prize(Rs 50000) at Smart India Hackathon 2019 held on **1 & 2 March, 2019**. In SIH 2019, the students had an opportunity to work on challenges faced within the private sector organizations

Nodal Center Level Runner-up 1 and Nodal Center Level Runner-up 2 from our college at Smart India Hackathon 2019 held on 1&2 March, 2019.

Two Day National Level Hackathon "RURATHON" 27 & 28 December 2019 at our college

Two Day National Level Hackathon "Vervethon" – 11&12th January -2019 at our college

NewGen IEDC

Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC: Sumathi Reddy Institute of Technology for Women

Name of the Chief Coordinator : Ranjith Kumar Marrikukkala

Period under Review : 2019-2020

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	Weekly Innovation Challenge	Every week student teams developed a solution for a given problem statements
2	Project Expo	Every student get hands on experience on project development
3	Startup Awareness Drive	Five products are under process to establish their startups

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	Tinker Camp	Students from different disciplines will be chosen and work together to complete the project. Tinker camp helps different engineering students to know the role of other disciplines in completing a project. Campers will also know how engineering can change human living conditions. Tinker Camp is organized for engineering and management students every year
2	Ideation Fest	15 Ideas are shortlisted for NewGen IEDC Second Year projects
3	Innovision	Students presented their ideas, and projected prototypes.
4	Buildathon	Students went through a 36 hours buildathon for converting their idea into a product.

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1	Industry Interaction Program (IoT Hackathon)	Student teams participated in a 24 hours hackathon to develop IoT based prototypes.
2	Industrial Product Expo	Five NewGen IEDC project teams participated in the National level E-Summit Competition organized by IIIT, Allahabad.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any: No

3. Other important highlights (new initiatives), if any:

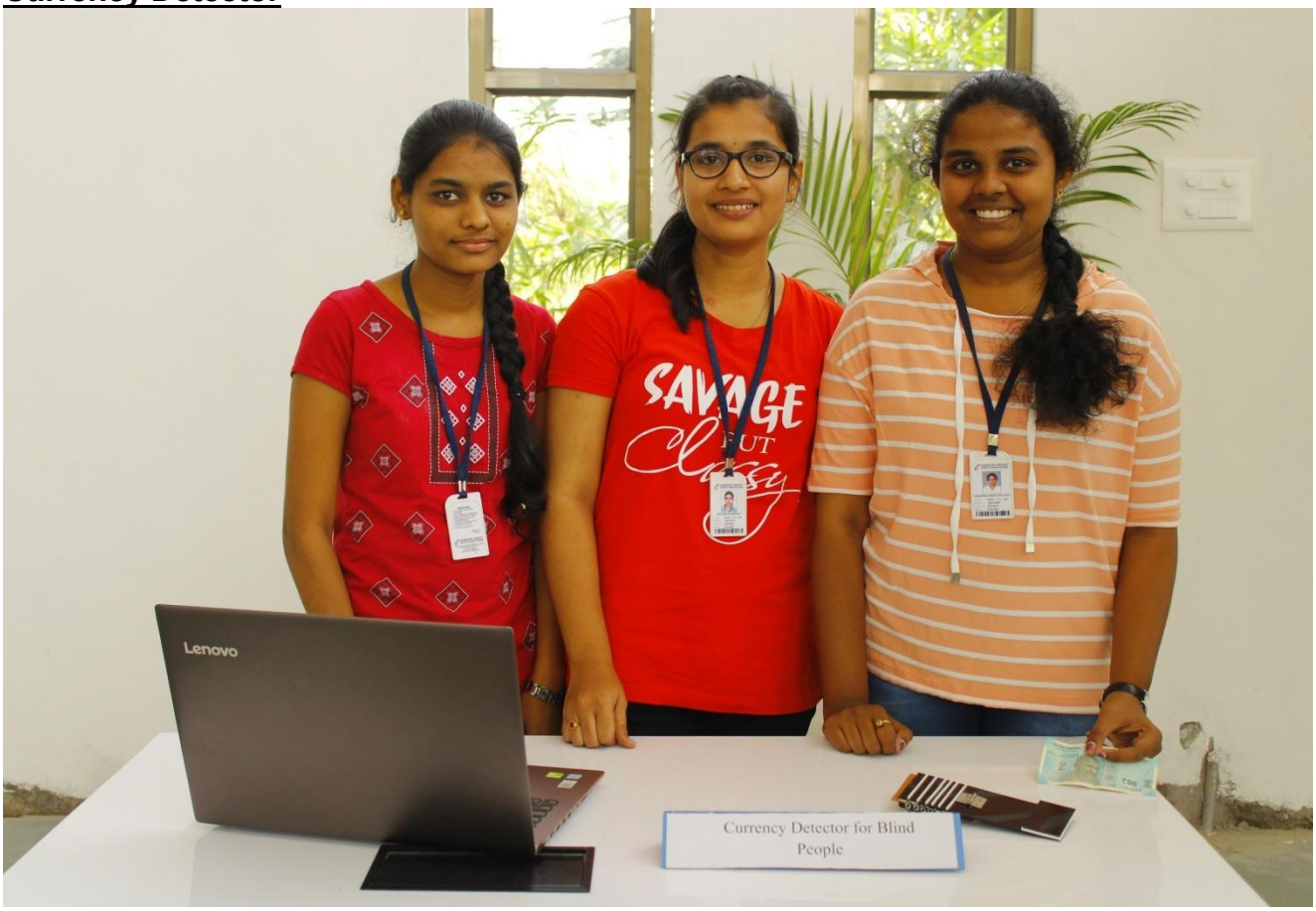
Encouraging the student community to participate in national level competitions.

- 2 teams shortlisted for the SIH2020 grand finale in software edition.
- 5 teams shortlisted in E-Summit, IIIT Allahabad.
- 3 startups established under NewGen IEDC, SRITW

4. Student Projects (Please provide the following details for each student project)

Sr. No	Team/Project Description	Project status at beginning of the Year	Interventions made	Current status
1	Magic Eye	Idea generation	Added ignition feature for motor cycles	Startup under establishment
2	IoT Based Live Video Status and Tracking Security for School Bus	Idea generation	Modified design, which applicable to packers and movers also	Startup under establishment
3	Line Path Tracking Robot	Idea generation	Added a feature for using in college library	Startup under establishment
4	She Bracelet for the women protection	Idea generation	Added voice call as an additional feature	Yet to be commercialized
5	Currency detector for Blind People	Idea generation	Redesigned model with voice over message	Startup under establishment
6	Smart Delivery Box	Idea generation	Added additional module for cross platform mobile application	yet to be commercialized
7	Challenging Dust Bin	Idea generation	Adopted STEM model for Schools and Colleges	Startup under establishment
8	Pond Skimmer	Idea generation	Designed mobile application for controlling the skimmer	project completed
9	Soil Testing Kit	Idea generation	Identified the targeted farmers with Primary Agriculture Committees(PAC's)	Startup under establishment
10	Ammonia Testing Kit	Idea generation	Designed an prototype to suitable local municipality for testing in sulbh complex (Public Toilets)	Startup under establishment

1. **Currency Detector**



2. **She Bracelet for the women protection**

3. **Magic Eye**

4. **IoT Based Live Video Status and Tracking Security for School Bus**

NewGen IEDC
Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC : ITS Engineering College
Name of the Chief Coordinator : Dr. Vikas Singh
Period under Review : February 2019- March 2020

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	Four Entrepreneurship Awareness Camp	Students were oriented towards understanding entrepreneurship as an alternate career option out of which about 300+ students showed interest to know further details.
2	Boot Camp for Entrepreneurship Development	Students from Engineering field receive information about learning an enterprise and tried at concept level to take it further.
3	Three Motivational campaign through successful entrepreneurs	An Interview about opportunities, programmes, policies & incentives were given to 150 students out of which students preferred to entrepreneurship for continuing their learning and making efforts to understand more about setting entrepreneurial venture.
4	Innovation and idea competition and demonstration	150 students participated in idea competition out of which 30 ideas were selected for further exploration.
5	One Entrepreneurship Development program	27 participants were selected to attend 4 weeks Entrepreneurship Development Programmes based on which most of them were able to select a product for enterprise setting besides developing bankable project report dully appraised by the bankers.
6	One Technology based Entrepreneurship Development program	A six week specialized program on Internet of Things was organised in which 25 participants received technical training besides business orientation. Expected that at least 30-45 percent of them will initiate in setting up their enterprises.
7	One Startup Weekend	200 students participated and interacted with existing entrepreneurs, business counselors, venture capitalists & bankers.
8	One Science day- Presentation of Proof of Concept	80 students participated with their idea and interacted with existing incubatees, technical experts and mentors

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	Three Entrepreneurship / Innovation Campaign	More than 200 Candidates received orientation about looking for innovative ideas & developed interest for such activities.
2	Two Business Opportunity Sensing	Science & art of sensing business opportunities were organized for 50 candidates helping them learn to how to sense opportunities for final product selection.
3	Two Business plan preparation & appraisal	30 incubatees learnt about preparation of developing a business plan.
4	Four IPR orientation and processing for Patent of selected ideas	200 students were made aware about once they are ready with their final product development
5	Two Idea competition/	100 innovative ideas were placed in the competition out of which 30 selected for further development incubation.
6	Four Hackathon	Weekly Hackathon was organized with dedicated problem statement which in return came out with solution
7	One Design Competition	A event on Design Competition organized in as annual event "Tectrix". It was competitive skill up of participant's from the region
8	2 Showcasing & Demonstration of product through exhibition & Trade fair	1. Innovative product was demonstrated during Techtrix 2019, after comments of visitor was used for upgradation of product. 2. Innovative project was Demonstrated in ODOP Expo, Noida organized by MSME GoI & UP Govt. Which Given connection and review to the incubatee

[C] To enhance Industry-Academia interaction

Sr. No.	Activities	Outcome/Achievements
1	Four programs-Invite Industry owners/ entrepreneurs for interaction with student and faculty mentors	Sharing of experience about opportunities, programmes, policies & incentives were given to students out of which students preferred to entrepreneurship for continuing their learning and making efforts to understand more about setting entrepreneurial venture.
2	Two programs-Students visit to industry to identify problems in different emerging areas	This program of industry visit was real learning for participants and a environment of opportunity sensing was developed which in return provided solution to the problem statement given by industry. Five such problem was solved by incubatee.
3	Two program-Continued interaction and meeting with industry association	1. Incubatee interacted with Ms. Upasana Singh, Founder Jagmag Lights,k Member Noida Entrpreneurs Association 2. Incubatee interacted with Mr. Chirag Chaudhary, Founder Jagmag Lights, Member Noida Entrpreneurs Association 3. Incubatee interacted Mr. Sanjay Gakhar, VP, Multi commodity Exchange of India 4. Incubatee interacted Mr. Ravi Jaiswal SEBI
4	Two program -Participation in Industrial fair and exhibition	Our students participated in no. of national and international industrial fair and exhibition such as

Sr. No.	Activities	Outcome/Achievements
5	One program- Technology based workshop and training for industries in COE of Institute by the industry experts	A national level Technology based summer workshop and training was organized on Robotic and participants from 17 college of country participated and developed innovative product at end of workshop which was learning.
6	One Webinar by industries	Series of Webinar was hosted by IIC MHRC ITSEC and guest speaker was Shri Anand Mahindra, M&M Motors, Prof. Shahatrabudhe AICTE and others. This was learning platform for participants which created enthusiasm for innovation.

2. Deviation (shortfall) from the proposed action plan (with reasons), if any:

NA

3. Other important highlights (new initiatives), if any:

NA

4. Student Projects (Please provide the following details for each student project)

Sr. No	Team/ Project Description	Project status at beginning of the Year	Interventions made
1	**E-Sugarcane Crusher Machine:** The E sugarcane mobile juicer machine is a type of sugarcane crusher in which a diesel engine is substituted by an electric DC motor which is runs by lithium ferro phosphate battery to extract the sugarcane juice. It is environmental friendly machine.	Ideation	Complete
2	**Healthy Pots:** During day to day activities many people often forget to water their plants and thus it becomes challenging for them to keep their plants healthy and alive. Also it is a challenge for people to maintain their gardens and manage watering of plants during shortage of water. Based on the above background, we thought that it is necessary to implement the automated system which will take care of plants considering all the different aspects of home gardening system (for system based on household purpose) and helps them to grow healthy. We also believe that technology can help people in cultivating plants, not just by automation but also through digital communications. Therefore our project HEALTHY POTS: Smart Gardening System aims to implement a simple system, using automatic watering a small potted plants with minimal human intervention.	Ideation	Complete

Sr. No	Team/ Project Description	Project status at beginning of the Year	Interventions made
3	**Health Monitoring System:** According to today scenario the medical technologies is used for some application as cardiac diseases, diabetes, but the real time problems like sudden heart problems, asthma, other heart diseases are located far from the medical care facilities. And we all know heart diseases have become one of the leading causes of human fatalities around the world. For instance, approximately per year around 2.5million peoples die because of real time diseases metabolic effects on blood pressure and cholesterol which increases cause of heart problems. Use of social connectivity, as we all know in the world population around 90% peoples around 6 million peoples are using cell phones and in 6 million approx. 3 million subscribers are using internet. In addition, smartphones contain many applications which work on real time techniques like GPS, and others, so we are developing inbuilt smartphone application compatible with wearable sensors that have been used for continuous monitoring, storing, and sending medical data to healthcare givers over distance. Wearable technology is also useful in solving the issues of monitoring in motion artifacts by using multiple sensors integrated on a single chip. The current study addresses the issue of integrating a wearable sensor with mobile technology by developing a remote monitoring system for heart patients. In this study, we propose a location based real-time monitoring system comprising a wearable sensor, mobile application to overcome some of the issues. And after sensing the issue it transfers data with the help of Bluetooth or wifi.	Ideation	Complete
4	**Rail Generator:** Novel multiple Rotor Induction/Permanent magnet Generator design optimized for Higher Efficiency, higher power density, more economical and compact operation.The invention discloses electrical generators/power alternators (cipher generators) for generation of AC and DC power, wherein multiple numbers of either type of rotors or same types of rotors, but no stationary stator is used, wherein all rotors either all same type or combination of different types rotate in opposite direction to each other, which generate more power from less required area. The novel arrangement of rotors and novel designs of alternators with such rotor arrangements are disclosed.	Ideation	Complete

Sr. No	Team/ Project Description	Project status at beginning of the Year	Interventions made
5	**Reception Robot:** Reception bot is robot (Welcome Your Clients Anywhere), able to meet and greet visitors or clients. Inform your visitors about your college or company it can also tell about latest news or products, it can displays video, receive a payment, etc. Find out how Keylo can revolutionize your business! Reception robot is one of the modern robots used for serving purpose at the reception area. In every organisation there is a need of at least two helpers or peons to serve water tea or coffee. This robot can easily do the same work. Along with this feature there is an option of talking to the new arrivals using Google home where I get can ask different questions and this robot with answers based on internet or the data is stored inside. It has also face recognition capability and it recognizes the face of the person coming second time. Balancing machine has two powerful BLDC motors to carry 5kg payload along with its self-load. It can be operated using remote control, voice command, also it can be programmed to perform a particular task. There is a space kept in front of the robot to carry the goods. The key features are mentioned below.	Ideation	Complete
6	**Rice Planting Machine:** Agriculture is the most important sector of the Indian economy. It is the most important source of employment for the majority of the work force in the country. A major population in India is engaged in agriculture. Among that highest percentage was in paddy sector. Rice is the major stable food of the country. Releasing of work force to sectors other than Agriculture is important to develop the country. To release the work force in paddy sector mechanization plays a big role. To feed growing population is a huge challenge. Mechanization of paddy sector will lead to higher productivity with releasing of work force to other sectors. The objective of this project is to design a paddy transplanting mechanism to transplant paddy seedlings by small scale farmers in the country. Farmer's Friend, a rice planting machine conceptualized and designed to compensate the issue in planting Paddy in field. Farmer's friend aims to improve farming efficiency. This machine is proposed to address the problems in rice planting by providing farmers with access to insights as well as guidance on appropriate distance between 2-Paddy plants which results in better yield of the Paddy. As it is 300cc engine powered machine and 8 rows working ability, it is more efficient than conventional planting practice. India is an agrarian country. About 70% of Indians are dependent on agriculture for their livelihood. India is one of the world's largest producers of rice, accounting for 20% of all world rice production. Rice is usually grown by planting rice paddy in the fields manually with hands. With this method of planting	Ideation	Complete

