



PAAVAI ENGINEERING COLLEGE (Autonomous)



IIC ANNUAL REPORT – 2024-2025

A. About IIC Institute

Vision / Mission of IIC established at the Institute Vision:

- To inculcate, develop and enhance the entrepreneurial potential of the budding professionals for producing ethical, innovative and successful entrepreneurs by creating an entrepreneurial ecosystem for individuals with creative minds and ideas for substantial business opportunities.

Mission:

- To dispense opportunity and encourage innovative ideas for transforming them into start-up establishments.
- To become the centre of excellence, inspire, and enable the students to become entrepreneurs by providing platforms for developing novel technologies catering to current market stipulations and developing their own enterprises.
- To produce socially responsible, economically viable, legally bound and ethically sound young entrepreneurs.

Journey of IIC established at the Institute

IIC was established in 2018 at Paavai Engineering College. Right from its establishment till date are regularly,

- Regular execution of **IIC, MIC, Self-Driven and Celebration** activities.
- For the academic year **2023-2024** we have received **4-star rating** and selected in the Consortium college and contributed as Mentor for other colleges.
- Received a fund of **Rs.2,25,000** to act as a mentor under **AICTE MENTOR MENTEE scheme 2023-2024**.
- Received a fund of Rs.13 lakhs under MSME 3.0 Women Hackathon – Preparation of bioplastic using sterculia foetida leaves.
- Our college team received a fund of **Rs.2,00,000/-** under the **YUKTI Innovation** contest for 23-24 - Adjustable drum seeder.
- Acted as **Nodal centre** for **Smart India Hackathon 2022**.
- We have received appreciation certificate for NIPAM KAPILA.
- Actively participating in the **Smart India Hackathons** and **Regional Meets**

- organised by AICTE.
- Organizing workshops every quarter to motivate the students.
 - Established Paavai Pre-Incubation and Incubation Centre to support IIC activities.
 - Conducting regular **online and offline activities** in association with **Entrepreneurship Development Cell** promoting Entrepreneurship, IPR and Innovation.
 - Arranging **interactive sessions** with successful Entrepreneurs and Innovation Ambassadors periodically.
 - Conducting **competitions** in every quarter to exhibit their Entrepreneurial talents, creativity and innovation.
 - Organizing **industrial visits**, at least once a year.
 - Arranging **special lectures** on topics like design thinking and creativity, innovation, IPR, start-ups, business planning, team building, generation of resources and other business-related concepts.

Diversified representation in the IIC established at the institute from industry, Interdisciplinary& Departments/ Units etc.

We have representatives from industries, Colleges (Incubation Centre Head), the banking sector, and alumni from our Institute who participates in our Quarterly meetings and give suggestions for the growth and improvement of entrepreneurship, start-up and innovation activities throughout.

B. Brief mention of key functionaries at the IIC Institute

President - Dr.M.Premkumar, President of IIC, Paavai Engineering College. His role involves motivating the faculty members and students to adopt innovative methods of teaching, and learning and encouraging them in doing innovative projects that may end in start-ups.

Vice President - Dr.K.SundaraMurthy, Vice-President of IIC, Paavai Engineering College. His role involves guiding both the Convenor and Coordinators in conducting various events and functions in IIC and motivating the students to start the new business in their areas.

Convenor - Dr.R.Mohana Priya, Convenor of IIC, Paavai Engineering College. Her role involves in guiding and giving key points to various departments to organize events and workshops related to IIC for developing the student's skills related to entrepreneurship. In addition, to monitor the execution of various calendar activities and reports to the President.

Coordinators - The role of the coordinators is to organize various seminars, workshops and events regarding IIC. In addition, to guide the student's projects related to their innovative ideas.

C. Portfolio/graphical/Tabular representation of Resource strength (human capital and Physical capital) of the IIC institution

Total No. of IIC Members	80+157 (faculty +students)
Total No. of IAs	79 (Basic and Advanced Level)
Total No. of faculty Mentors from Portal	80
Pre-Incubation Units, If any	Paavai Incubation Centre
Incubation Units, If any	Paavai MSME Incubation Centre
IP Facilitation Unit, If any	Nil

D. Highlight Facilities, Infrastructure of Pre-Incubation & Incubation kind and Student bodies/clubs engaged in the promotion of Innovation and Entrepreneurship on the campus.

