3.3.1 Institute has created an ecosystem for innovation and creation and transfer of knowledge supported by dedicated centres for research entrepreneurship, community orientation, incubation etc.

Our college supports innovation and knowledge sharing through different active cells like Entrepreneurship Development Cell (EDC), Industry-Institute Partnership Cell (IIPC), and Institution's Innovation Council (IIC). These bodies work together to foster entrepreneurial spirit and technical innovation among the students. Throughout 2024-2025, different cells organised many activities like exposure visits, idea and innovation showcase, field visits to incubation centres, guidance on starting companies, startup summits and expert sessions like the MIC Programme with Dr. Abhay Jere. In order to strengthen innovation culture among the students' events like Demo Days, exhibitions of prototypes and start-up ideas, and mentorship programmes were conducted. Because of this support, a couple of student teams were nominated for the Yukti Innovation National Challenge 2025 by MoE. Notable projects selected for this Challenge are IoT-based condition monitoring, AI for electric vehicles, and AI-driven room design. Our centre of excellence in chip design enabled students to do projects apart from their regular curriculum activities which gave them practical understanding of VLSI. Entrepreneurship development cell (EDC) organized a one-day workshop on "Ecosystem for Building Entrepreneurs and startups" in which 56 students were participated and benefited. Our efforts are helping students learn practical skills to solve real-world problems and grow as innovators.

Gayatri Vidya Parishad College of Engineering for Women
(Autonomous)
KOMMADI, MADHURAWADA, VISAKHAPATNAM-530048
(APPROVED BY AICTE, NEW DELHI, AFFILIATED TO ANDHRA UNIVERSITY, VISAKHAPATNAM)
(ACCREDITED BY NBA FOR B.TECH CSE, ECE AND IT – VALID FROM 2019-22 AND 2022-25)
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MIC Programmes & Schemes

The Institute Innovation Council (IIC), GVPCEW, organized an insightful session on "MIC Programmes & Schemes" on 23rd October 2024 at 2:00 PM. The session was conducted in online mode, and a total of 54 students from ECE Section-2 actively participated.

The resource person for the session was Dr. Abhay Jere, Vice Chairman, AICTE, and Chief Innovation Officer, Government of India. Dr. Jere provided a comprehensive overview of the Ministry of Education's Innovation Cell (MIC) programmes and schemes, which are designed to nurture innovation and promote entrepreneurship within Higher Education Institutions (HEIs) across the country.

During the session, he explained how these initiatives support students and faculty in developing innovative projects, accessing funding opportunities, and transforming ideas into viable solutions for societal needs. The talk also highlighted the role of MIC in fostering an ecosystem of innovation, incubation, and start-up culture in academic institutions.

The interactive nature of the session encouraged students to raise queries about entrepreneurial pathways, start-up ecosystems, and government-supported innovation platforms. Students expressed great interest in the schemes that provide mentorship, seed funding, and exposure to national-level innovation contests.

Salient Features of the Event

- Session by Dr. Abhay Jere, Vice Chairman, AICTE & Chief Innovation Officer, Govt. of India.

- Focus on MIC programmes and schemes for HEIs.

- Guidance on entrepreneurship, start-up culture, and funding opportunities.

- Exposure to national innovation initiatives and competitions.

- Participation of 54 students from ECE Section-2.

Date: 30-11-2024

Title: Problem-Solution Fit and Product-Market Fit – Insights from IEEE Student Branch & WIE Affinity Group Inauguration

Date: 30th November 2024

Venue: Auditorium, GVP College of Engineering for Women (GVPCEW)

The inauguration of the IEEE Student Branch and Women in Engineering (WIE) Affinity Group at GVPCEW was a milestone event, attended by 118 students from ECE, CSE, EEE, IT, and CSM departments, along with faculty members and industry professionals. The event was organized to spark innovation, foster leadership, and build stronger industry-academic collaborations.

The program began with a warm welcome and an overview by the chairs of both IEEE Student Branch and WIE Affinity Group. They shared their vision and upcoming initiatives focused on developing a tech-savvy, socially responsible student community.