Sr. No	Team/ Project Description	Project status at beginning of the Year	Interventions made
	rice paddy, labour cost increases and it is a very time consuming process. These problems can be solved with the help of rice planting machine. This machine reduces labour cost and time to plant rice paddy. This machine has a simple mechanism and it is eco-friendly. This machine requires only one person for its operation. This machine can bring revolution in rice production. So, the main aim of this to design and develop a rice planting machine which will help the farmers to make the whole rice planting process mechanical resulting in reduction of labour, cost and time to a large extend. The ultimate aim of agriculture or farming in India is not only limited to growing of crops but is also associated with the economic growth of farmers and labours. Mechanization in agricultural sector has put revolutionary change in agricultural economy of the country.		
7	**Sewage Cleaning Machine:** Workers entering manholes to clean them by hand is a process known as manual scavenging. The practice of manual scavenging involves workers physically entering sewers or septic tanks to clean out excreta. This is actually illegal in India and has been since 2013. One of the biggest problems in India is the profession of manual scavenging. Although laws have been made to stop the practice, human scavengers are forced to enter and clean the manholes with their hands even today. Due to manual scavenging hundreds die every years. Many scavengers reported that they have no alternative expect to enter the manhole. The Tata Institute of Social Sciences, an educational and research organization, found that 80% of the workers die before age 60 because of work-related health problems. Sewer workers die from accidents, suffocation or exposure to toxic gases, the study found. Due to lack of availability of low-cost machines, manual scavenging processes is still used for sewer cleaning in spite of knowing the death risk.	Ideation	Complete

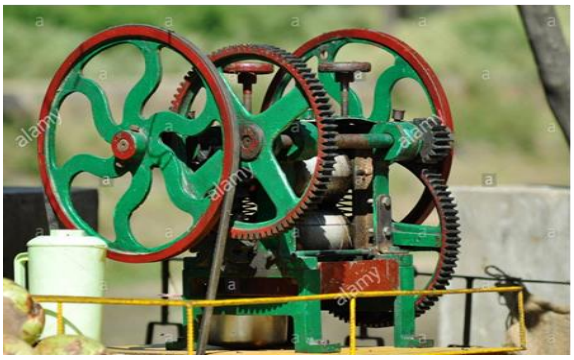
Sr. No	Team/ Project Description	Project status at beginning of the Year	Interventions made
8	**SMART INHALER:** Asthma is a state in which a person's airways become inflamed, slim and swell and produce extra mucus, which makes it difficult to breathe. Asthma can be minor or it can interfere with daily activities. In some cases, it may lead to a life-threatening attack. As per data available on internet [1], there are approximate 235 million patients worldwide diagnosed with Asthma. One in every 10 patients present is an Indian. In our country, the numbers of deaths due to asthma recorded is 4000 per year. In present situation, most of the inhalers companies use sodium cromoglicate or nedocromil, which have saved numerous lives in blink of seconds.	Ideation	Complete
9	**SMART SOLAR PANEL CLEANING SYSTEM:** Solar energy is generated in the sun due to fusion reaction. In just one hour the sun generates enough energy to power the world for an entire year. This solar energy is captured by photovoltaic cells and converted into electricity this is due to photo-electric effect. Solar power is an abundant renewable energy source with the potential to supply the world's energy needs. Solar modules produce most electricity when they are pointed directly towards the sun, so it is important to install them this way so that they receive maximum sunlight. Ideally they should be directly facing sun at least from 9am to 3pm and free from dust and dirt to produce maximum power from the solar panels. So, it is necessary to clean the solar panels regularly.	Ideation	Complete
10	**Smart Trolley:** According to present scenario, now a day's shopping at big malls is becoming a daily activity in metro cities. The huge rush at malls on holidays and weekends. After purchase, at the billing counter the cashier prepares the bill using bar code reader which is a time-consuming process and results in long queues. Considering all this, we have implemented a system that can be used in shopping malls to solve the rush at billing counter using RFID based trolley.	Ideation	Complete
11	**TRAFFIC FREE AMBULANCE SYSTEM:** A lot of brainstorming has been done for the development of such a product which focuses on the improvement of the traffic conditions for Ambulance like emergency systems. The product undertakes simultaneously the inclusion of both the electronics and communication technology and programming to achieve a system that can give free ways to ambulances. The motivation for the project comes from the scenario of heavy traffic conditions in metropolitan cities, the system aims to provide green signals to the approaching ambulances by manipulating the traffic signal lights. The free roads will be helpful in saving time thereby making the ambulance able to rush to the hospitals, thereby saving precious lives.	Ideation	Complete

Sr. No	Team/ Project Description	Project status at beginning of the Year	Interventions made
12	**E-Smart Bike:** The main objective is to develop E-smart Bike to Reduce the Air pollution, Noise pollution, Global Warming and Increase Security by IOT based system. And providing Automation in automobile sector. Emphasized on safety and security of the Driver. Top Speed: 80Km/h; Charging Time: 2-2.5hrs; Mileage: 80km at Full Charge. The Running cost is very low compared to the petrol bikes. IOT Based Security System like Bio-metric thumb start, Tracker, Whole Bike Analysis by using Android/iOS Application.	Ideation	Complete

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

- Student team details (with contact information)
- Brief description about the student start-up
- Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs
- Contribution of NewGen IEDC in the same
- Future plan

E Sugarcane Crusher-Juicer Machine



ITS ENGINEERING COLLEGE GREATER NOIDA

Final Project Report On-

E Sugarcane Crusher-Juicer Machine

OUR TEAM:

MENTOR - Mr. MAHIP SINGH

STUDENTS:

Syed Yusuf Amin	7301767789
Prashant Kumar	9472827208
Md. Suleman Akhtar	8252133553
Syed Faisal Hussain	9631701517

1. **INTRODUCTION:** The E sugarcane mobile juicer machine is a type of sugarcane crusher in which a diesel engine is substituted by an electric DC motor which is runs by lithium ferro phosphate battery to extract the sugarcane juice. It is environmental friendly machine.

Problem

Problem faced by current sugarcane crusher machine

1. Safety problem (hazardous),

- The vendors do not know how to operate the machine properly.
- Accidents like hand injuries that are caused while working with the machine.
- All the machines are not user friendly.

2. Hygiene problem,

- All the machines are not easy to clean.
- The major problem of the sugarcane juice machines is rusting of the extracting rolls.
- The extraction of juice at roadside causes dust impurities.

3. Pollution problem,

- Vendors uses high power diesel engine and it causes air pollution.
- The engine sound causes sound pollution.
- The engine oil impure the juice as well.

4. Illegal according to government laws,

- Using of 2 stroke engine to run the machine.
- They used unregistered vehicle.

Solution: Solar Top E Sugarcane Mobile juicer Machine

BENEFITS:

- It will be Electric powered (Environmental- friendly).
- The extraction of juice will be covered (protected from dust particles).
- The juice extraction roller will be made of stainless steel and easily Cleanable (hygienic).
- The use of E vehicle to make that crusher machine mobile which will be government registered and legal.
- The use of E vehicle will not cause any type of pollution.
- The partial charging of batteries for crusher machine and vehicle will be solar powered.
- Machine will be Concised in size and portable (easy to move from one place to another).

This whole project will promote values towards-

- Use of renewable energy.
- Minimize the pollution.
- Use of legal things with proper procedures.
- Maintain hygiene because HEALTH IS WEALTH.
- Considering safety.
- Waste management CLEAN INDIA GREEN INDIA.
- Innovation to make things better.

Electronics components And Its Details

1. Sugarcane crusher

- BLDC Motor - A brushless DC electric motor (BLDC motor or BL motor), also known as electronically commutated motor (ECM or EC motor) and synchronous DC motors.

Specification-1.2KW,48V,3000RPM

- Motor Controller-A Motor Controller is a device that acts as intermediary between battery and motor.

Specification- 60A,1.5KW

1. Solar panel-It is a flat plate like device that absorbs the sunlight and convert it into direct current electricity.

Specification-24V,

2. E Rickshaw

• Rickshaw chassis - A chassis is the load-bearing framework of a vehicle or rickshaw, which structurally supports the object on it.

Generally it is made up of mild steel.

• Driving BLDC motor- A brushless DC electric motor (BLDC motor or BL motor), also known as electronically commutated motor (ECM or EC motor) and synchronous DC motors.

Specification-850W

• Motor Controller-A Motor Controller is a device that acts as intermediary between battery and motor.

• Specification-40A

1. Battery-It is a device which is consist of electrochemical cell use to provide power to the electronic devices. We are using (LiFePO4) battery

Specification-lithium ferro phosphate (LiFePO4),51V,60A

2. Methodology of development

Abstract- —A E-sugarcane mobile juicer is developed, constructed and being tested to assist the small and medium sugarcane crusher to extract juice from sugarcane. The machine grinds the horizontally loaded sugarcane stem and presses the macerated stem against the cylindrical cone to extract the juice from the wet baggasse. The machine is designed and mounted on E rickshaw for mobilityand it is powered by lithium ferro phosphate (LiFePO4),51V,60A.and it consists of the (stainless steel) housing, shaft, bearings, keys, pulleys, rollers, hopper, v-belt, adjusters and gears electric motor etc. This machine can be produced in small machine shops in the sugarcane producing areas instead of depending on the imported ones.

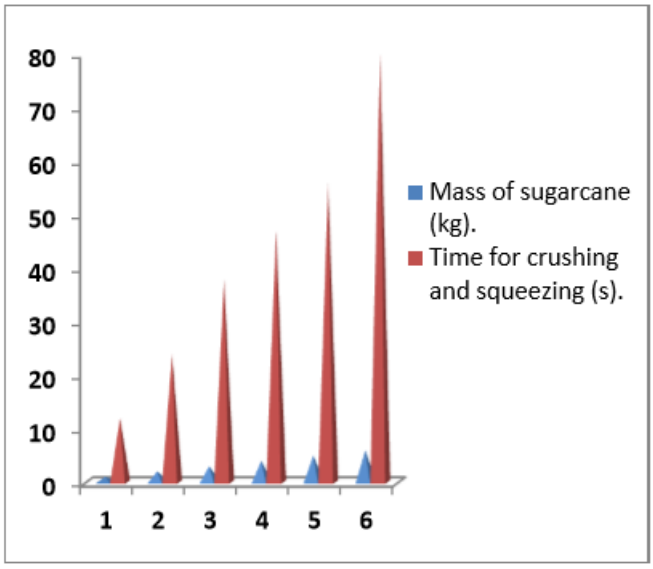


Figure 4: Result of different masses of sugarcane and time

Sugarcane is any of the six to thirty-seven species (depending on taxonomic system) of tall perennial grasses. Sugarcane is a tropical grass belonging to the same family as sorghum, Johnsongrass, and corn – also known as maize (Midwest Research Institute, 1997). Most of the several types of sugarcane planted are cross-fertilised between Saccharum officinarum (high sugar content), Saccharum .sinensis (adaptable), Saccharum. spontaneum and Saccharum robustum (disease resistant). The most common clones are octaploid and are propagated vegetatively. Due to the favourable climate of India, the sugarcane plant has growing well and one would have expected India to be a huge exporter of sugar by reason of high production of sugarcane stalk but this is not so at present. Sugarcane is the main source of obtaining sugar, the extraction of sugar from sugarcane is done through certain processes, which have undergone immense improvement. However, two processes are commonly used which are the milling and the diffusion processes.

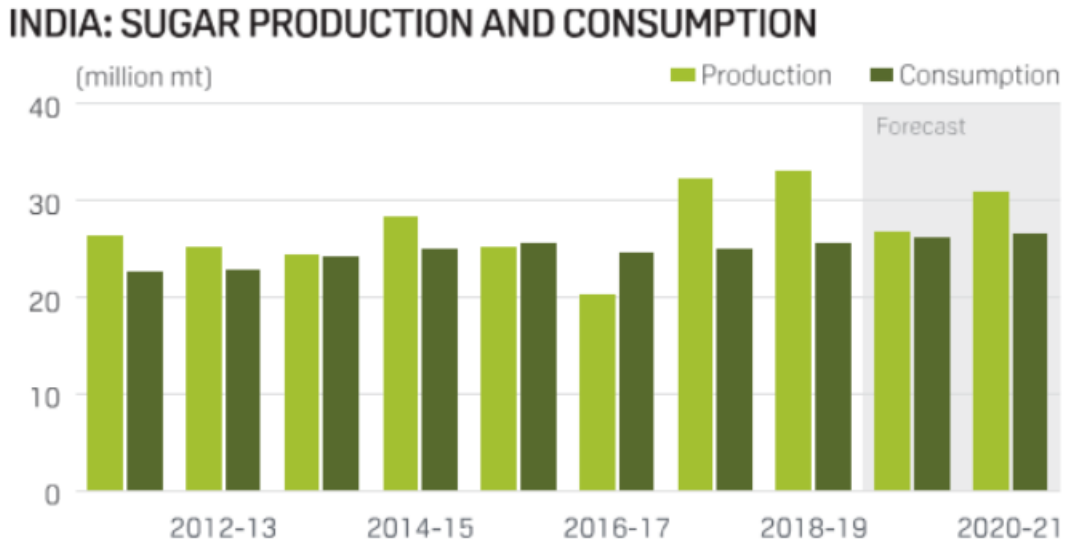
In the milling process, the sugarcane first go through a washer before being fed to a cane cutler consisting of cylindrical shaft, revolving a 400-500 rpm fitted with conical grooves. The conical grooves crush the cane either into small pieces, which are shredded, or not before moving to the crushers. The crushing is done as the sugarcane stalks pass between series of grooved horizontal metal rollers results in separating the juice that contains the sugar from the fibre otherwise known as bagasse.

CONCLUSION A E-sugarcane crushing and squeezing machine which is mounted on solar top E rickshaw with a capacity of 200 kg/hr is developed and tested; the production cost of the machine is Rs 1.3 lakhs approx (mass scale production). The development machine possess simplicity in operation and maintenance, as well as being affordable with low running and maintenance costs and with reliable efficiency. If commercialized, the machine could go a long way in solving the problem of sugarcane juice extraction commercially, for the local use thereby meeting the sugar requirement of the nation.

3. Financial Detail

Project Cost: Rs. 231580
Honorarium for Mentor: Rs. 22273
Honorarium for Incubatee: Rs. 22273
Total Expense: Rs. 276126

4. Tentative Procedures for Commercialization: We are providing our esteemed clients with an excellent quality of Sugarcane Crushing Machine that is manufactured using the best quality components. The offered machine is available in varied sizes and other related technical specifications, in order to meet the different requirements of our precious clients. Our provided machine is strictly tested by the team of our professionals. In addition, our clients can avail this machine from us at industry leading prices.



4. Features:

- Sturdy construction
- Less Hazardous
- Hygienic to use
- Environmental Friendly
- Less Noise Pollution
- Electric powered
- Solar power assistance
- Easy to use
- Smooth performance

5. Future Scope: As long as these three factors remain in play, sugar production will most likely remain above 30 million mt, unless severely adverse weather conditions hit agricultural yields, planting and/or cause diversion to fodder. This exceptional set of conditions happened this year, which is why for 2019-20 (October-September) sugar production forecasts range between 26 million and 28 million mt (we are at 26.6 million mt). For 2020-21, everyone is expecting a recovery in sugar production to above 30 million mt.

Solar top E sugarcane mobile juicer will be Electric powered (Environmental- friendly) which will led to natural resources storage. The use of E vehicle to make that crusher machine mobile which will be government registered and legal. The partial charging of batteries for crusher machine and vehicle will be solar powered. Local vendors which uses hazardeous , illegal machine will switch to Solar top E-sugarcane crusher which will be hygienic, covered (free from dust), portable and clean. It will ultimately increases the earning of poor vendors and it also increases the quality of sugarcane juice (hygienic and pure).

6. Reference:

https://www.researchgate.net/publication/334173185_Methodology_for_the_Development_of_Hardware_Startups

https://www.jmest.org/wp-content/uploads/JMESTN42350769.pdf

https://www.sugarplant.in/sugar-cane-crushers.html

http://www.iisr.nic.in/download/publications/IISRVision2030.pdf

https://energy.economictimes.indiatimes.com/energy-speak/what-might-the-future-hold-for-india-s-sugarcane-industry/3890

NEWGEN IEDC – 2019-20

I.T.S ENGINEERING COLLEGE
Greater Noida

Project Report

Project Name: **Health Monitoring System**

Team Mentor:

Mr. Rajiv Ranjan (Asst. Prof. EEE Dept.) rajivranjan.eee@its.edu.in, M: 9891262550

Team Details:

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1. Brief description:

According to today scenario the medical technologies is used for some application as cardiac diseases, diabetes, but the real time problems like sudden heart problems, asthma, other heart diseases are located far from the medical care facilities.

And we all know heart diseases have become one of the leading causes of human fatalities around the world. For instance, approximately per year around 2.5million peoples die because of real time diseases metabolic effects on blood pressure and cholesterol which increases cause of heart problems.