- Paavai Innovation Forum
- Paavai Incubation centre
- Entrepreneurship Development cell
- Software development and information management club
- Microbytes innovative club
- Resource club
- TVS Harita centre
- Google Developer Students club
- Bootcamps and activities through EDII

E. Highlight Achievements (Narrative/Graphical/tabular representation)


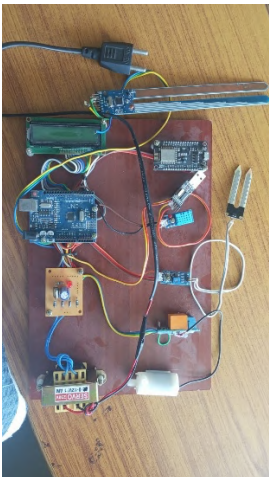
Number and Different types of I&E and IPR activities Conducted	80
No. of student's & faculty ideas generated	61
No. of students & faculty Innovation/prototypes developed	67
No. of IPs generated, published and granted	60 + 6
No. of Student & Faculty Start-ups/Ventures established.	28 (till date)
Amount spent on promotion and awareness generation on Innovation Entrepreneurship on the campus	Rs.7,00,000
Amount grant or fund supported to student & Faculty lead Innovations, start-ups and IPR	Rs.7,50,000
No. of Technology Transfer and Commercialization happened	03

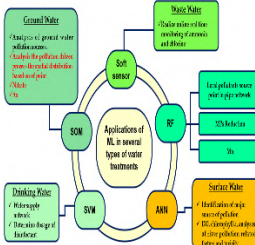

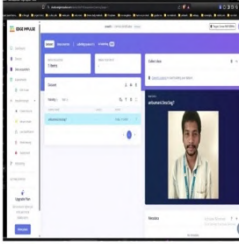
F.Highlight a few best IIC Faculty/Student members and their achievements/ Rewardedfor the innovations at different forum [Profile of few faculties with 2-lines of their achievements]


S.No.	Name of the Student/Faculty	Department	Award/Achievement	Organised/Event Name	Date
1	A.Logesh kumar J.Jerin Jacob	Mechatronics Engineering	1 st Prize in Project Presentation	SYMMECH-25	11.08.25
2	Surya Raja	Civil Engineering	Received grants of Rs. 400500 from the MSME2.0 Hackathon for the "Rapid Decomposition of Solid Waste" project	MSME 2.0 Idea Hackathon	24.06.2025
3	S.Gowtham Kumar	Food Technology	Achievement as an Entrepreneur from EDII-TN	Achievers Meet-EDII TN gov. of Tamil Nadu	19.11.2024
4	S.Sanjay	Food Technology	Achievement as an Entrepreneur from EDII-TN	Achievers Meet-EDII TN gov. of Tamil Nadu	19.11.2024
5	S.Thirumurugan	Food Technology	Achievement as an Entrepreneur from EDII-TN	Achievers Meet-EDII TN gov. of Tamil Nadu	19.11.2024
6	Mr R Loganathan	Cyber Security	Best Faculty Award (Contribution in Research and Professional Society Activities)	The Institution of Engineers (India)	04.04.2025
7	Mrs J Velumani	Cyber Security	Star Believer Award	NPTEL	31.05.2025
8	Saleem Ulla Khan.S	Electronics and Communication Engineering	EDII-TN Achievers Award	EDII-TN	19.11.2024

9	B. Rishi C. S.Vijay M.Nambumageshwaran	Chemical Engineering	1 st Prize	Saint gaits and IICHE/National Level Idea pitching Competition	08.08.25 09.08.25
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G.Give the best Innovations & images with mention of inventor/innovation name for the academic year 2024-2025