Prof. Rajkumar Goswami, Principal of GVPCEW, addressed the gathering and highlighted the value of IEEE as a platform for technical growth and global exposure. The official introduction of office bearers was marked by a badging ceremony, symbolizing the beginning of their leadership journey.

Key Highlights – Industry and Innovation

The event uniquely explored the themes of Problem-Solution Fit and Product-Market Fit, thanks to insights shared by esteemed guests.

- Guest of Honour: Mr. Gopi Kumar Bulusu, CEO of Sankya Technologies, delivered a compelling talk on how cutting-edge solutions emerge from correctly identifying real-world problems. He emphasized the role of generative AI in chip design and introduced the audience to Terapoter, a powerful model developed by his team. His talk reflected the importance of understanding user needs and developing deep-tech solutions that align with market demand—perfectly echoing the essence of Problem-Solution and Product-Market Fit.

- Chief Guest: Sri Subrat Kumar Prusty, DDG Technology, Department of Telecommunications (DoT), gave an inspiring address focused on localization and inclusivity in technology. He spoke about SOIL (Sanskrit Operating System for Indian Languages), developed to support regional languages. He emphasized the importance of creating products that not only solve problems but also resonate with the cultural and linguistic context of the users. He also introduced the concept of TODLA (Total Development of Local Area), a visionary approach to promote rural development through decentralization of industries.

These sessions demonstrated how understanding the problem landscape and user context is key to building impactful solutions—central to the ideas of both problem-solution fit and product-market fit.

Outcome & Impact

This inauguration served as an excellent platform to inspire students towards innovation-led thinking. The emphasis on problem identification, solution relevance, and market alignment has laid a strong foundation for the Student Branch's future goals. With upcoming technical workshops, industry talks, and collaborative projects, the IEEE Student Branch at GVPCEW is set to become a vibrant hub for technical excellence and leadership.

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN (Autonomous)
Madhurawada: Visakhapatnam – 530048
(Approved by AICTE, New Delhi and Affiliated to Andhra University, Visakhapatnam)
(Accredited by NBA for B. Tech-CSE, ECE, IT and EEE)
Accredited by NAAC with A Grade from 2022-2023 to 2027-2028

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Event: Demo Day/Exhibition/Poster Presentation of Innovations/Prototypes as part of Energy Conservation Week

Date: 20-12-2024

As part of Energy Conservation Week, a Demo Day/Exhibition and Poster Presentation of Innovations and Prototypes was organized on 20th and 21st December 2024 from 09:30 AM to 12:30 PM. The event provided a platform for students to showcase their creative ideas, working models, and posters related to energy conservation and sustainable practices. It encouraged innovation, knowledge sharing, and awareness on efficient energy usage while fostering teamwork and presentation skills among participants.

MODEL TOPICS:

1.GREEN BUILDING: A green building, also known as a sustainable or eco-friendly building, is designed, built, and operated to minimize its negative impact on the environment while maximizing the use of natural resources. These buildings focus on energy efficiency, water conservation, and the use of eco-friendly materials, all while ensuring a healthy indoor environment for occupants. The concept of green building is rooted in the idea of reducing our carbon footprint. This means using renewable energy sources like solar panels, ensuring proper insulation to reduce energy waste, and incorporating natural ventilation and lighting.

2.WATER MANAGEMENT: Rainwater harvesting is the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from a roof-like surface and redirected to a tank, cistern, deep pit, aquifer, or a reservoir with percolation, so that it seeps down and restores the ground water. Rainwater Harvesting is one of the most commonly used methods to save water. It reduces soil erosion, stormwater runoff, flooding, and pollution of surface water with fertilizers, metals and other sediments. The implementation of rainwater harvesting system is an important step towards reducing the dependence on groundwater and other sources of water. The project activities, budget, and timelines have been carefully planned to ensure that the system is installed efficiently and effectively.