Use of social connectivity, as we all know in the world population around 90% peoples around 6 million peoples are using cell phones and in 6 million approx. 3 million subscribers are using internet. In addition, smartphones contain many applications which work on real time techniques like GPS, and others, so we are developing inbuilt smartphone application compatible with wearable sensors that have been used for continuous monitoring, storing, and sending medical data to healthcare givers over distance. Wearable technology is also useful in solving the issues of monitoring in motion artifacts by using multiple sensors integrated on a single chip.

The current study addresses the issue of integrating a wearable sensor with mobile technology by developing a remote monitoring system for heart patients. In this study, we propose a location based real-time monitoring system comprising a wearable sensor, mobile application to overcome some of the issues. And after sensing the issue it transfers data with the help of Bluetooth or Wi-Fi.

1. **Ideation to prototype:**

The real-time monitoring system is compatible to use various wearable sensors which helps finding out multiple parameters such as heart rate, blood pressure, and body and skin temperature at the same time. These cardiac parameters help early detection of diseases such as arrhythmia, hypertension, and hyperthermia through alarming system.

➢ *System design:* -System design consist of patient body with wearable sensors and second patient with a handy smartphone and third the main component transmission of report with the help of web.

As we can see in the above figure first part contain wearable sensor. Heart rate or heart pulse is a palpable rhythmic expansion of an artery produced by flow of blood and recorded as number of pulses in one minute. Wearable sensor measures the patient information and transmits the data to the second stage with the help of Bluetooth of low energy. Now in second stage the data is abstracted from the wearable sensor and after recording data it communicate with the third stage web with the help of internet or Wi-Fi networks. In addition, the inbuilt application GPS helps to locate the location of individuals under observation, and lastly the data is downloaded to the doctor's web interface with the help of networks. Web portal is a platform that acquires the data of multiple patients wearing wearable sensors and displays them on web interface, also said as doctor's interface. With the location of the patient and identity.

In this study, three types of wearable sensors are used to extract heart rate, blood pressure, and body temperature information of the patients. In this the accuracy of sensor directly impacts on patient heart rate in real time measurement.

Zephyr BT is a wearable sensor which has been used to extract heart rate information of the patients requiring continuous monitoring. The second measuring parameter of our monitoring system is blood pressure, it means the force exerted by the flow of blood against the atrial wall during heart contraction and heart expansion so being in safer side we use a wireless blood pressure detection device. Body temperature of the patient is the third parameter under the scope of this project, Bluetooth based temperature sensor is used to temperature.

➢ *Data Transmission from Wearable Sensors to android:* - measure body the data transmission process from sensor to Android listening port via Bluetooth, the developed application is installed in smartphone which acts as android handheld listening port of the system to receive the information from the first stage (wearable sensor) with the help of Bluetooth. Once the connection is established, the listening port of the system (smartphone) starts scanning processto detect BLE sensor and it stops immediately as soon as the detection process is complete. Now when the connectivity of system is complete, then it record the heart rate data sending to the listening port but the data recorded is in the wave form or other codes then the data is converted in the form of integer and displayed on application process. As shown in images,

➢ *Web Interface: -*

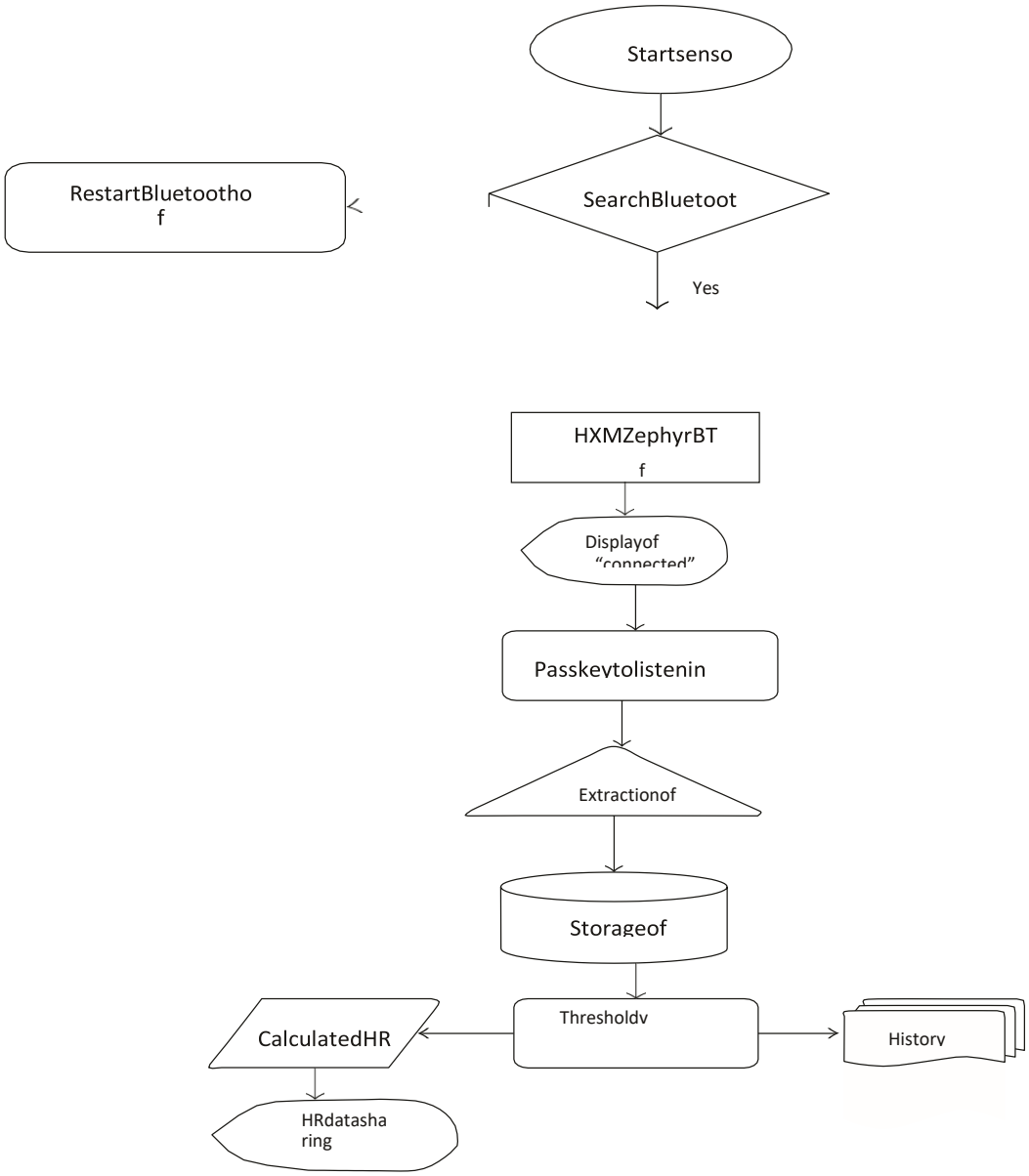
Patient data*:* - This consists of the patient's personal and medical records. Real-time data acquired by wearable sensors has been shown with respect to time

Alarming Messages: - This module contains alarming messages generated at Android handheld listening port. Extracted physiological parameters give the alarming signals after comparison with assigned threshold values. These alarming signals indicate abnormalities in the body.

Management: - User management allows the involvement of multiple doctors in the web application for diagnosing patients.

Location Records: - The location records of patients after knowing about the abnormalities, the doctor can immediately track the current location of the patient which helps in both reaching the patient and sending ambulance to transfer the patient to hospital in case of serious emergency.

*Flow chart: -I*n flow chart we can see how the whole mechanism works in both monitoring system.



The above flow chart shows the heath monitoring process.

➢ *Threshold values for alarming: -*

Threshold values are the pre-defined values for the alarming technique when the reading exceed from threshold values then the alarm works and informs patient.

As an example, a tabulated data is shown below in table for alarming mechanism.

Sinus rhythm type	Threshold value of heart rate, blood pressure, and temperature
Normal	$60 \leq HR \leq 100$ (beats/minute), BP = 100–140/60–80 mmHg, and temperature = 36.5–37.5°C
Bradycardia	$HR \leq 60$ (beats/minute)
Tachycardia	$HR \geq 100$ (beats/minute)
Hypertension (Stage 1)	Blood pressure = Sys/Dys $\geq$ 140/90
mmHg Hypertension (Stage 2)	Blood pressure = Sys/Dys $\geq$ 150/95
mmHg Hypotension	Blood pressure = Sys/Dys $\leq$ 90/60
mmHg Fever	Temperature $\geq$ 37.8°C
Hypothermia	Temperature $\leq$ 35.0°C

Contribution of NewGen IEDC:

Technical support: We got help from different faculty members wherever technical support is needed andespecially our project mentor.

Infrastructural support: We worked in a well-equipped lab available in NewGen cell and the cell provided us all necessary items required for completion of the project.

Financial Support: We received required financial support as per the details given below:

Financial Detail

Project Cost: Rs. 99086

Honorarium for Mentor: Rs. 22273

Honorarium for Incubatee: Rs. 22273

Total Expense: Rs. 143632

Future Plan:

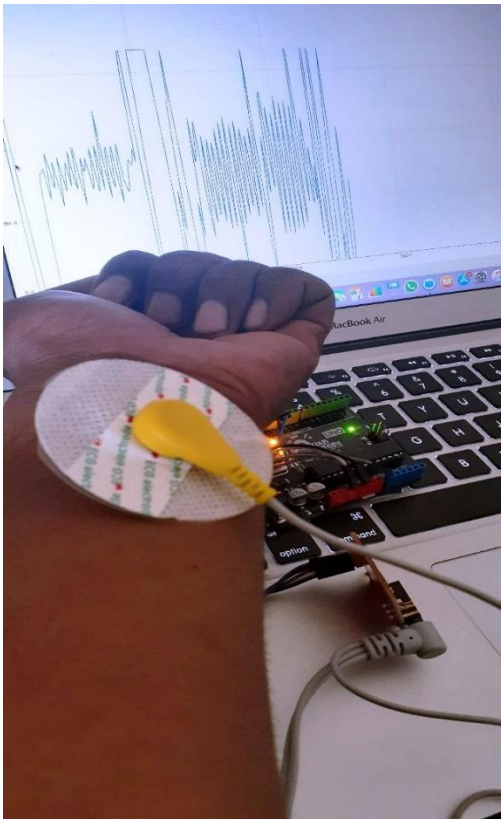
The health monitoring system finds its applicability throughout the world. For the purpose of knowing the functioning condition of heart of every individual, and to know if any alarming condition arises due to functioning of it. Accordingly corrective measures can be taken.

The entire commercialization process can be summarized as follows:

- To provide aesthetic look of the system.
- Authentication of the system through doctors or cardiologist.
- Authentication of the survey report analysis with cardiologist.
- Patenting of the product.
- To tie up with a manufacturing company.
- Fixing of price as per market standards.
- Marketing and advertisement.
- Tie up with online marketing company.
- Making a personalized server and data center.
- Tie up with Telemedicine Company.

Video Link: https://youtu.be/SES2eY2PkxQ

Photographs:



NEWGEN IEDC 2019-20
ITS ENGINEERING COLLEGE
PROJECT REPORT

1. INTRODUCTION:

Project name:
Rail Generator

Team leader:
Harshit Kumar Singh
3rd Year student of Electrical and Electronics Department

Mobile : 8826565590

Team mentor:
Dr. Monika Jain
Head Of Department Electronics and Communication Engineering

Project Description:
Novel multiple Rotor Induction/Permanent magnet Generator design optimized for Higher Efficiency, higher power density, more economical and compact operation.

The invention discloses electrical generators/power alternators (cipher generators) for generation of AC and DC power, wherein multiple numbers of either type of rotors or same types of rotors, but no stationary stator is used, wherein all rotors either all same type or combination of different types rotate in opposite direction to each other, which generate more power from less required area. The novel arrangement of rotors and novel designs of alternators with such rotor arrangements are disclosed.

Where all alternators are being used-

- All power plants described so far heat water to turn the turbines and generate electricity.
- Hydroelectric power plants convert mechanical energy of moving water to produce electricity using turbines
- Wind-Turbine convert kinetic energy of air to electricity
- Tidal energy and upcoming Fusion Reactors.

Proposed outcome-

1) Alternator/generator Power density that is the will drastically increase as the relative motion well cause the alternator to run at double the angular velocity as before hence the electro motive force developed during this part will be double and the
2) Alternators cost will be reduced by 20-30%

3) Alternators Weight will be reduced
4) Alternators Size will be reduced
5) Alternators can operate on single or multiple Mechanical inputs.

a) Problem the invention is trying to solve-

· Alternator power output is limited when operated at high R.P.M, due to very high operational rpm the centrifugal force on the rotor increases so much that, alternator might explode due to this huge force.Due to such high force experienced by the rotor they are needed to be built using very high costing materials so that they can withstand such high force.Hence alternators are very expensive.Alternators are single mechanical input units, hence whenever the machine is to be repaired the whole unit has to be shut down.

b) Technical features of the invention-

- Operates on relative angular velocity between the rotor and stator
- Both rotor and stator are in motion in equal and opposite direction for double power output.
- Centrifugal force is less for the same conventional unit.
- Size to power ratio is comparatively much better
- Proposed model can work either on single or dual mechanical input

c) Application of the invention-

· This invention can be used in all types of power generation plants such as wind turbines, coal plant, nuclear plant, hydro plant, tidal plant, solar thermal plant, natural gas plant, waste to power plant and many more.

· Also with all type of commercial generation units such as petrol, diesel, kerosene units which are in use in houses and so on

· Proposed models can also be converted to be utilized as Electric motor with all the above proposed benefits.

d) Advantages of the invention-

Cost in making the alternator is much lesser when compared to other counter parts

Rotor and stator both are operating on less rpm individually, hence no need for expensive selection of rotor/stator material

Centrifugal force is lesser and more distributed in nature among the two rotors.

One as well as multiple mechanical inputs

e) Best way of using the invention as well as possible variants

It can be used to generate Alternating current as well as to produce rectified D.C(100Hz AC Current rectified to DC current)

Small generators with rated power output of (500W to 20KW) and large generators with rated power output of (20KW to MegaWatts).

This invention can be turned inwards to work as a motor also.

f) Diagrammatic representation, formulas and mathematics used-

For D.C Generators

P= no. of poles

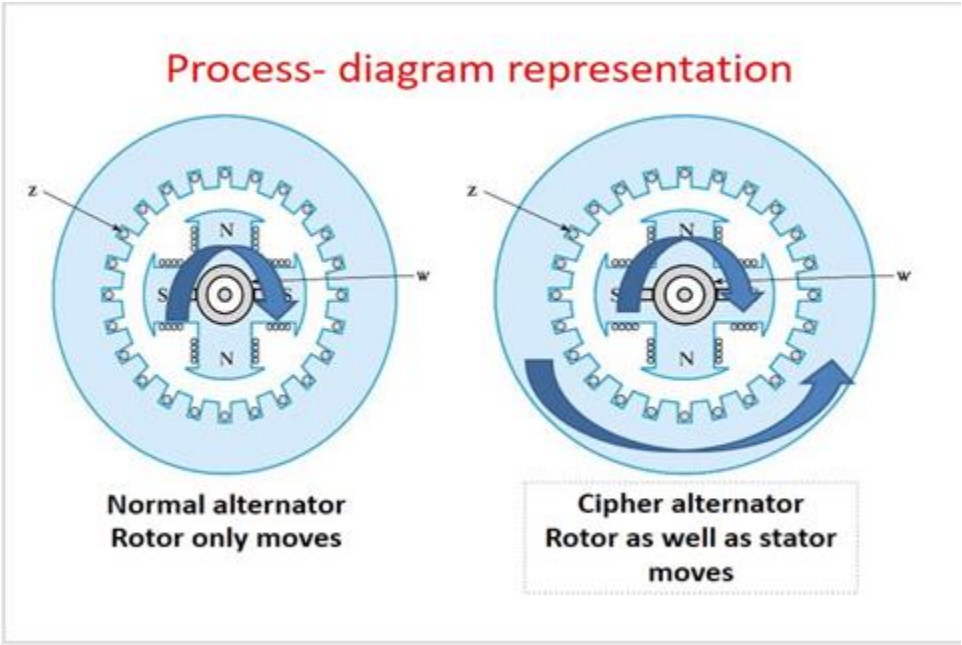
Z = no. of conductors

N= R.P.M of armature

A= no. of parallel path

ϕ=flux per pole in Wb

here N is R.P.M of the D.C generator and is directly proportional to E hence **when N is doubled the E also doubles.**



For A.C generators

N = no. of turns of conductor
B= flux per pole
A= area vector
ω= R.P.M of the armature
here ω is R.P.M of the A.C generator and is directly proportional to E hence **when ω is doubled the E also doubles.**

Frequency of A.C current generated by A.C generator

F=frequency of emf
N= R.P.M of armature
When N is double frequency also gets doubled
All the above R.P.M can also be taken as relative velocity between a moving and a stationary body.
Directly increasing the velocity will result in greater amount of centrifugal force and if the strength of the frame which it is made out of is not a good generator will break due to this large force. What we have done here has changed the relative velocity of the system. Hence the centrifugal force is lowered