S.No.	Innovations	Inventors	Images	Abstract (Breakthrough in Innovation/Technology Developed)
Mechatronics Engineering				
1.	Piezoelectric Electricity Harvesting Method Using Road Bumps	J.Vishwa R.Kavinkumar L.Prem		<p>The product is a Modular Piezoelectric Road Bump System with integrated energy harvesting and storage.</p> <p>It captures force from vehicles, converts it to electricity, and powers EV-supportive devices like streetlights and IoT systems.</p> <p>The system consists of two units: VEHICLE UNITS: Where vehicle force is applied on the bump to generate energy. SURFACE UNITS: Contain the piezoelectric stacks, circuitry, and battery to store and supply the harvested power.</p>
2	Smart Fertilizer application using Machine learning	S.V.Thamara i selvan S.Srikanth S.Poovitha		<p>Uniform fertilizer application leads to wastage, higher costs, and environmental pollution.</p> <p>Absence of real-time, geo-tagged soil feedback limits precise nutrient management for farmers.</p> <p>Farmers do not have access to AI-driven precision agriculture tools.</p> <p>Manual fertilizer management processes reduce efficiency and overall productivity.</p>



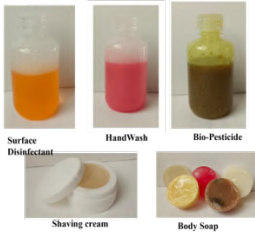
<p>3</p>	<p>Wastewater Toxicity Detection Bot Using Adaptive pH and TDS Sensors with Ai integrated</p>	<p>E.Sivabharathi M.Prakash V.Akash</p>		<p>Self-calibrating sensor setup → long-term drift and fouling solution</p> <p>Adaptive system pH + TDS sensors combine toxicity detect design (usual systems only pH or TDS use).</p> <p>Adaptive dosing algorithm→ TDS trend + pH deviation combine exact chemical neutralizer dose predict (chemical wastage avoid).</p> <p>Hybrid AI (Edge + Cloud)→ local device la quick anomaly detection + cloud la continuous retraining accuracy improve.</p> <p>Automated corrective dosing trigger.</p> <p>Instant alert(SMS/WhatsApp/Dashboard) operator send.</p>
<p>4</p>	<p>Automated Student Attendance Monitoring and Analytics System for Colleges</p>	<p>M.G.Dhnaishkar S.K.Kiran J.Aswinraju</p>		<p>Automated Attendance Capture & Real-Time Data Sync.</p> <p>Eliminates manual effort and proxy attendance.</p> <p>Provides administrators with data-driven insights for decision-making.</p> <p>Predictive analytics for early detection of at-risk students.</p> <p>Affordable and scalable design suitable for Indian education institutions</p>
<p>Aeronautical engineering</p>				
<p>1.</p>	<p>IOT Enabled Crowded Surveillance Drone With ESP Based Facial Recognition And Tear Ball Dispensing</p>	<p>N.Anbumani , G. Kokila, S.Vengatachalam</p>		<p>The integration of IoT with autonomous surveillance has enabled advanced security and crowd monitoring solutions. This project develops an IoT-enabled drone with ESP-based facial recognition, high-resolution cameras, and an automated tear gas dispensing system for efficient riot control. Its low-power design ensures cost-effective, scalable deployment, while real-time data transmission and cloud processing support centralized decision-making and multi-drone coordination. The system enhances law enforcement response by enabling swift, remote, and efficient crowd management with minimal human intervention.</p>