3.WASTE WATER PURIFICATION: A critical issue we face today is water pollution. As urban areas expand and industrial activities increase, the need for effective wastewater purification becomes more urgent than ever. The essential process involved in wastewater purification, which not only protect our water resources but also contribute to public health and environmental sustainability. The technologies used to ensure that treated water is safe for discharge or reuse.

4.STAR RATING ON ELECTRICAL APPLIANCES: Star rating to the electrical appliances can be given by the way they performance and their efficiency is. These star ratings are given to the appliances of energy efficiency. They calculate and evaluate how better the electrical appliances can save the energy. These star ratings help consumers choose products that are more energy-efficient, which can reduce electricity consumption and lower utility bills. Appliances are given a star rating based on how much energy they consume. More stars mean higher efficiency. The star system allows consumers to compare different models of the same type of appliance to see which one will be more energy-efficient. These energy-efficiency is determined by BEE in India.

5.ENERGY EFFICIENCY OF TRANSPORTATION: In today's world, transportation is not just about getting from one place to another. It's about how efficiently we do it. Vehicle efficiency refers to how well a vehicle uses energy to perform its task, whether it runs on petrol, electricity, compressed natural gas, hydrogen, or a combination of these. Vehicle efficiency is crucial because it affects

Environmental impact, Cost-Effectiveness, Energy Conservation, Long-Term Sustainability. Petrol vehicles are of high power and speed. Moderate fuel efficiency. Electric vehicles are best for urban driving due to regenerative braking in stop-and-go traffic. Hybrid vehicles will Combines an internal combustion engine and an electric motor for smooth performance.

6.SOLAR ENERGY: Electrical energy is often considered the backbone of modern civilization, powering everything from homes and industries to transportation systems and communication networks. Electric energy enables technological innovation, enhances productivity, and drives economic growth. Solar energy is generated from the sun's rays either through solar thermal systems. The world is facing an unprecedented energy crisis. With the increasing demand for energy and the depletion of fossil fuels, it has become imperative to explore alternative sources is solar energy, which has emerged as a clean, renewable, and sustainable energy source.

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INSTITUTION'S
INNOVATION
COUNCIL
(Ministry of Education Initiative)

13-02-2025

Event: Field/Exposure Visit for Problem Identification
Date: 12th February 2025 (10:00AM to 4:00PM)

Industry Visited: Sankhya Technologies, Visakhapatnam

Purpose: To gain real-time exposure to industrial practices and identify potential technical or process-related problems for academic or project-based research.

A group comprising faculty members and students visited Sankhya Technologies, a company known for its expertise in simulation-based solutions and model-driven software development. The visit aimed to expose students to live industrial environments, understand ongoing challenges, and identify practical problems that could be addressed through academic projects or research work.

Attendees:

- Faculty: Prof. G. Sudheer, Dr. Susheelatha

Students:

- Poreddy Sri Charitha Reddy (322103282079, 3CSM 2)

- Shanmukha Priya (322103282068, 3CSM 2)

- Relangi Sri Bhavya (322103210131, 3CSE 3)

- Boni Poojitha (322103282014, 3CSM 1)

- Athota Aishwaryaanjali (322103282006, 3CSM 1)

During the visit, students interacted with professionals, observed ongoing projects, and gained insights into real-world applications of software and systems engineering. The team identified a few key problem areas that may serve as potential topics for further study or final year projects. Overall, the visit was highly informative and helped bridge the gap between academic knowledge and industrial practices.