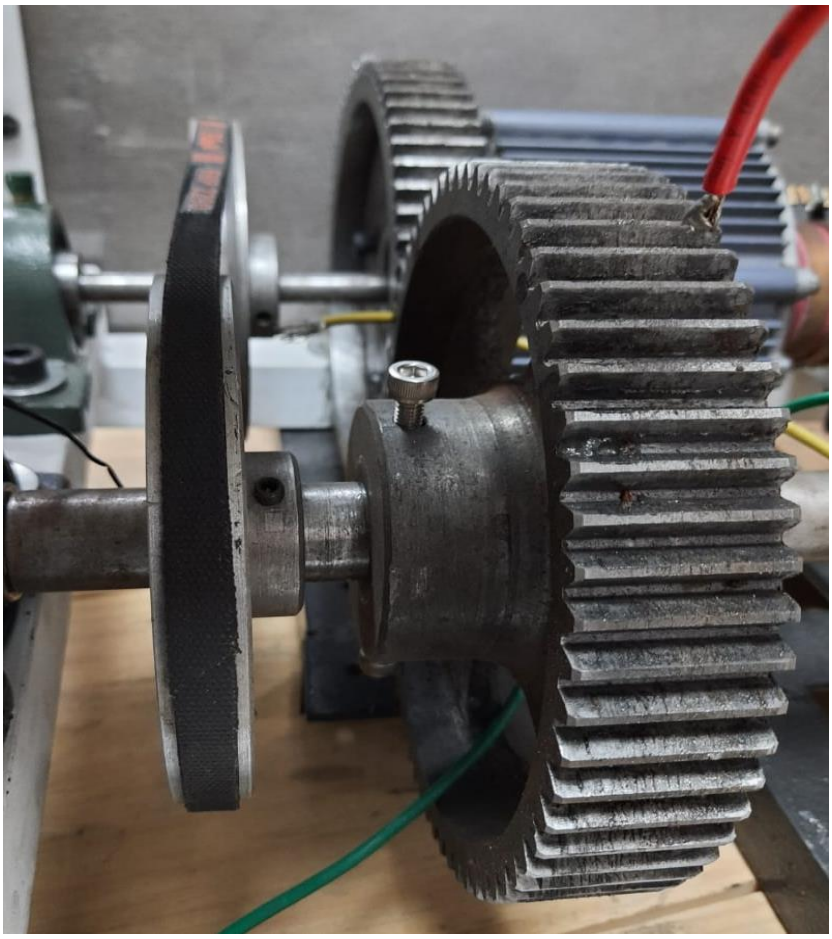


Fig.1 This figure shows parallel working of pulley and gear.

The above arrangement of pulley and gear is set as to achieve relative motion between the rotor and stator. Using this relative angular velocity has increased by two times.

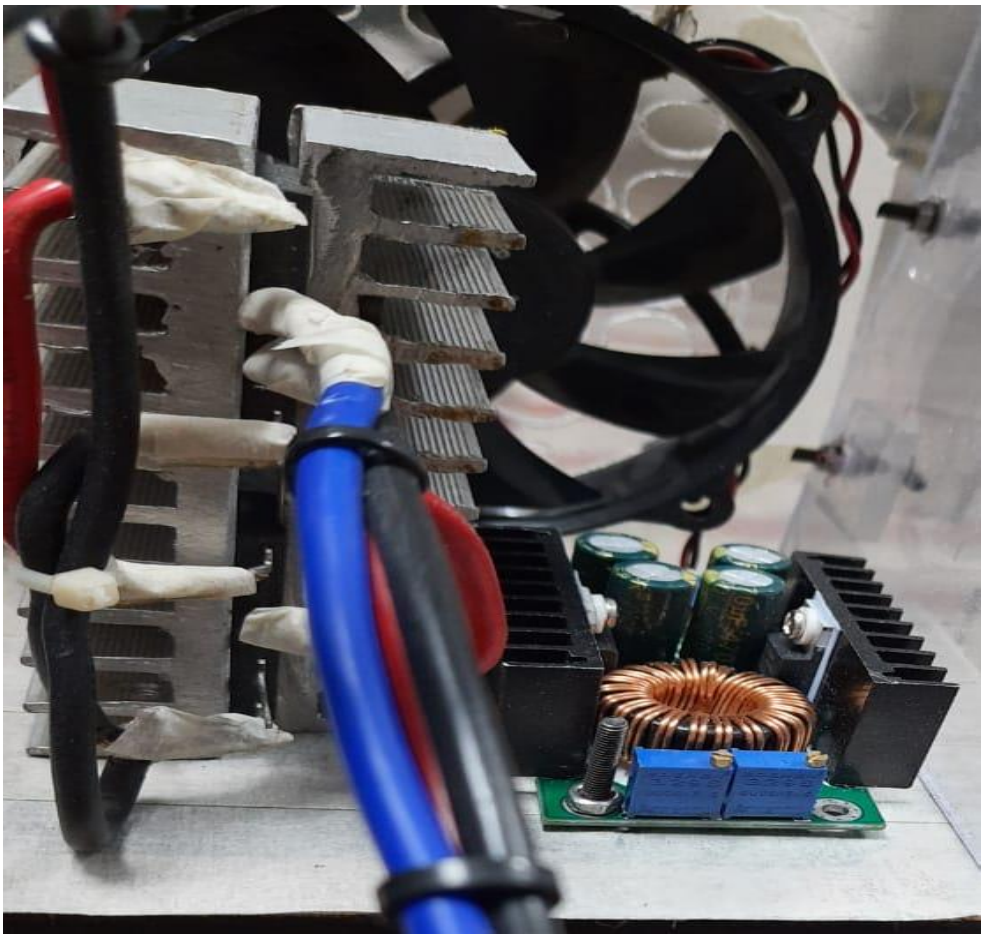


Fig.2 Three Phase Rectifier and DC-DC Buck Boost converter

This is used to convert the three phase 100hzs to rectified DC with a DC-DC Buck boost converter 300W to drive the cooling fan for the rectifier. This Rectified DC current is passed through DC to AC inverter. Variable 24-48 DC to AC 220v Ac 50Hz converter.

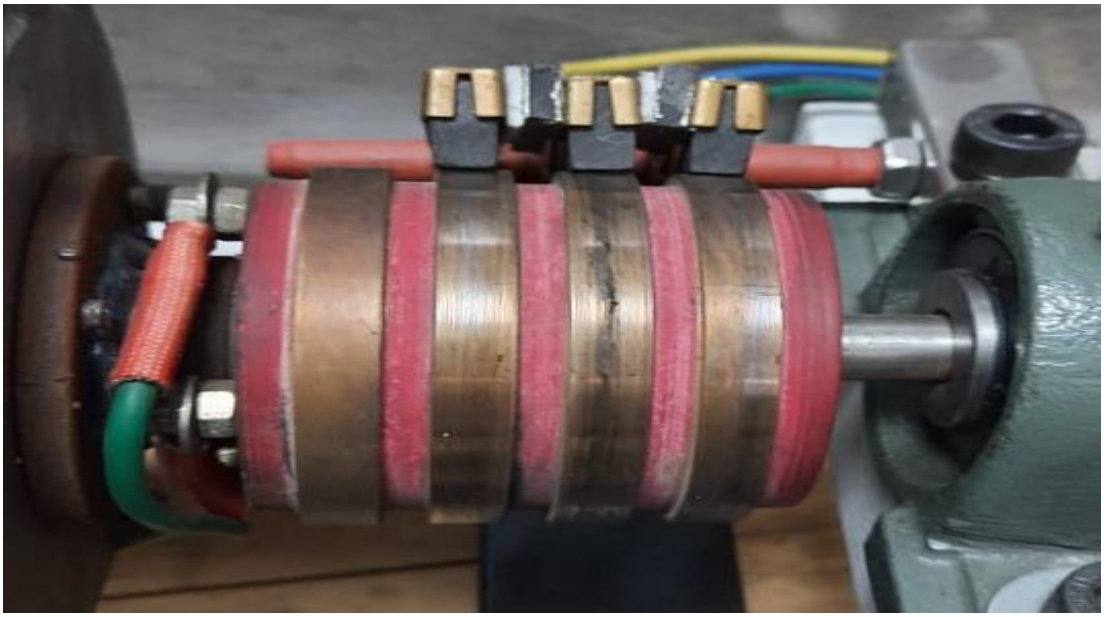


Fig.3 Three phase commutator with carbon brush.

This is a Specially designed three phase commutator, Basically these are mounted on the shaft itself with the brush mounted placed along with it, but in the above case commutator is made hollow and is mounted not on the shaft but on the alternator case itself with a counter rotating shaft passing through it.

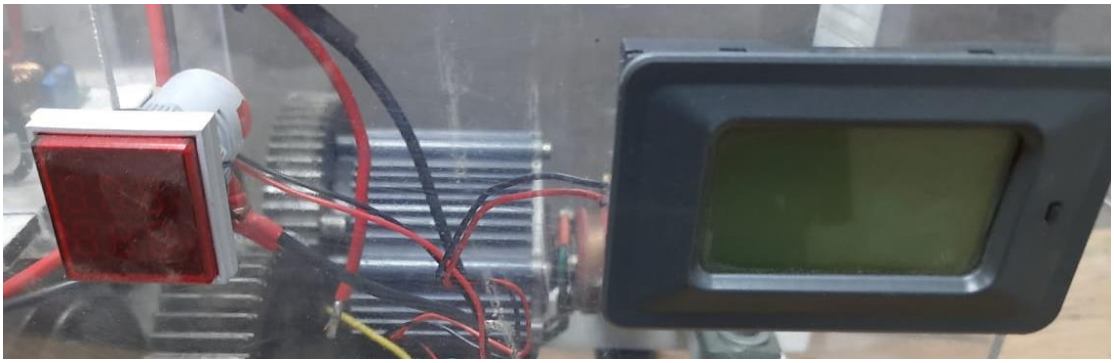


Fig.4 Voltmeter and Wattmeter

The above voltmeter and wattmeter is mounted on the front side of the genset to display the volt and power generation in real time.

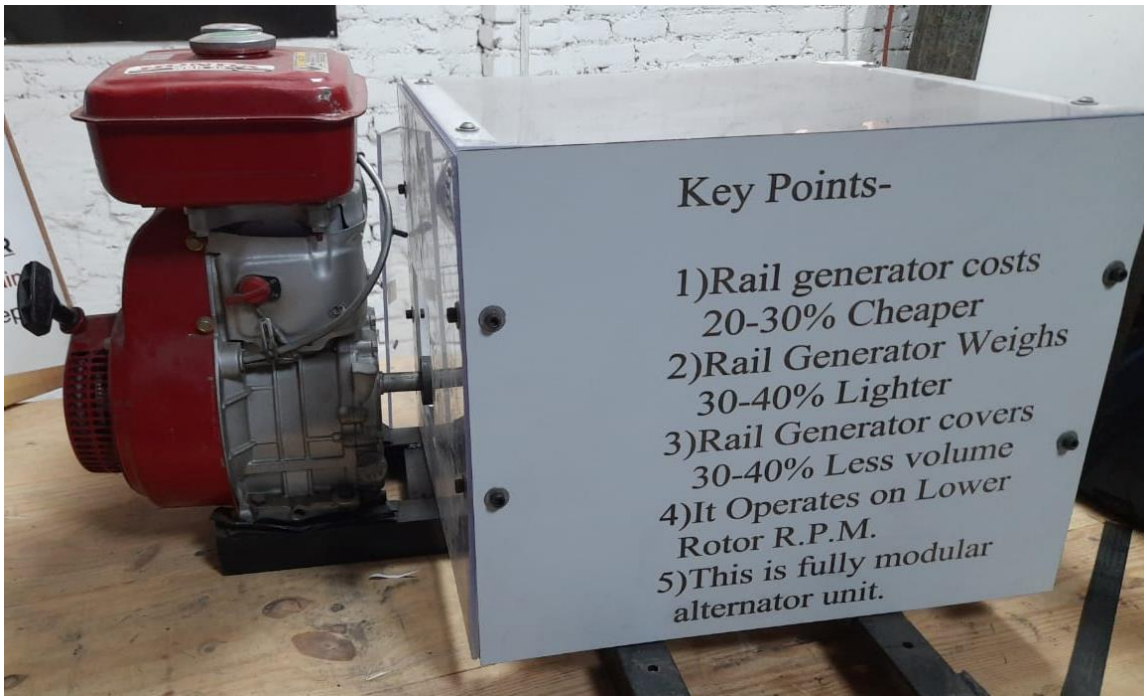


Fig.5 Key Highlights of the generator

Fig.6 Side view of completed project

Belt pulley ratio-

Power(out) = Power(in)

speed(out)Torque(out) = speed(in)Torque(in)

Γ(out) = ω(in)Γ(in)/ω(out)

The proposed gear ratio - 1:1 approximately and similarly gear to pulley ratio is also 1:1

This alternator is version V1.0

Design of this alternator in detail-

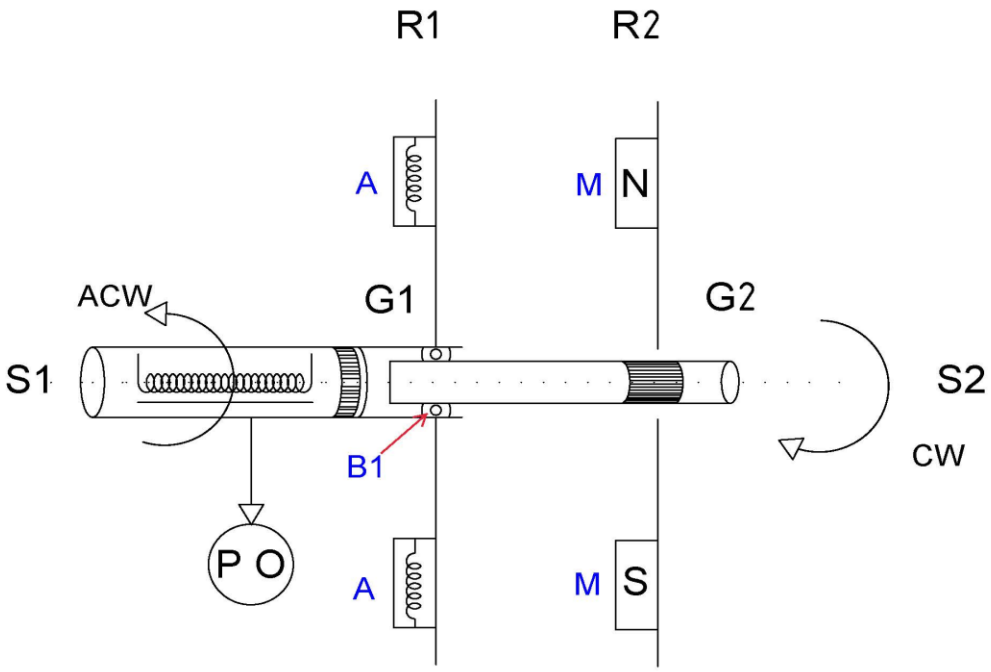
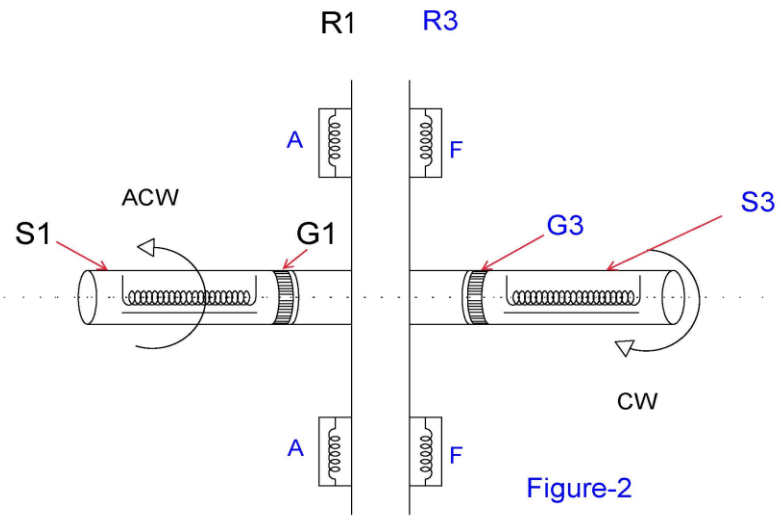


Figure 1

Electrical Line Representation of permanent magnet type Rail Generator.

The above model is Radial Flux type,this is also a model on which the prototype is built on.



Electrical line Representation of Induction type Rail generator

2. Methodology of Development:

●Phase-1

Patent Filing and Patent Publication.

Study of market and Pain problems which are to be given more importance.