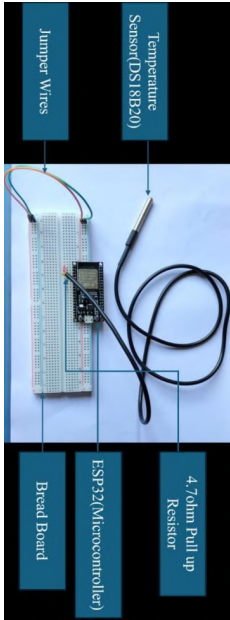
2	Smart Hexacopter For Soil Sensing And Precision Planting	Logeshwaran .M, Sakthivel.J, Vijay.V		Precision agriculture is transforming farming through autonomous aerial systems for real-time soil analysis and optimized planting. This project presents a Smart Hexacopter with soil moisture and temperature sensors, GPS navigation, and IoT connectivity for remote precision farming. Its multi-compartment seed storage enables automatic seed switching for multi-crop and intercropping efficiency, while a precision seed-drop system ensures uniform distribution, reducing waste and improving yield. By analyzing soil conditions, it minimizes excess water, fertilizer, and seed use, promoting eco-friendly practices. With an aerodynamic, lightweight design and modular seed dispenser, the hexacopter is adaptable for diverse agricultural applications.

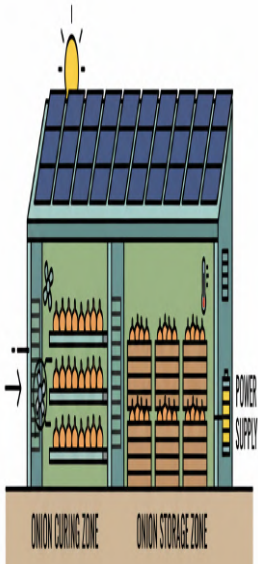
Civil Engineering

1.	Rapid Decomposition of solid waste	Surya Raja (Student)	 	We use special microbes, like Actinomycetes and fungi, to break down fruit and vegetable waste. Waste turns into compost in just 30 days instead of 90 days. This method cuts down on bad smells and keeps pests away. The end result is valuable compost that helps plants grow. It works fast and doesn't need much space. Suitable for waste from places like hostels, canteens, municipalities, hotels, and businesses. The compost keeps the right pH, moisture, and temperature, making it effective. This method makes waste management easier and supports a sustainable environment
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Master of Computer applications

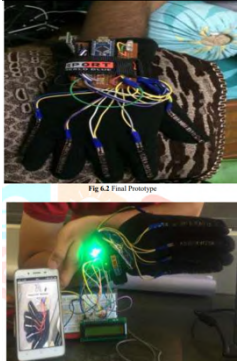
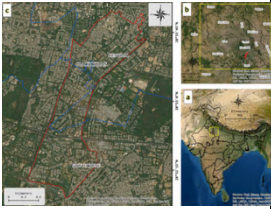

1.	Cadibal Self learning	KISHORE RG (Student) MCA B-Section		<p>Cadibal Self-Learn Portal is an innovative e-learning platform designed to empower individuals through self-paced and adaptive learning. The portal provides structured modules, micro-learning resources, interactive quizzes, and practical exercises to support both theoretical understanding and hands-on skill development. With a built-in adaptive learning engine, it personalizes learning paths, tracks progress, and offers actionable insights for continuous improvement. To enhance engagement, the system integrates community forums, achievement badges, and certification features. Covering a wide range of technical, professional, and soft-skill areas, the portal enables learners to acquire measurable competencies effectively and at their own convenience.</p>
Pharmaceutical Technology				
1.	Moringa Jelly for Anaemia	R. Dhanush Kumar		<p>Moringa oleifera is a perennial plant species of the family Moringaceae which is known as the "miracle tree". The advantage of using the plant is that all of its parts can be utilized as food. As an antioxidant, it can help in protecting cells from damage. Moringa might also help decrease inflammation and reduce pain</p>
Food Technology				
1.	Development Of Various By-Products from Waste edible cooking oil.	S.Gowtham Kumar (Faculty)		<p>The Development of By-Products from Waste Edible Cooking Oil project focuses on sustainable reuse of discarded oils. Unlike conventional disposal, it transforms waste oil into value-added consumer and industrial products. Key by-products include “biopesticide, body soap, shaving cream, handwash, and surface disinfectant”. This approach reduces environmental hazards caused by improper oil disposal. It also lowers</p>