Faculty Coordinator

Gmail
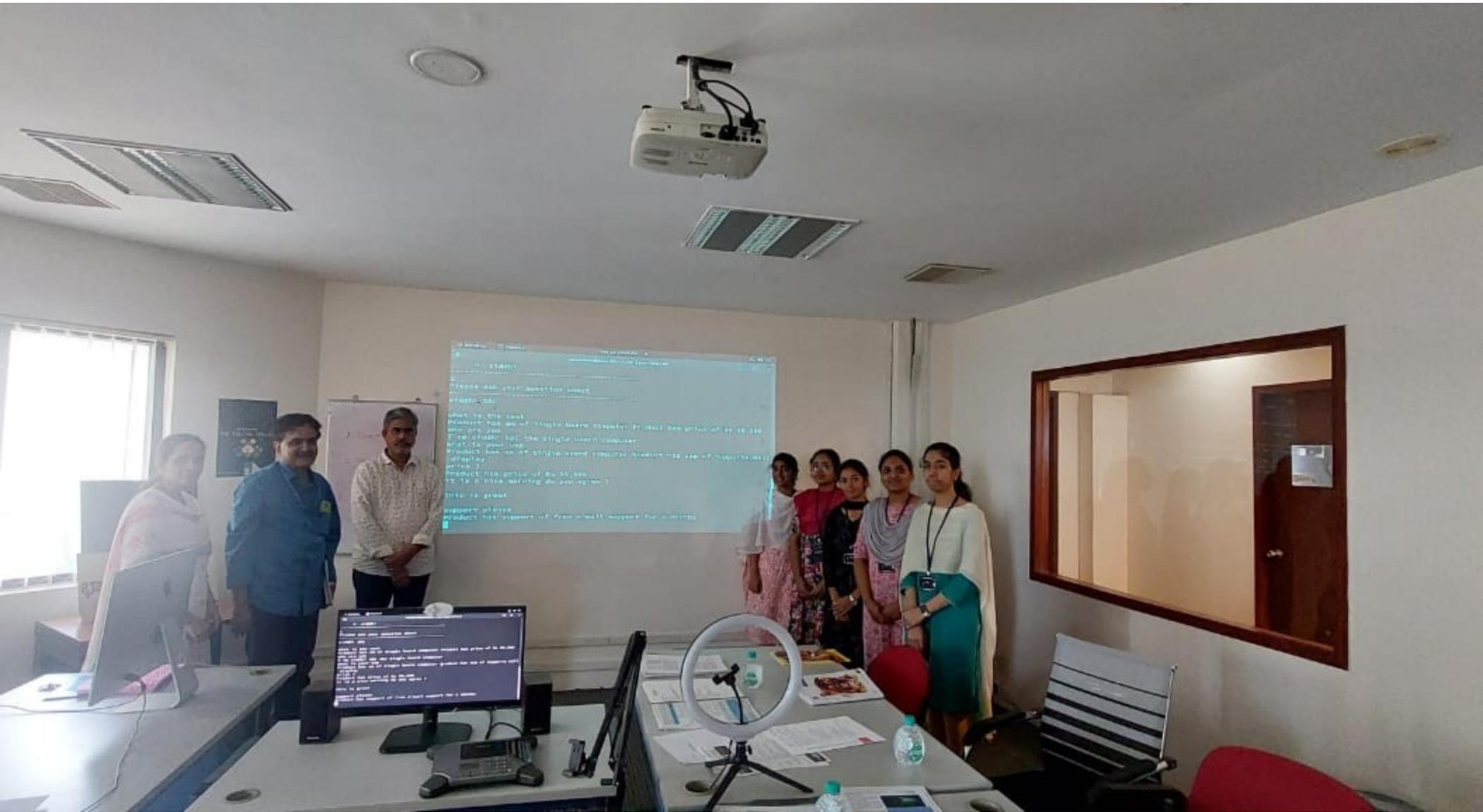
Laveti, Dr. Ganesh <ganeshlaveti2010@gvpcew.ac.in>

Series of Events - Science Week - 2025 - by Mathematical Sciences Club

1 message

klsprasad@gvpcew.ac.in <klsprasad@gvpcew.ac.in>   Mon, Feb 17, 2025 at 2:40 PM
Reply-To: "klsprasad@gvpcew.ac.in" <klsprasad@gvpcew.ac.in>
To: Faculty <faculty@gvpcew.ac.in>, Hods <hods@gvpcew.ac.in>
Cc: "Sudheer G." <g.sudheer@gvpcew.ac.in>, GVPCEW Principal <principal@gvpcew.ac.in>

Dear All,

Mathematical Sciences Club is organizing a series of events to celebrate the National Science Week - 2025, highlighting the theme "Empowering Indian Youth for Global Leadership in Science & Innovation for Viksit Bharat "of Department of Science and Technology, Govt. of India. These events are designed to empower young minds with scientific knowledge, inspire creativity and foster innovation.