●Phase-2

Possible approach selection, Research and development on Design and power output selection.

●Phase-3

Purchase with reference to 2KW Unit.

Fabrication of Unique Parts and testing phase.

●Phase-4

On site Testing, certification and Incubation for Startup

3. Financial Detail

Project Cost: Rs. 235198
Honorarium for Mentor: Rs. 22273
Honorarium for Incubatee: Rs. 22273
Total Expense: Rs. 279744

4. Tentative procedure for commercialization and Future Scope-

- Patent filed and patent published
  - Patent Filed and Published in Indian Patent Office Journal No. **02/2020** on **January 10, 2020** at Page No. **1987**

Application number- 201811025513

- Selected for incubation in IIT Mandi to be taken further as a Startup under which we will be taught about the marketing, finance and legal perspectives of a startup.
- Selected Top 20 Innovation Pan India under MHRD IIC POC
- Funded By AICTE for further prototyping and R&D to help fast forward to MVP and commercialization process.
- Further R & D has already started and much work is being done on high efficiency design which are almost ready to be fabricated and testing for demonstration purposes.
- To be integrated with Wind turbines,
    - It can be integrated with dual blades counter rotation wind turbines which will not only lower the cost of the overall wind turbines but also more power can be extracted.
- Expected to be launched This year 2020
    - If everything works as planned

Reception Robot

Project Report

Project Name: **Reception Bot**

Team Mentor: Mr. Mahip Singh(Asst. Prof. MED)

Team Leader: Jeevesh Gupta

Team Members:

Jeevesh Gupta	9999249941
Harshit Kumar Singh	8826565590
Mayank Raj	9814769565
Syed Yusuf Amin	7301767789

Introduction:

Reception bot is robot (Welcome Your Clients Anywhere), able to meet and greet visitors or clients. Inform your visitors about your college or company it can also tell about latest news or products, it can displays video, receive a payment, etc. Find out how Keylo can revolutionize your business!

Reception robot is one of the modern robots used for serving purpose at the reception area. In every organisation there is a need of at least two helpers or peons to serve water tea or coffee. This robot can easily do the same work. Along with this feature there is an option of talking to the new arrivals using Google home where I get can ask different questions and this robot with answers based on internet or the data is stored inside. It has also face recognition capability and it recognizes the face of the person coming second time. Balancing machine has two powerful BLDC motors to carry 5kg payload along with its self-load. It can be operated using remote control, voice command, also it can be programmed to perform a particular task. There is a space kept in front of the robot to carry the goods. The key features are mentioned below.

Key features

1. Dimension are 1 feet x 1 feet x 3 feet (WxDxH).

2. 10 inch pneumatic radial tyres make smooth movement.

3. Body is made of steel with composite covering to make it robust and aesthetic.

4. Head is made of PVC where high speed tablet, with inbuilt camera is attached.

5. Head is 90 degree movable using high torque Servo Motors.

6. Google home is attached inside the head to make it interactive.

7. Powerful BLDC Motors having Power capacity of 250 watt each are attached.

8. Lithium-ion battery of 500w is kept inside with inbuilt charger which gives 4 hours of backup.

9. Two landing gears control by high torque metallic Servo Motors design to balance it on standby mode which activates immediately as the power is disconnected in case of any emergency.

10. Motherboard is also attached to control all the units as gravity sensor, charging support, movement, turning, voice command etc.

11. Gravity sensor is attached to the motherboard to make itself balanced on two wheels.

12. A transmitter and receiver system is also associated with this robot to control it remotely.

13. 250 watt inverter convert AC to AC to supply the power to the Google home as well as tablet.

14. All the control switches are exposed outside to make it easy to control.

15. Charging time is 2 hours.

16. Maximum speed is 25 kilometer per hour.

Parts used:

- Hub Motor with tire 250 Watt
- Samsung tablets (screen)
- Servo motor
- Gyroscope Sensor
- Servo controller
- Remote Control 6 channel
- Lithium-ion battery
- Power supply unit
- Google assistant (for quick respond)

What it is used for- Greeting guest, serving water and coffee
This bot is equipped with Google assistant therefore can answer

Future improvisation- We want to make the Bot much lighter in weight
With added features such in machine learning like effective voice recognition and video recognition which can be helpful in case of greeting expected guests in advance.

We want to make the whole bot with parts that are made fully in India, hence putting forward our countries goal in make in India

Body and Frame:

Body is made up of polymer and frame is made with Mild Steel L-section 3mm width.

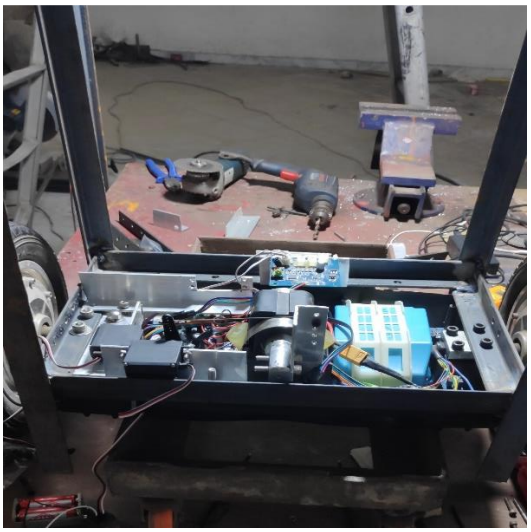
Financial Detail

Project Cost: Rs. 143157

Honorarium for Mentor: Rs. 22273

Honorarium for Incubatee: Rs. 22273

Total Expense: Rs. 187700




MAY I HELP YOU?
CHARGING POINT AC 220V
I.T.S
ENGINEERING COLLEGE
GREATER NOIDA
Reception Robot
Designed by
Department of Mechanical Engineering

NEWGEN IEDC – 2019-20

I.T.S ENGINEERING COLLEGE

Project Report

FARMER'S FRIEND – RICE PLANTING MACHINE

Team Mentor: **Mr. Mahip Singh (Asst. Prof. MED)**
Mr. Saurav Kumar (Asst. Prof. CED)

Team Leader: **Suleman Akhtar**
Mobile No.: 8252133553

Introduction

Agriculture is the most important sector of the Indian economy. It is the most important source of employment for the majority of the work force in the country. A major population in India is engaged in agriculture. Among that highest percentage was in paddy sector. Rice is the major stable food of the country. Releasing of work force to sectors other than Agriculture is important to develop the country. To release the work force in paddy sector mechanization plays a big role. To feed growing population is a huge challenge.
Mechanization of paddy sector will lead to higher productivity with releasing of work force to other sectors. The objective of this project is to design a paddy transplanting mechanism to transplant paddy seedlings by small scale farmers in the country.
Farmer's Friend, a rice planting machine conceptualized and designed to compensate the issue in planting Paddy in field. Farmer's friend aims to improve farming efficiency. This machine is proposed to address the problems in rice planting by providing farmers with access to insights as well as guidance on appropriate distance between 2-Paddy plants which results in better yield of the Paddy. As it is 300cc engine powered machine and 8 rows working ability, it is more efficient than conventional planting practice.
India is an agrarian country. About 70% of Indians are dependent on agriculture for their livelihood. India is one of the world's largest producers of rice, accounting for 20% of all world rice production. Rice is usually grown by planting rice paddy in the fields manually with hands. With this method of planting rice paddy, labour cost increases and it is a very time consuming process. These problems can be solved with the help of rice planting machine. This machine reduces labour cost and time to plant rice paddy. This machine has a simple mechanism and it is eco-friendly. This machine requires only one person for its operation. This machine can bring revolution in rice production. So, the main aim of this to design and develop a rice planting machine which will help the farmers to make the whole rice planting process mechanical resulting in reduction of labour, cost and time to a large extend. The ultimate aim of agriculture or farming in India is not only limited to growing of crops but is also associated with the economic growth of farmers and labours. Mechanization in agricultural sector has put revolutionary change in agricultural economy of the country.

Problem statement:

It is always seen that in conventional method of paddy plantation, the pattern of Paddy in the field is not accurate which results in lower quality of the paddy plant as the fertilisers in soil do not get equally distributed to all the Paddy plant. Also, high labour demand during the peak periods of planting adversely affects the timeliness of operation, thereby reducing the crop yield. To offset these problems, mechanical transplanting is the solution. Mechanization not only changes the structure of labour in agriculture, but also influences the nature of the workload. Hence there is a need of mechanization in rice cultivation sector.

Project Description

In this direction Rice planting machines help us to see a bright future ahead. Existing models of rice planting machines are highly efficient and effective in term of cultivation of rice in paddy field. The only problem with the existing rice planting machine is that, these planting machines are very expensive and moreover they possess very complex mechanism which could not be repaired or serviced easily at any ordinary workshop. Hence there is need for designing and developing a rice planting machine for the small scale farmers who are mostly affected by the unwanted situations or condition prevailing in our country can help them to cultivate rice effectively and efficiently with less health related issues. In India since an average farmer possess land of small size in area thus a mechanized rice planting machines would be highly helpful in the rice transplantation. It would also help in decreasing the over dependence of farmers upon labour for transplantation. **Farmer's Friend**, the Rice planting machine helps to acquire lesser cost of production with higher yield and production moreover the quality of produced rice is also good.

Brief of the Machine

Rice Planting Machine is a 300cc petrol engine powered 1 wheel driven machine with two supporting wheels.

About the Materials Used:

- Mild Steel is used for body and framing.

Machine and Component Specification:

Dimension(mm)	2510×2132×1230
Mainframe Weight(kg)	310
Power	Diesel Engine 300cc
Mould of carriage	Drive with alone wheel
Planting formation mould	Each alone link of crank
Planting row number	8
Row spacing (mm)	238
Planting spacing (mm)	120 / 140,140 / 170,160 / 200
Engine Power(Rotating Speed)	4kw (3600r / min)
Planting depth (mm)	0-45 Step less-adjust
Planting speed (m / s)	0.35-0.58
Planting efficiency (hm2 / h)	0.13-0.4
Running speed on road (km / h)	7.8-10.7
Asunder needle entry max depth (mm)	17
Landscape orientation	18
Walking wheel of rubber dimension (mm)	680
Wheel of blade dimension (mm)	705
Walking wheel max turning (mm)	60°
loading 20 feet	18
40feet	37

Financial Detail

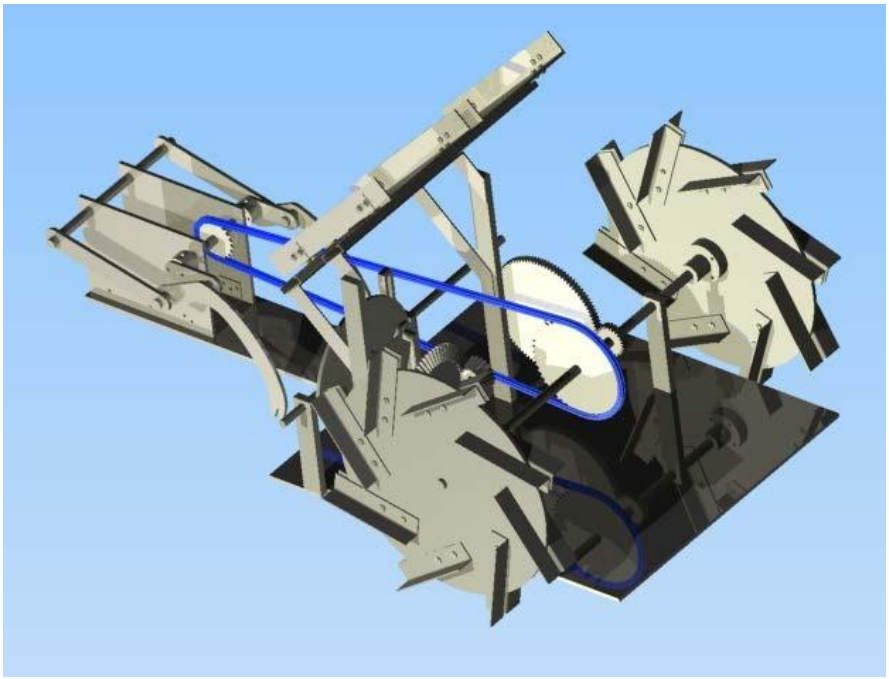
- Project Cost: Rs. 228360
- Honorarium for Mentor: Rs. 22273
- Honorarium for Incubatee: Rs. 22273

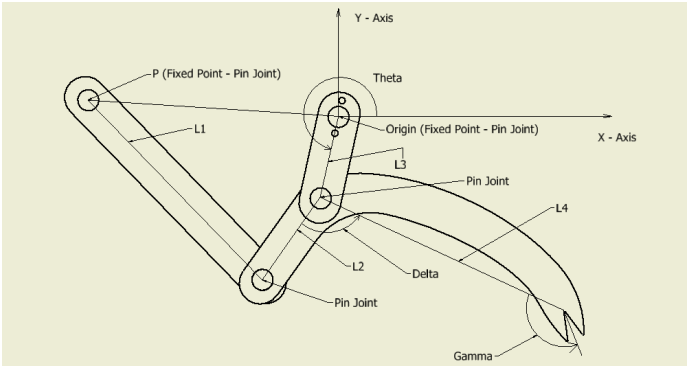
Total Expense: Rs. 272903

-

Future Improvisation:

- Further we are planning to make the system much lighter in weight and modular in nature so that it can be serviced more easily and broken parts can be replaced too.
- The frame will be made with the MS bars, square section and rectangular section with lower gauge that will reduce the weight.
- The extra space we provided in the first prototype can be reduced as we were not aware about the position and mounting of different components. Now, that extra space can be reduced as we are now aware of the position of different components.





Part design

Tentative procedure for Commercialization:

Required updates for final commercial product which needs to be done before the start-up and commercialization of the product:

Further we are planning to make the system modular and much lighter in weight. The frame will be made with the SS bars (which is now of MS and higher gauge) square section and rectangular section with lower gauge that will reduce the weight and strengthen it as well. The extra space we provided in the first prototype can be reduced as we were not aware about the position and mounting of different components. Now, that extra space can be reduced as we are now aware of the position of different components that will help in reducing overall size and weight.

Initialization of start-up-

We are going are to get incubated at our college, I.T.S Engineering College, Newgen IEDC under which we are planning to make several commercial level prototypes to get certified from the rating agency after which we will start marketing and mass production of the product.

Our current aim with this project is to provide better and cost economical in market, we are also planning to expand our technical team as well as to add members in management team.

Weakness of the device

The planting unit is not much robust.

The angle at which the tray is inclined is very high.

Suggested Improvements

A more robust planting unit can be fabricated, with help of iteration of the different types of heads of the Planting Arm 3.

Multiple machines can be used by connecting the in a line to a tractor. This will increase the no. of rows of transplantation and decrease the labour cost.

Future Scope:

In future our main goal is to meet the market demand by expanding our company in Indian market as India is agriculture based economy.

Sewage Cleaning Machine

1. Our Team Details:

A). Aashu Kumar Jha (Team Leader) 9319440185
B). Md Shafique - 9718337573
C). Aman Shrivastva - 8004794452
D). Shamsad Ahmad- 9006298753
E). Prashant Mishra - 9717664770

INTRODUCTION

Workers entering manholes to clean them by hand is a process known as manual scavenging. The practice of manual scavenging involves workers physically entering sewers or septic tanks to clean out excreta. This is actually illegal in India and has been since 2013. One of the biggest problems in India is the profession of manual scavenging. Although laws have been made to stop the practice, human scavengers are forced to enter and clean the manholes with their hands even today. Due to manual scavenging hundreds die every years.

Many scavengers reported that they have no alternative expect to enter the manhole. The Tata Institute of Social Sciences, an educational and research organization, found that 80% of the workers die before age 60 because of work-related health problems. Sewer workers die from accidents, suffocation or exposure to toxic gases, the study found. Due to lack of availability of low-cost machines, manual scavenging processes is still used for sewer cleaning in spite of knowing the death risk.