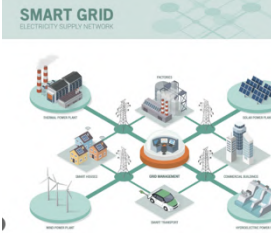

				<p>dependence on synthetic chemicals in hygiene and agricultural products. The process promotes circular economy principles by turning waste into useful resources. By-products are safe, effective, and cost-competitive compared to conventional alternatives. The project supports public health by offering eco-friendly cleaning and hygiene solutions. Farmers benefit from affordable biopesticides, reducing reliance on chemical inputs.</p> <p>Overall, it delivers environmental protection, economic value, and sustainable product innovation..</p>
<p>2</p>	<p>AI And IoT Integrated Milk Quality And Adulteration Sensor Kit</p>	<p>S.Sanjay (Student)</p>		<p>The AI and IoT Integrated Milk Quality and Adulteration Sensor Kit is built for farmers, cooperatives, and dairy processors. Unlike conventional analyzers, it combines multiple functions into one portable device. It measures pH, fat, protein, conductivity, and temperature instantly. The kit detects common adulterants such as urea, starch, and detergent. AI algorithms analyze data to identify anomalies and predict risks. IoT connectivity enables cloud storage, mobile access, and dashboards. Results are available in real-time, ensuring fair pricing and transparency. Its compact, battery-operated design suits rural and field use. By replacing costly lab tests, it reduces expenses and time delays. Overall, it improves milk safety, farmer income, and trust in the supply chain.</p>

3	<p align="center">Moderate Solar Chamber-A smart hybrid Storage for Onions</p>	<p align="center">S.Thirumuran (Student)</p>		<p>The Moderate Solar Chamber is a smart hybrid storage solution designed for onion farmers, trader-collectives, and post-harvest aggregators. Unlike traditional storage sheds, it integrates multiple control systems into one solar-assisted, IoT-enabled chamber. It constantly monitors and regulates temperature, relative humidity, gas composition (e.g. ethylene / CO₂), and airflow to keep onions in optimal storage condition. Hybrid power (solar panels + battery/grid fallback) ensures uninterrupted operation even during cloudy days or power outages. AI-based analytics detect early signs of spoilage risk—such as moisture spikes, gas accumulation or temperature drift—and issue alerts.</p>
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Cyber Security

1.	<p align="center">Layered defence DDoS Architecture</p>	<p align="center">Sathiya G (Student), Shushaanth S (Student), Shanmugapriyan R (Student)</p>		<p>The project creates a layered defense against DDoS attacks with dynamic load balancing between two firewalls, improving server resilience and reducing overload risk. This project establishes a DDoS defense architecture using four VMs to protect a Kali Linux NGINX web server (VM1). It includes two firewalls (VM2, VM3) and a load balancer (VM4) that alternates traffic between the firewalls every 20 seconds, ensuring efficient filtering before reaching the server. Custom Python based firewall rules, combined with tools like Snort, Fail2Ban, ModSecurity, and OpenDPI, provide real-time DDoS detection and prevention.</p>
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1.	<p>TNWISE Women Hackathon 2025(Sign language using bluetooth and Arduino)</p>	<p><u>Incubatee</u> R.Bhuvaneshwari A.JayaHarshitha S.Bhavya</p> <p><u>Staff Mentor</u> Dr.R.Mohana Priya</p>		<p>The fully automated solar grass cutter is a fully automated grass cutting robotic vehicle powered by solar energy that also avoids obstacles and is capable of fully automated grass cutting without the need of any human interaction. The system uses 6V batteries to power the vehicle movement motors as well as the grass cutter motor. We also use a solar panel to charge the battery so that there is no need of charging it externally. The grass cutter and vehicle motors are interfaced to an 8051 family microcontroller that controls the working of all the motors. It is also interfaced to an ultrasonic sensor for object detection. The microcontroller moves the vehicle motors in forward direction in case no obstacle is detected. On obstacle detection the ultrasonic sensor monitors it and the microcontroller thus stops the grass cutter motor to avoid any damage to the object/human/animal whatever it is. Microcontroller then turns the robotic as long as it gets clear of the object and then moves the grass cutter in forward direction again.</p>
2.	<p>GIS-based solution for automating the approximate assessment of property tax (Naan Mudhalvan Niral Thiruvizha 2.0)</p>	<p><u>Incubatee</u> Tamilarasan R</p> <p><u>Staff Mentor</u> 1. Dr M Shantha kumar</p>		<p>It might we develop a GIS-based solution for automating the approximate assessment of property tax. This system would streamline the process and enhance accuracy in property valuation for tax purposes, ensuring more efficient and transparent tax management.</p>
3.	<p>System to monitor the availability, utilization, and weekly requirements of medicines in dispensaries (Naan Mudhalvan Niral Thiruvizha 2.0)</p>	<p><u>Incubatee</u> Vignesh R</p> <p><u>Staff Mentor</u> 1. Mrs R Bhuvaneshwari</p>		<p>To develop a system to monitor the availability, utilization, and weekly requirements of medicines in dispensaries, hospitals, clinician centers, and polyclinics to ensure efficient supply and management.</p>