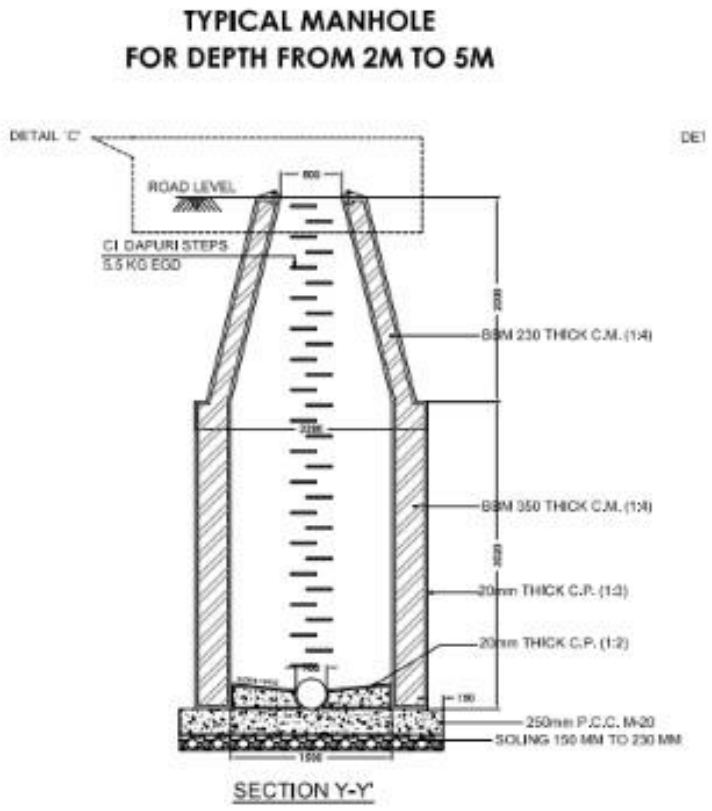
Design Philosophy and Technology Development: The main objective to develop this machine is to provide a low-cost solution for sewer cleaning. Cost is one of the important factors as sever cleaning work is on contract basis. If we provide the high cost machine then the many contractors will not prefer the machine and they will continue manual scavenging. Low cost sewage cleaning machine will motivate the contractors to provide it to their workers and reduces the risk of manhole cleaning.

Following are the main component of the machine

A. Transportable Body
B. Pneumatic grab bucket
C. Mini Electric Hoist
D. Air Compressor
E. Portable Generator
F. Specially designed clamp to open manhole cover

This machine can hoist 500 Kg garbage from 10 to 20-meter-deep manhole. The opening and closing of the grab bucket is done by pneumatic system. Four pneumatic pistons are fitted on the grab bucket at specific angles.

MS Sheet and MS Angle are used to fabricate the bucket. A special mechanical linkage has developed for effective opening/closing of the bucket so that user can grab maximum volume of garbage in single operation. MS Rectangular Hollow Section (RHS) is used in body fabrication. The bucket can enter in 500 mm opening of manholes.The machine is design for following type of manhole Proposed market price: Rs.85000 per machine with air compressor and generator.



Financial Detail

Project Cost: Rs. 172537

Honorarium for Mentor: Rs. 22273

Honorarium for Incubatee: Rs. 22273

Total Expense: Rs. 217083

Entrepreneurial journey from ideation to prototype

A group of students from department of mechanical engineering from of ITS Engineering College Greater Noida under the mentorship of Prof. Manvendra Yadav had realised the pain in manual scavenging. They started the field visit and did literature review to find solution for manual scavenging. After many design iterations finally a low-cost sewage cleaning machine has been developed for an alternate of manual scavenging.

4. Contribution of NewGen IEDC:

For the development prototype of this machine, NewGen IEDC of ITS Engineering College has supported all expenditure incurred in design & fabrication. NewGen IEDC also provided us the technical mentorship as well as entrepreneurial mentorship. NewGen IEDC helped us in Business Plan preparation. All fabrication work has been carried out at NewGen IEDC

5. Future Plan:

1. Field Testing

2. Design Modification if required after the field test.

3. Review of business plan and implementation of pilot project in Greater Noida area.

4. After the successful implementation of pilot project we will approach other municipal corporations all over India.

Project Report on

SMART INHALER

Team Details:

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Project Mentor:
1. Agha Hussain (Asst. Prof. ECE Dept.) &
2. Praveer Saxena (Asst. Prof. ECE Dept.)

INTRODUCTION: Asthma is a state in which a person's airways become inflamed, slim and swell and produce extra mucus, which makes it difficult to breathe. Asthma can be minor or it can interfere with daily activities. In some cases, it may lead to a life-threatening attack. As per data available on internet [1], there are approximate 235 million patients worldwide diagnosed with Asthma. One in every 10 patients present is an Indian. In our country, the numbers of deaths due to asthma recorded is 4000 per year. In present situation, most of the inhalers companies use sodium cromoglicate or nedocromil, which have saved numerous lives in blink of seconds.

Inhaler:

- An inhaler is a device used for delivering medication into body via the lungs.
- It is mainly used in the treatment of asthma and chronic obstructive pulmonary disease.

Nowadays, there are many types of inhalers available in the market. Few of them are illustrated below:-

Control Inhaler:

These inhaler help prevent flares and keep symptoms from getting worse. They are called control inhaler because they have medicine that controls inflammation.

- Whether or not you are having symptoms
- Even if you feel like you are doing better

Rescue Inhaler: A rescue inhaler is for short term symptom relief, not to control your asthma in the long term. Rescue or relief inhalers quickly bring back normal breathing when you are:

- Short of breath
- Wheezing
- Feeling tight in your chest

The above mentioned inhalers have few issues which are as follows:

- Unable to count the number of puffs
- Difficult to trace in case of misplacing
- Completely dependent upon the patient to carry the inhaler all the time
- Not able to analyze patients medical report
- Not reusable
- Not rechargeable

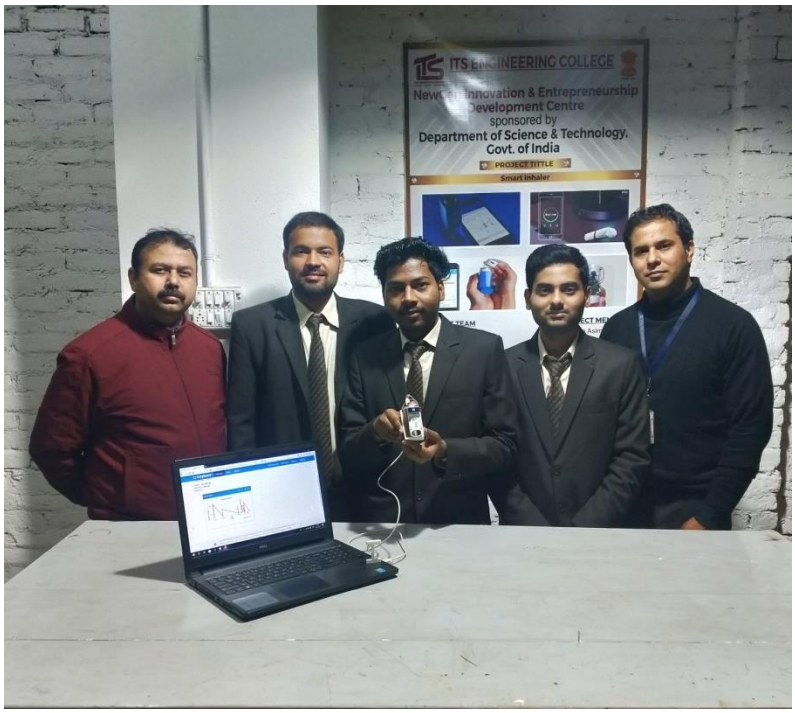
Smart Inhaler:

Smart inhaler is the modified version of inhaler because it has certain advance and new technology.

Following are the new features:

- GENERATE CLICKS(DATA)
- MICROCONTROLLER RECEIVES THE DATA
- UPLOAD THE DATA ON THE CLOUD STORAGE
- THE DATA IS ACCESSIBLE BY THE ASSIGNED AUTHORITY
- WEEKLY REPORT IS SENT TO THE ASSIGNED AUTHORITY

STARTUP ENTREPRENEURIAL JOURNEY:



Before a commercialization plan can be developed and implemented, it must be driven by an overall commercialization strategy. By taking a strategic approach to our commercialization strategy, we will be better positioned to be successful with our new product launch.

In terms of commercialising our product, we can take help of the media but prior to that we will meet few renowned doctors and tell them how much beneficial our product could be. The doctor may recommend the asthma patients to use our product and after stepping our foot in the market, we will take a big leap and will take help of the media in globalising our product to a big scale.

Financial Detail

Project Cost: Rs. 101780
Honorarium for Mentor: Rs. 22273
Honorarium for Incubatee: Rs. 22273
Total Expense: Rs. 146326

CONTRIBUTION OF NEWGEN IEDC:

The NEWGEN IEDC has given us a platform to do our project:

- They have helped us in the issues of finance and they have also given us the required facilities for completing our project successfully.
- Time to time we got the opportunity to interact with the industrial experts.
- Also they have conducted guest lectures which helped in grooming our skills.

FUTURE SCOPE: Smart inhalers use Bluetooth technology to detect inhaler use, keep track of medicine left in inhaler and gather data to analyse patient's health status. It not only have the benefit of monitoring patient health status but also to remind the patient not to forget his inhaler as forgetting the inhaler sometimes can be life threatening.

In future inhalers might alert users to potential environmental triggers and, if used widely enough, big data analysis could help researchers answer important questions about asthma and other respiratory disorders that require inhaled drugs. It is a very exciting area and has the potential to be truly disruptive. We anticipate that the expectations of patients, healthcare professionals and ultimately payers will change as smart inhalers become more established. This new technology introduces the potential to support patients, ensuring they get the best from the medicine they have been prescribed. In future smart inhalers might help by monitoring and correcting a patient's inhalation technique. It can also be helpful for doctors to see what is happening and we are looking at developing a modeling tool to help researchers understand more about the disease. There is a long way to go, and the potential improvements in smart inhalers could bring, is worth the effort. But health systems should not be blinded by the lights and rush into adopting the new technology before all potential problems are ironed out. Patients, doctors, drug companies, health systems — everyone stands to benefit, but to work for one part it needs to work for all of them — the patients first.

Project Report on

SMART SOLAR PANEL CLEANING SYSTEM

Team Mentor: **Mr. Mahip Singh (Asst. Prof. MED)**

Team Leader: **Mr. Mayank Raj (ME, 2018-21)**

Team Members:

Sr. No.	Name	Mobile No.
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2	Nitish Kr. Yadav (1822240902)	6388368549
3	Rituraj kumar (1722240046)	8527713431
4	Shwetank Gupta (1722240056)	9810626751
5	Aakash Bhati (1722240001)	8954056023

Introduction

Solar energy is generated in the sun due to fusion reaction. In just one hour the sun generates enough energy to power the world for an entire year. This solar energy is captured by photovoltaic cells and converted into electricity this is due to photo-electric effect. Solar power is an abundant renewable energy source with the potential to supply the world's energy needs. Solar modules produce most electricity when they are pointed directly towards the sun, so it is important to install them this way so that they receive maximum sunlight.

Ideally they should be directly facing sun at least from 9am to 3pm and free from dust and dirt to produce maximum power from the solar panels. So, it is necessary to clean the solar panels regularly.

Problem statement:

- Due to Dust, Smog, Dirt and Bird Beat Deposit, the output of Solar Panel reduces by 25% approximately. So to overcome this, cleaning of Solar Panel is very necessary.
- According to different surveys by different institutions, efficiency of solar panel is reduced by:-
  - 20%— according to Solar Energy Industries Association
  - 25%— according to National Renewable Energy Laboratory, U.S.
  - 50%— according to some university recent research if not cleaned regularly.
- By cleaning the solar panels regularly, efficiency can be increased by
  - 21% increase in residential areas
  - 60% increase in industrial and commercial areas
  - 30% increase in agricultural site
- 32% increase in power output according to a survey by GOOGLE in California for 8 week on a 1.6MW solar plant.

Project Description

- This device is made according to Indian context, as the profile of dust and dirt deposition upon the solar panels are quite different as compared with the countries from where other solar panel cleaning device are imported from that is the reason imported automatic machines are not capable to clean the solar panels in India efficiently. Because of this gap the idea born to conceptualise this machine.

- We call it "**Solaraise-ENHANCER-I**".
- It is a fully automated device which is to be used in cleaning solar panels efficiently.
- It can clean dust, dirt and droppings of birds from the Solar Panels.
- Ideal for Solar Panels: (5ft x 3ft) 1P-Solar array.
- It is a onetime investment device and easy in installation. It does not require any special mounting for the device.

Brief of the Machine

- Ideal for 3ft X 5ft Solar Panel for now and can be adjusted as well.
- 1-Cleaning Brush(Roller Type), 1-Sponge Brush(Roller Type), 1-Wiper, 2-Water Jet
- 4-Driving Wheel and 4-Supporting Wheel
- Two 5ltr. Liquid Cleaner container and pump and jet.
- Power Source: 1 $LiFePO_4$ battery (12V, 20amp) and a separate Solar Panel can be mounted on the Device also.
- Sensors are mounted to detect the obstacles, ending and droppings on the solar Panels
- Fully automatic and can be made remote controlled as well.

About the Materials Used:

- Mild Steel is used for body and framing.
- Stainless Steel Pipes are used in Roller Brush and common shaft for driving wheel.
- The device is covered in Wooden and Composite material casing which is complete dust proof and water proof.

Detailed Technicalities

Driving Wheel:

- 4 - Driving Wheel operating with single motor (250watt/12.5v/20amp) and common shaft. This is done so to get no slippage in any of wheel and hence stay in aligned condition which helps in better movement throughout the Panels.
- 4 - Supporting wheel are provided to hold the device on the Solar Panels aligned in series. Rubber wheels are used as supporting wheel to get better grip with the panels.
- The driving wheel is driven by the motor with Timing Pulley and Timing Belt on both side.
- The L-type timing belt and timing pulley is used because L-type Timing pulley and timing belt can with stand torque up to 8823Nmm. And can sustain up to 6000 rpm.
- The motor used for the drive system may reach to 3000 rpm and 7675Nmm torque. Hence the mechanism used is safe and sustainable in the maximum load condition for the device.

Wiper-Actuator:

- Wiper is provided to wipe off the water from solar panel after cleaning is done.
- It is mounted at last most part of the machine so that it does leave any dirt, dust or water on the solar panel.
- The Wiper is made by joining 3 floor wipers together to cover the solar panel length.
- **Actuator** is provided to control the wiper during backward and forward movement of the device as it receives signals from the control panel that the device is about to move backward and the actuator convert the signal into mechanical motion leads to flip up the wiper and it get in noncontact condition.
- When the machine move forward the Actuator receives the signal from the control panel and leads to get the wiper in contact condition.

Cleaning Brushes Mechanism:

- 2 Brushed 12V Motors separately employed for cleaning brush and dusting brush. Cleaning and Dusting can be controlled according to the need with the help of a control box which is analogous in nature and is user friendly in its operation.
- Whenever there is only dusting is needed only the dusting can be carried out.
- Whenever there is need of cleaning and dusting both, both can be carried out simultaneously.

Brushes:

- The cleaning brush is designed by plastic fibres and can be replaced by microfiber brushes so that its overall work efficiency can be increased significantly also use of this fibre increase its life time.
- The microfiber brush will be designed in CAD and simulation will be done for the whole brush fibres make contact with the panels throughout uniformly and completely.

Water Tank:

- Tanks were designed to cater the requirement of the unit. Therefore commercial Tanks were not used but fabricated as per our need.
- The water tank is made with 8inch diameter PVC pipe of 6mm thickness and is air packed with liquid cement. Liquid Cement solidify in such a manner that it does not leave any leakage and become as hard as cement.
- Two Water Tanks mounted are of 7ltrs per tank capacity making total of 14ltrs of water capacity which can be easily filled up whenever it is required to.
- Both the tanks are connected to each other visa centralized piping system as the water pressure jet is only connected to one of the tanks.
- Two tanks configuration is used so that balance can be maintained around the centre of mass of the whole unit.

Water pump and water supply:

- Whenever water is required in cleaning of the solar panels, Water pump is installed with water tank to spray water on solar panels with Windshield water jet spray.
- This water jet is mounted in the front of the machine which make it look good.
- This water jet has two way water spraying hole. There are two water jet of this type make it possible to spray liquid throughout the panels uniformly.

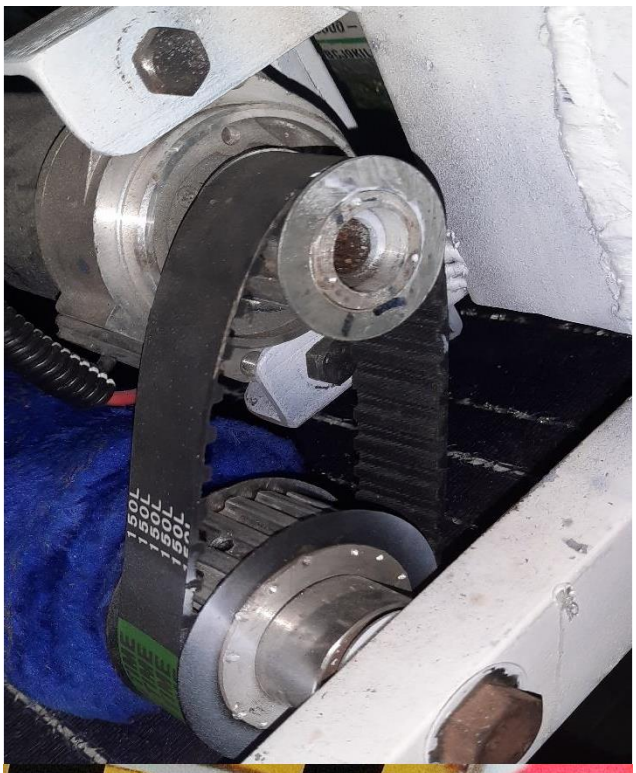
Sensor:

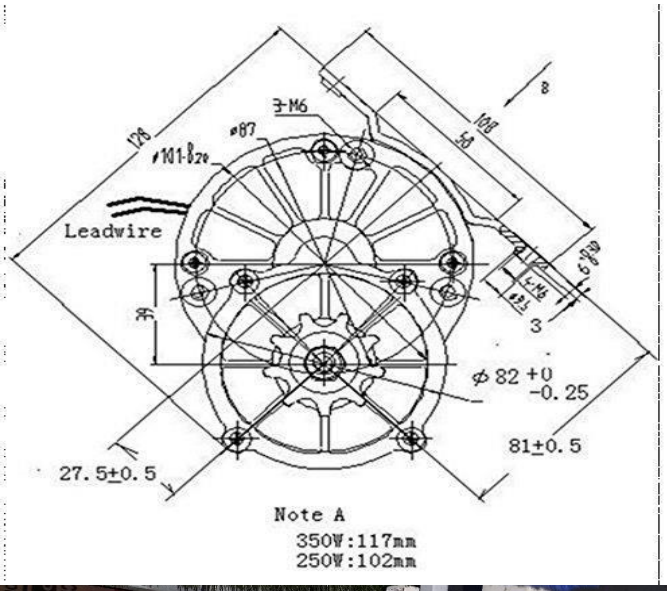
- **Reed Switch** is a special type of sensor which operates in the presence of external magnetic field. In presence of magnetic field, it conducts electricity that is the resistance falls and signal is able to pass through it. And when there is no magnetic field signal is not able to pass, this property of reed switch is used for stopping the whole unit at the end of the solar panel array in series.
- For this purpose we have attached magnets at the end of each array.
  Regular neodymium magnets are strongest operating up to temperatures of 80°C but after this point, they will lose their magnetic output.

Control Panel:

- Checking over the control panel, it comprises speed controllers switch board having different switches for different components in the device and the circuit is automated using Arduino Nano.
- The Arduino Nano is programmed accordingly with the reed switch sensor take the data with the assistance of Neodymium Magnet installed at both end of the solar panel series.

Prototype and Components Used:





Future Improvisation:

- Further we are planning to make the system much lighter in weight and modular in nature so that it can be serviced more easily and broken parts can be replaced too.
- For the body and the frame, we are planning to replace the wooden and composite sheets with Glass Fibre Sheet. This will improve the life of the body covering as well as the strength.
- The frame will be made with the MS bars, square section and rectangular section with lower gauge that will reduce the weight.
- The extra space we provided in the first prototype can be reduced as we were not aware about the position and mounting of different components. Now, that extra space can be reduced as we are now aware of the position of different components.
- The Control Panel circuit which is bulky and meshy now can be replaced by modular PCB with Microcontrollers which will increase accuracy as well.
- The water tank filled with water is very heavy which can also be reduced by mounting water tanks with lesser gauge which will reduce its weight as well as of lesser volume. Unnecessarily it is not required to carry 14-15ltrs of water.

Financial Detail
Project Cost: Rs. 200813
Honorarium for Mentor: Rs. 22273
Honorarium for Incubatee: Rs. 22273
Total Expense: Rs. 245359

Tentative procedure for Commercialization:

Required updates for final commercial product which needs to be done before the start-up and commercialization of the product: Further we are planning to make the system modular and much lighter in weight. For the body and the frame, we are planning to replace the wooden and composite sheets with Carbon Fibre Sheet. This will improve the life of the body covering as well as the strength. The frame will be made with the SS bars, square section and rectangular section with lower gauge that will reduce the weight and strengthen it as well. The extra space we provided in the first prototype can be reduced as we were not aware about the position and mounting of different components. Now, that extra space can be reduced as we are now aware of the position of different components that will help in reducing overall size and weight. The water tank filled with water is very heavy which can also be reduced by mounting purposely designed water tanks which will reduce its weight as well as of lesser volume. Unnecessarily it is not required to carry 14-15ltrs of water.

Initialization of start-up: We are going are to get incubated at our college, I.T.S Engineering College, Newgen IEDC under which we are planning to make several commercial level prototypes to get certified from the rating agency after which we will start marketing and mass production of the product.

Our current aim with this project is to provide better and cost economical in market, we are also planning to expand our technical team as well as to add members in management team.

Future Scope: In future our main goal is to meet the market demand by expanding our company in Indian market with the pace of the solar energy market is expanding and after that, will expand our feet out of India. Looking over the market opportunity we have: India has established nearly 42 solar parks to make land available to the promoters of solar plants. In 2015 the target was raised to 100 GW from 20GW of solar capacity (including 40 GW from rooftop solar) by 2022, targeting an investment of US$100 billion. It is considered to be raised in coming days as India has good solar potential. The International Solar Alliance (ISA), proposed by India as a founder member, is headquartered in India.

Reference:

1. We visited different small solar power generation unit in nearby and did research on wherever the manual cleaning processes done. Some are ITS Engineering College & Sharda University.
2. https://en.wikipedia.org/wiki/List_of_photovoltaic_power_stations
3. https://solargis.com/
4. Different Data Collected from studies of:
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    - Solar Energy Power Association
    - A survey by GOOGLE in California for 8 week on a 1.6MW solar plant
    - Other Research done by different institution

5. Solar Panel Cleaner Technology: A Review Nasib Khadka, Binamra Adhikari, Aayush Bista, Ashish Shrestha Department of Electrical & Electronics Engineering,
Kathmandu University, Nepal Email:nasib1667@gmail.com

https://www.researchgate.net/publication/324311904_Solar_Panel_Cleaner_Technology_A_Review

6. Solar Photovoltaic Panels Cleaning Methods A Review
Saravanan V. S.
Department of Mechanical Engineering,
Bhivarabai Sawant College of Engineering Research
Darvekar S. K.
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Pune, India
May 23, 2018

NEWGEN IEDC 2019-20
ITS ENGINEERING COLLEGE
PROJECT REPORT

Smart Trolley

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4. Himanshi Garg	9971231767

DESCRIPTION

In metro cities purchasing and shopping at super shops, big malls is a daily activity. Shopping mall is a place where most people from all walks of life will get their daily necessities ranging from food product, apparels, toiletries, gardening tools electrical appliances, and others. The numbers of little and enormous looking malls keep it up increasing over the years throughout the world because of the demand of the general public. Thus, the amount of advancement of shopping centre system and infrastructure conjointly varies. Compared to some foreign countries' shopping mall system, there are still a plenty of spaces for improvement in terms of providing quality shopping experience to the consumers. Consumers often face many problems and inconvenience when shopping. These problems include worrying that the amount of money brought is not enough for paying all the items needed, insufficient information of the items that are for sale and also wasting time at the cashier. These are the issues that include worrying that the amount of money brought is not enough for paying all the items needed, insufficient information of the items that are for sale and also wasting time at the cashier. These are the issues faced by the customer. There are some existing ways to resolve the issues that are declared on top of however the effectiveness still take into account corrigible.

When there are special offers and discount the rush is also even more. Customers will purchase many items and put it into the trolley. After customers done the purchase, they need to go to billing counter for payment. At the billing counter the customer will prepare the bill using bar code reader which is a time-consuming process and will creates the long queues at billing counters. All the products in the shop are attached with RFID tags. When a customer put any products in the trolley, its unique code will be detected and the price of those products will be

gestured in memory. As we put the products into the trolley then costs will automatically get added to total bill. Thus, the billing will be done in the trolley itself. Total bill information will be transferred to Screen by wireless Transmitter and receiver modules at the billing counter. When the customer purchases a product, she/he put the product in trolley which automatically scans the RFID tag of the product using the RFID reader and then add product to bill.

OVERVIEW

According to present scenario, now a day's shopping at big malls is becoming a daily activity in metro cities. The huge rush at malls on holidays and weekends. After purchase, at the billing counter the cashier prepares the bill using bar code reader which is a time-consuming process and results in long queues. Considering all this, we have implemented a system that can be used in shopping malls to solve the rush at billing counter using RFID based trolley.

EXISTING WAY OF SHOPPING

The currently available method in shopping malls is barcode method. In this technique there are barcode labels on every product which might be browse through specially designed barcode readers. A barcode reader is Associate in electronic device for reading written barcodes. Like a flatbed scanner, it consists of a lightweight supply, a lens and a light sensor translating optical impulses into electrical ones. Additionally, nearly all barcode readers contain decoder circuitry analysing the barcode's image data provided by the sensor and sending the barcode's content to the scanner's output port. When we have a tendency to choose any product for purchasing, we place it within the trolley and take it to the cashier. The cashier scans the merchandise through the barcode scanner and Offers North American country the bill. But this becomes as low method once ton of merchandise is to be scanned, therefore creating the billing method slow. This eventually Results in long queues.

An innovative product with societal acceptance is the one that aids the comfort, convenience and efficiency in everyday life. Purchasing and shopping at big malls is becoming daily activity in metro cities. There will be rush at these malls on holidays and weekends. People purchase different items and put them in trolley. After completion of purchases, one needs to go to billing counter for payments. At billing counter, the cashier prepares the bill using bar code reader which is very time-consuming process and results in long queue at billing counter.

PROPOSED SYSTEM :

Radio Frequency Identification (RFID) is changing into preferred technology as another to barcode systems. RFID systems gives automatic identification method, counting on storing remotely retrieving knowledge mistreatment RFID tags or transponders. An RFID tag is associate object that may be connected to or incorporated into a product, animal, or person for the aim of identification mistreatment radio waves. Chip based RFID tags contain silicon chips and antennae. In this paper, we have developed a smart shopping cart system that allows

customers to manage their shopping list while shopping and only pay the bill at the checkout counter. The cart has the power to calculate mechanically and show the entire costs of all the product within it. This makes it simple for the client to understand what quantity he or she has got to pay whereas searching and not at the checkout. This way the client will receive quicker service at the checkout. The advantage for the shop owners is that they'd would like fewer cashiers, which might end in an outsized cut in their prices.

FIGURE 1.2 Trolley overview 360 Degree

FINANCIAL DETAIL

Project Cost: Rs. 121768

Honorarium for Mentor: Rs. 5000

Honorarium for Incubatee: Rs. 5000

Total Expense: Rs. 131767

Depending on the RFID reader used, it could read around 7 tags in a second. And the major task of avoiding the reading of the same tag multiple times has also been accomplished by implementing a quiet tag function. Finally, the billing is completed in nearly one tenth of the time required in barcode-based billing system including the time required in dispatching the items which include removing of tags from the items. Further, in future we can look forward to implementing it in shopping malls using a long-range RFID reader (With a range of ~2metres).

1. The utility of trolley are 1st of its kind for industrial use.

2. This device records the information of the various product with facilitate of the acceptable sensors like RFID Tags.

3. This recorded information helps the search owner with careful analysis of shopping by the client & their preferences through the computer; output signal of a similar may be obtained.

4. Net banking can be included.

5. Using a GSM module we are able to transfer the bill to mobile rather than printing it.

JOURNEY FROM IDEATION TO PROTOTYPE

Group of 4 Students from department of computer science engineering from ITS Engineering college Greater Noida under the mentorship of Asst. prof Mukesh Kumar had presented the idea in start-up weekend held in ITS Engineering college in 2018. Smart trolley team had presented the idea many times in many colleges event. Basically the idea for the project has came up in mind during shopping aty big malls and marts, where genrally we face queues issue and we have to wait for a long time standing inn a queue. So, we came up with idea of automatic billing, scanning, and paying system.

FUTURE PLAN

- Patent filing
- Commercialization

Project Report On

TRAFFIC FREE AMBULANCE SYSTEM

Team

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Tushar Verma	
Rishav Kumar	9431831204

Introduction

A lot of brainstorming has been done for the development of such a product which focuses on the improvement of the traffic conditions for Ambulance like emergency systems.

The product undertakes simultaneously the inclusion of both the electronics and communication technology and programming to achieve a system that can give free ways to ambulances. The motivation for the project comes from the scenario of heavy traffic conditions in metropolitan cities, the system aims to provide green signals to the approaching ambulances by manipulating the traffic signal lights.

The free roads will be helpful in saving time thereby making the ambulance able to rush to the hospitals, thereby saving precious lives.

The aim of this project is to clear the traffic at the junction before the arrival of the ambulance at the junction.

For this project we are going to employ the radio frequency identification principle for identifying the ambulance by giving each ambulance a unique identification tag. The project is implemented by using following devices:

1. Arduino (Microcontroller)

2. RFI Tag: The tag will be implanted in the ambulance each ambulance must have a unique identification tag.

3. RFID Card Reader: The reader will be fixed to the side of the road approximately 1 km from the signal.

After receiving the signal the RFID reader will transmit a serial data to the main microcontroller at the traffic junction. The transmission may be wired or wireless.

The ambulance approaching to the traffic junction will be detected 1 km away from the traffic junction by the RFID reader. The output of the RFID reader is then transmitted by a wireless transmitter to the receiver of the traffic junction. The path from which ambulance is approaching towards the junction is identified by the program in the microcontroller at the traffic junction.

After the identification of the path the microcontroller will manipulate the traffic signal and make it green only for the path of ambulance. The signals for the other paths will remain red. Therefore the stuck traffic will be cleared from the path of the ambulance

Financial Detail

Project Cost: Rs. 94371

Honorarium for Mentor: Rs. 22273

Honorarium for Incubatee: Rs. 22273

Total Expense: Rs. 138917

Future Scope

a. We will use Google API in the future.

b. Will inculcate GPS navigation module in the ambulance.

c. Will extract the location of ambulance and all the traffic signals which will come in the route of ambulance.

d. And also we will involve the server which is controlling the traffic signals.

e. We will change the traffic signals according to the ambulance if any ambulance comes & the signals will work according to the ambulance till the ambulance doesn't reach hospital.

Commercialization

1. We will try to install transmitter and receivers in every traffic light with government permission.
2. All the ambulances will separately buy the transmitter that can communicate with the traffic signal.
3. The private hospitals will buy this for their ambulance.

Project Report on
E-Smart Bike

Students Team Details:

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Project Mentor: Mr. Manvendra Yadav

2. Brief description about the students' startup:

- Bikes are worse pollution control standards then cars the emissions of more potent greenhouse gases count for more than the CO2 emissions.
- In these days sometimes bikes are stolen by the strangers due to the failure of locking system in bikes. Sometimes bikes gets started from other unknown keys which is unsafe.
- Most of the Accidents are occur not because of crashing because of side stands.
- During the Accidents many of the victims died because of delay of ambulance and first aid.
- Also many of the peoples use their phone for calls, listen music, maps etc during ride and that causes the higher probability.

3. Design Philosophy and Technology Development:

The main objective is to develop E-smart Bike to Reduce the Air pollution, Noise pollution, Global Warming and Increase Security by IOT based system. And providing Automation in automobile sector. Emphasized on safety and security of the Driver.

Top Speed: 80Km/h; Charging Time: 2-2.5hrs; Mileage: 80km at Full Charge. The Running cost is very low compared to the petrol bikes.
IOT Based Security System like Bio-metric thumb start, Tracker, Whole Bike Analysis by using Android/iOS Application.

Following are the main component of the machine:

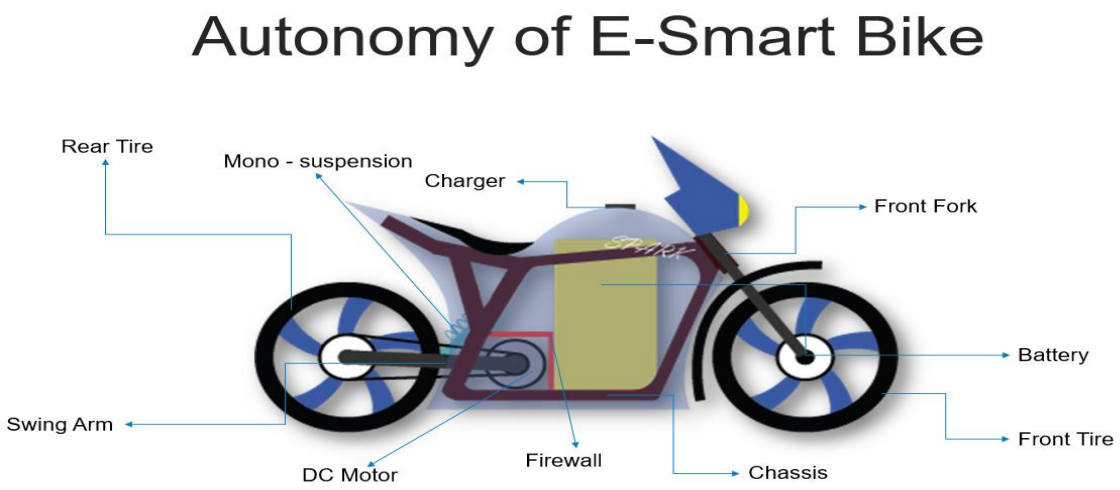
A. E-Bike Body

a. Frame

b. Design

c. Motor

d. Battery



B. Smart Features

a. Smart Stand- We created a automatic Side stand which worked automatically whenever driver starts or stops the bike by using Arduino and step motor.

b. Smart Helmet- It a helmet which integrated with microphone and speakers so the driver can use it for maps, calling and voice commands.

c. Smart Start- It is feature which allows driver to start his bike by his thumb print. Only those person which registered their thumb can only start the bike.

d. SOS emergency- It is a emergency service only be triggered during accidents. This feature automatically send SOS signal on phone along with driver's location to the nearest hospital and to the family members.