4	AI-powered energy management system that optimizes energy consumption in industrial and commercial facilities(Naan Mudhalvan Niral Thiruvizha 2.0)	<u>Incubatee</u> Lalithkumar R Deepak Raj RV Mathan Kumar N		It might we develop an AI-powered energy management system that optimizes energy consumption in industrial and commercial facilities, reducing costs, improving efficiency, and minimizing environmental impact through real-time analytics and automation
5	IoT-based self-sustained autonomous solution for the maintenance of public toilets (Naan Mudhalvan Niral Thiruvizha 2.0)	<u>Incubatee</u> Loshika K S Aasha P Gokila S <u>Staff Mentor</u> 1. Mrs A Samundeeswari		It might we design an IoT-based self-sustained autonomous solution for the maintenance of public toilets? This system would use sensors for automatic cleaning, odor control, and tracking daily usage to ensure cleanliness and efficient management, improving hygiene and reducing manual intervention.

Chemical Engineering

1.	Preparation Of Bio-Plastic From Sterculia Foetida Leaves	Swathi (Faculty)	 	This study involves the extraction of cellulose and other useful compounds from the leaves and blending them with natural plasticizers and cross-linking agents to create biodegradable plastic films. The final product will be evaluated for its mechanical, thermal, and biodegradability properties to ensure it can serve as an alternative to conventional plastics
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H) Highlight selected start-ups established by students/faculties with mention of founder/cofounder name.

Faculty Startups

Ecofit (Name of the Faculty – Prof K. Sharmiladevi) - Civil

S.Gowtham Kumar, Founder , Nextt Generation - Food Technology

Student startup:

S.Sanjay, Founder,Vital Producer's - Food Technology

S.Thirumurugan, CEO, Sustain Bowl - Food Technology

J. Pranow Ronald, NJR Packaging units - Chemical Engineering

S. Praveen, Green Gloww - Chemical Engineering

S.Saleem Ulla Khan / R.Jayaraman JASA – ESSENTIAL – ECE

I.List of any breakthrough Innovations / Technology Developed at the institute (2-3 technology with 2-3 lines about technology and innovation).

Development of Various By-Products from Waste edible cooking oil.

The Development of By-Products from Waste Edible Cooking Oil project focuses on sustainable reuse of discarded oils. Unlike conventional disposal, it transforms waste oil into value-added consumer and industrial products. Key by-products include “biopesticide, body soap, shaving cream, handwash, and surface disinfectant”. This approach reduces environmental hazards caused by improper oil disposal. It also lowers dependence on synthetic chemicals in hygiene and agricultural products. The process promotes circular economy principles by turning waste into useful resources. By-products are safe, effective, and cost-competitive compared to conventional alternatives. The project supports public health by offering eco-friendly cleaning and hygiene solutions. Farmers benefit from affordable biopesticides, reducing reliance on chemical inputs. Overall, it delivers environmental protection, economic value, and sustainable product innovation.