C. Financial Detail

Project Cost: Rs. 193607
Honorarium for Mentor: Rs. 22273
Honorarium for Incubatee: Rs. 22273
Total Expense: Rs. 238153

3. Start-up entrepreneurial journey from ideation to prototype

A group of students from department of mechanical engineering from of ITS Engineering College Greater Noida under the mentorship of Prof. Manvendra Yadav had realised these problems. They started local surveys and research. After they started R&D and development of the features and the E-bike.

4. Contribution of NewGen IEDC:

For the development prototype of this machine, NewGen IEDC of ITS Engineering College has supported all expenditure incurred in design & fabrication. NewGen IEDC also provided us the technical mentorship as well as entrepreneurial mentorship. NewGen IEDC helped us in Business Plan preparation. All fabrication work has been carried out at NewGen IEDC.

5. Future Plan:

1. Field Testing
2. Design Modification if required after the field test.
3. Review of business plan and implementation of pilot project in Greater Noida area.
4. After the successful implementation of pilot project we will approach other municipal Corporations all over India.

Project Report on
Healthy Pots: Smart Gardening System

Team Details

Mentor: Dr. Monika Jain (HOD ECE)

Sr. No.	Name	Branch & Year	Position	Contact details
1	Anuj Katiyar	EEE 4th year	Team leader	Anujkatiyargg_eee16@its.edu.in 9717298977
2	Deepak	ME 4th year	Team Member	deepaksk_me16@its.edu.in 9718317703

Introduction: During day to day activities many people often forget to water their plants and thus it becomes challenging for them to keep their plants healthy and alive. Also it is a challenge for people to maintain their gardens and manage watering of plants during shortage of water. Based on the above background, we thought that it is necessary to implement the automated system which will take care of plants considering all the different aspects of home gardening system (for system based on household purpose) and helps them to grow healthy. We also believe that technology can help people in cultivating plants, not just by automation but also through digital communications.

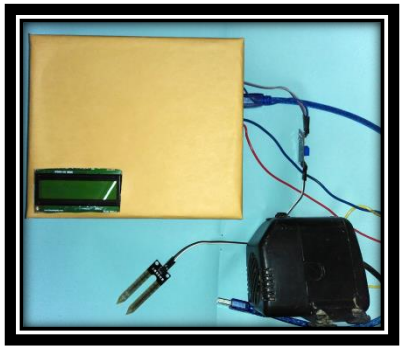
Therefore, our project ***HEALTHY POTS: Smart Gardening System*** aims to implement a simple system, using automatic watering a small potted plants with minimal human intervention.

Features

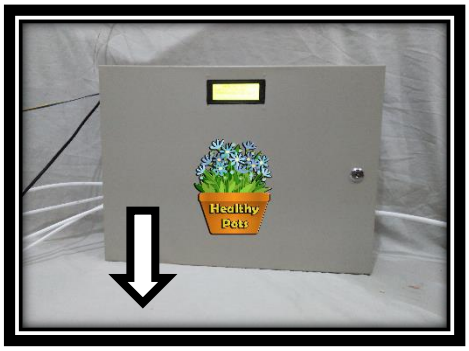
- It is an IOT based automatic gardening system.
- It waters the plants by sensing the moisture content of the Plant's soil.
- It contains weather monitoring System which shows:
- (1) Air Temperature
- (2) Air Humidity
- (3) Air Pollution
- It also shows the amount of water consumed by the plant.
- It can be operated through mobile app.
- It is a fully Automatic machine & do not require any human intervention.

Transition from Ideation to Prototype

Sep 2017



Oct 2018



Feb 2020

Main Unit

Pot Module

Financial Detail
Project Cost: Rs. 173915
Honorarium for Mentor: Rs. 22273
Honorarium for Incubatee: Rs. 22273
Total Expense: Rs. 218461

Contribution of New-Gen IEDC

NewGen IEDC helped us to develop the prototype by providing services such as fund support, management, mentorship, co-working space, technological assistance or everything that a startup requires in its initial phase.
Because of NewGen IEDC we were able develop a prototype in such a short span of time while taking care of product feasibility & reliability.

Future Plans

(1) PCB designing and fabrication required to be done for commercialization.
(2) Collaboration of Agricultural experts, researchers & institutes for precisely calibrating the moisture values of moisture sensor required to be set for different species of plants.
(3) Making it suitable to be commercialized for home gardens.

NewGen IEDC

Under the Aegis of NSTEDB, DST, Govt. of India, New Delhi

SUBMISSION OF PROGRESS REPORT

Name of HI/NewGen IEDC : IIIT Allahabad
Name of the Chief Coordinator : Dr. Ranjana Vyas
Period under Review : 1st February, 2019 -31st March, 2020

1. Initiatives/Activities Undertaken as per the Action Plan Submitted:

[A] To inculcate the spirit of innovation and entrepreneurship amongst S&T students

Sr. No.	Activities	Outcome/Achievements
1	Design Thinking Workshop by Kaavya Reddy, Y-Combinator alumni	The session enabled the audience get a workshop on different aspects of design thinking when dealing with a young startup. The talk was attended by in-campus participants and external startups. This was the 1st of its kind session at IIIT Allahabad.
2	Talk by Shivani Maheshwari, Alumni Entrepreneur and Co-founder, Cloric	Talk inspired the students by highlighting the different virtues of entrepreneurship, especially useful as narrated by an alumni entrepreneur.
3	Talk by Sandeep Jain, Alumni Entrepreneur and Founder & CEO, Geeksforgeeks	Geeksforgeeks is the most popular portal among the IT graduates and hence the person has his own fan following. He inspired the audience by his journey.
4	Panel Discussion moderated by Ajay Suman Shukla, LEAD, Deshpande Foundation	The discussion was aimed at increasing social startups and making the students conscious about this sector that is often overlooked.
5	Business Plan Presentation	Letting young startups get a direct feedback from the experts.
6	IPR Workshop by MyCrave Consultancy Ltd.	The workshop made the students at the institute and the young startup conscious about dealing with their IP, and encouraged patent filing.
7	Panel discussion with students	The centre at IIIT Allahabad faces unique problems ranging from high attrition to lack of interest of the senior-most students. The discussions highlighted the problems that enabled design the future course of action.
8	Talk by Zunaid Ahmed, Alumni Entrepreneur and Co-founder, Knudge.me	Talk inspired the students for entrepreneurship using a story of an in-campus entrepreneur that the students could relate to
9	Interactive Sessions with Teun Mentzel, PUM Netherlands	The aim was to make a structured program for the NewGen IEDC participants. The expert gave a direct feedback though personalized hour long session with every project idea. The expert also hosted a lean canvas model.
10	Business Model Canvas by Startup Grind	The experts from Starup Grind took a session on business model canvas. The participants were best selected NewGen IEDC projects from Pan India.

[B] To identify, develop & commercialize students' innovative ideas

Sr. No.	Activities	Outcome/Achievements
1	Ideathon – 1	The students submitted ideas that have future business prospects.
2	Business Hackathon	The students were given a set of topics to develop prototypes and business applications.
3	Hack in the North	The annual mega hackathon, one of the largest hackathons in north India.
4	Project Demonstration	The students demonstrated the current version of their prototypes through an open exhibition.
5	Ideathon – 2	The students submitted ideas that have future business prospects.
6	NewGen Hacks	The students developed prototypes of projects and 2 of them were selected for continued work and NewGen IEDC funding.
7	Project Demonstration	The students demonstrated the current prototypes through an open exhibition
8	Pitching contest for pan-India NewGen IEDC centres	Following up from the advisory board meeting, the aim was to
9	Business Hackathon	The students came up with business ideas and developed prototypes of the same through hackathons.

[C] To enhance Industry-Academia interaction

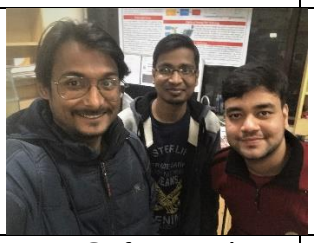
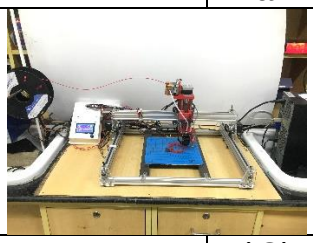
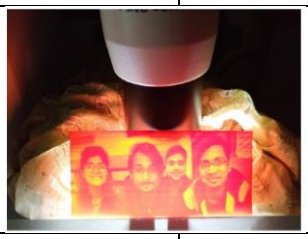
Sr. No.	Activities	Outcome/Achievements
1	Survey of startups	The students went to numerous startups during the summers to look out for possibilities of academic linkage and get a feeling of the startup culture and their problems.
2	Talk by Smriti Tomar, CEO, InvestoAsia	The expert talked about financial markets and the role of startups in the fintech domain.
3	Talk by Sandeep Kochhar, CEO, Blewminds	The expert gave a motivational session on startups and an entrepreneurial life with many real life examples.
4	Talk by Ajit Balakrishnan, CEO, Rediff	The expert highlighted the changing technological front, and highlighted numerous problem domains where startups have an immense scope.
5	Talk by Anil Chikara, Chairman, Startup India Foundation	The expert interacted with most of the project ideas one-on-one and gave constructive feedback about the utility of the ideas in the real industry. He also took a talk.

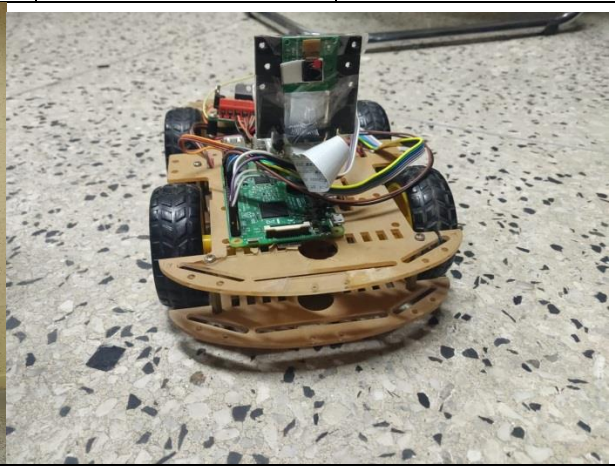
2. Deviation (shortfall) from the proposed action plan (with reasons), if any: The activity Startup Expo was replaced with a talk, because of a geographical disadvantage to host enough startups of substance.

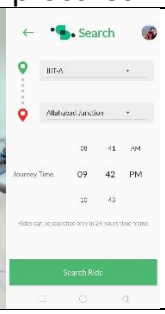
3. Other important highlights (new initiatives), if any: (i) The centre is aiming to launch a BTech with a minor in Innovation, Entrepreneurship and IPR program as an academic offering. The design is already done and the program is awaiting an approval from the senate. (ii) The centre is also planning to admit students from the local colleges and to offer them a platform through a structured program with certification in collaboration with PUM Netherlands.

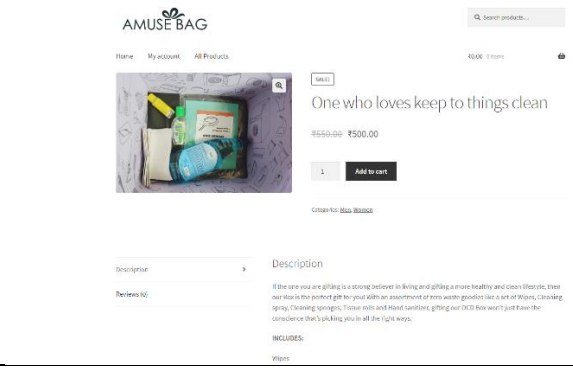
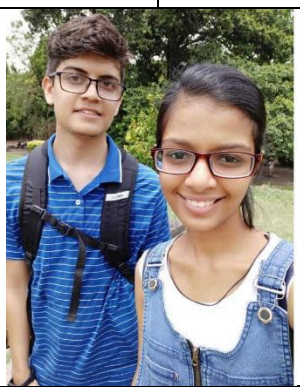
4. Student Projects (Please provide the following details for each student project)

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
1	IoT based Smart Street Lighting System, Light automatically adjusts its intensity as per background for energy savings.	NIL, New Project	The protype has been demonstrated as live deployment in the identified location at IIIT-A. The scaling is not possible till the project is properly fabrication, which is being worked over.	Prototype is ready. The team is struggle with the miniaturization and fabrication.
2	A Portable Corona-Discharge System with Custom Made Electrodes for PDMS Hydrophilic treatment and Bonding for Microfluidic Chip Fabrication and Cost Effective Micro Impedance Pump For Potential Application in the Micro-fluidics & Bio-Medical Domain, A device with medical applications	NIL, New Project	The prototype has been developed and demonstrated at sister labs. The product has been customized and made compact to suit the user requirements.	The proof of concept is done. Commercialization options are being sought.
				
3	Desi Drone for Healthcare Sector in India – “Chikitsa PS-1925”, A drone that	NIL, New Project	The drone design is done. The user application is being developed.	The project is in the development stage.

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
	delivers medical samples for efficient delivery			
	 			
4	Advanced Bio-3Dprinters and Multi domain 3D Printing Services	NIL, New Project	3D printers were made and various structures related to the medical domain are printed to check its efficiency of printing and found to be up to the mark.	Website is being made so as to provide the platform of service being served to the needy. We have found our customers ready to take our service.
	  			
5	Women Safety Ring, Ring can be triggered in case of emergencies	NIL, New Project	1)Cloud server(Firebase) established between pi and Android Application 2)Android Application completed 3)Audio and Video recodings are uploaded successfully via cloud database.	In prototype stage. In contact with DLab and THub to convert the prototype into product.
6	OGO – The place for bikes and e-bikes, Engineering an e-bike and giving rental services at tourist places	NIL, New Project	E-bicycle, have designed and developed the prototype for an electric bicycle. Successfully	Ready with the prototype and recently raise 3 orders from the customers. Have a plan to

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
			converted a regular bicycle to electric bike with pedal assist and results tested with multiple user surveys.	provide 10 E-bicycle for the IIIT-A campus and ready for commercialization.
				
7	An Alexa controlled smart surveillance robot, Service robot that is affordable for homes	NIL, New Project	Reached to a state where our robot is able to generate a map and estimate the semantics involved in the environment. It can be used by virtual agent for further HRI task.	Project is in the development stage
				

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
8	Safest Route, Get the safest route to commute within cities based on mined historic police records.	NIL, New Project	Prototype is developed and demonstrated. The product requires a reasonable amount of data which is not currently available.	The project is being re-thought in the lines of data requirements.
9	SCAB (Sharing-Cab), Share a cab with your friends only to commute between common places in a city.	NIL, New Project	i) The mobile app is rebuilt on Flutter and was going to be launched after the Holi holidays but it has to be postponed due to the pandemic and we will launch it whenever the college reopens. ii) The marketing strategy for promotion has been planned and is being worked on. Also, a google play account has been procured	To be launched soon after institute reopens
	 			
10	Advanced Energy efficient Home Automation, Smart home that saves energy	NIL, New Project	A proof of concept for various use cases has already been demonstrated in multiple venues. The team is currently struggle on miniaturization	Prototype is ready, needs to be improved to make a product.

Sr. No.	Team/Project Description	Project status at beginning of the Year	Interventions Made	Current Status
			and fabrication. As per suggestions, the team also wishes to try a more competitive related idea.	
11	AmuseBag, Personalized gifting which is actually of high value for the recipient	NIL, New Project	The website is ready(amusebag.com) we have shifted our focus on 7-12yrs kids market, and researched and bought products for it.	To go to retailers for the collaborations
				

5. Provide a minimum two page case-let each on the two best student projects (either prototype developed or commercialized) from the above list. The case-let should include:

- Student team details (with contact information)
- Brief description about the student start-up
- Startups entrepreneurial journey from ideation to prototype or commercialization along-with 2-3 high resolution photographs
- Contribution of NewGen IEDC in the same
- Future plan