Moringa Jelly for Anaemia

Moringa oleifera is a perennial plant species of the family Moringaceae which is known as the "miracle tree". The advantage of using the plant is that all of its parts can be utilized as food. As an antioxidant, it can help in protecting cells from damage. Moringa might also help decrease inflammation and reduce pain.

Smart Hexacopter for Soil Sensing and Precision Planting

Precision agriculture is transforming farming through autonomous aerial systems for real-time soil analysis and optimized planting. This project presents a Smart Hexacopter with soil moisture and temperature sensors, GPS navigation, and IoT connectivity for remote precision farming. Its multi-compartment seed storage enables automatic seed switching for multi-crop and intercropping efficiency, while a precision seed-drop system ensures uniform distribution, reducing waste and improving yield. By analyzing soil

conditions, it minimizes excess water, fertilizer, and seed use, promoting eco-friendly practices. With an aerodynamic, lightweight design and modular seed dispenser, the hexacopter is adaptable for diverse agricultural applications.

J) Participation of IIC-institute in various programs of Central and State Govt.

Highlighting specially for the schemes or programs

- **AICTE Internshala Rank** - Ranked Number 1 in Internshala ranking among all the colleges in India for 24-25.
- Has implemented NISP policy.
- Completed internal Hackathon - Smart India Hackathon.
- YUKTI Innovation Challenge received fund of Rs.200000/- for the project “Adjustable Drum Seeder”.

K) Detail of Social Media & Connections of IIC institute

Instagram: <https://www.instagram.com/paavaipecprincipal/?hl=en>

Twitter: <https://twitter.com/paavaipecprincl>

Facebook: <https://www.facebook.com/pecprincipal.pecprincipal/>

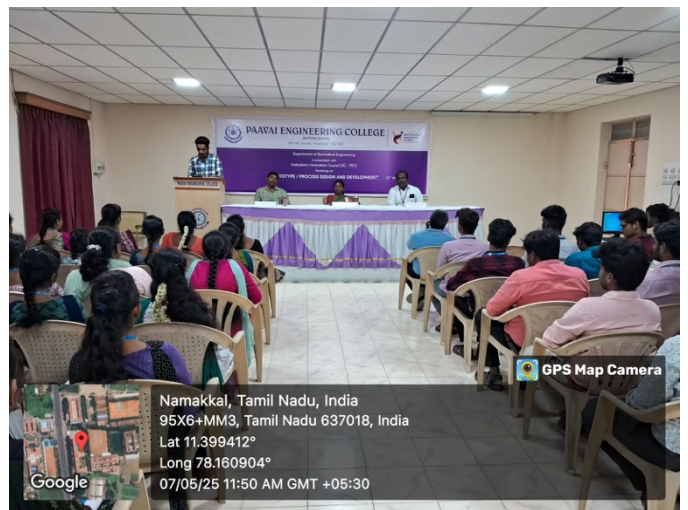
YouTube: <https://bit.ly/3BvEYA>

L) Testimonials from IIC members – Minimum 01 submission, Video minimum of 1 minute. Required. - By Innovation Ambassadors of your dept.

https://youtu.be/R4cPqffC_jY?si=N9HA6OssIF1nEi4m

https://youtube.com/shorts/xJs2pj_l9NA?si=k3Outi68BMhu6Yr5

M) Images





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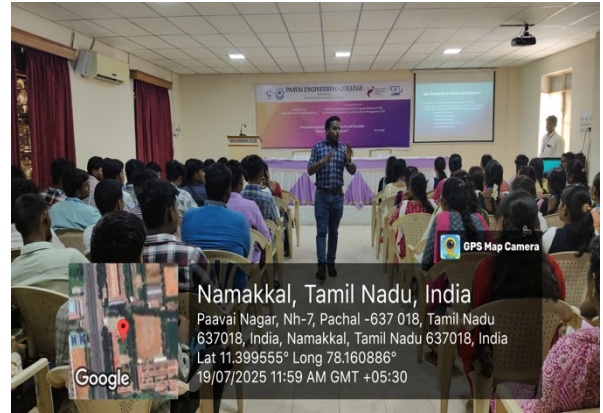
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