Events:

1.   Science in Action: Demonstration (By the students of the Mathematical Sciences Club)
Event Date: 25-02-2025
Timings: 10.20 AM – 3.20 PM (4 Sessions)

2.   Ignite Innovators: Model Exhibition by Students (All students in Teams can participate)
Event Date: 27-02-2025
Timings: 2.00 PM to 4.30 PM.
Venue: Auditorium
Guidelines:
- A physical model is to be presented by the students during the designated time for the competition.
- Maximum number of students permitted in a team is 3.
 Registration Link: https://forms.gle/ULeCJcoTRfdYBsBr6
 Registration Deadline: on or before 04.00 PM, 20-02-2025.

Prizes:

- Attractive prizes will be awarded to the winners of Model Exhibition competition.
- e-Certificates of Participation will be provided to all participants.

Please encourage your students to participate in the above said 2nd Event.

Mathematical Sciences Club

--

Dr. A. SUSEELATHA

Assistant Professor

Department of Mathematics

Gayatri Vidya Parishad College of Engineering for Women

Visakhapatnam

India-530048.

MATHEMATICAL SCIENCE CLUB - SCIENCE WEEK CIRCULAR.pdf
63K

MATHEMATICAL SCIENCES CLUB

Empowering Minds in Exploring Thoughts

Ignite Innovators: Model Exhibition by Students

Date: 27-02-2025
Timings: 02:30 PM - 4:30 PM

S. No	Name of the Participant (As required on certificate)	Roll Number	Branch	Year of Study	Title of the Model (Description)	Signature
1.	S.Jaya Vaashini N.Navya Sri d.Triveni	32410321403g 32410321402 8 3241032140 24	EEE EEE EEE	1st 1st 1st	Hydraulic Lift	S.Jayatashini N.Navya Sri. L.Triveni
2.	G.Mallika Ch.Harshini	3241032100 56 3241032100 29	CSE-1 CSE-1	1st 18t	Phonenumber Tracker	G.Mallika ch.Harshini
3.	P.Sravani S.Deekshita P.Thanmayee	32410321017 0 3241032101 82 3241032101 69	CSE CSE CSE	1st 1st 1st.	Face emotion detection	Sravani Deekshita. P.Thanmayee

S. No	Name of the Participant (As required on certificate)	Roll Number	Branch	Year of Study	Title of the Model (Description)	Signature
(4)	k. Yashaswini	3241032101010 CSE		1st	Buzzer wire experiment	k. yashaswini
	k. Hemalatha	32410321008D	CSE	1st	wire walk challenge.	k. Hemalatha
	k. kirthika	32410321007A	CSE	1st		k. Kirthika
5.	Madhumita Palla	3241032101016	CSE	1st	Flood saftey method	Madhumita
	k. v.s. Jahnavi	32410321009I	CSE	1st		Jahnavi
6.	k. Hladhitha	32410321025	IT	1st	Automatic Fire Extinguisher	k.Hladhitha
	G. lepakshi	32410321015	IT	1st		G. lepakshi
	N. Lakshmi Prasanna	324103211057	IT	1st		N. Lakshmi Prasanna
7.	k. Satya Sri	32410328205	CSM	1st	E-Waste Management	Satya
	A. Sirisha	32410328202	CSM	1st		A. Naga Sirisha

MATHEMATICAL SCIENCES CLUB

Empowering Minds in Exploring Thoughs

Ignite Innovators: Model Exhibition by Students

Date: 27-02-2025

Timings: 02:30 PM - 4:30 PM

S. No	Name of the Participant (As required on certificate)	Roll Number	Branch	Year of Study	Title of the Model (Description)	Signature
8	B. Roshini	3241D3262023	CSM-1	1st	Purification of Rainwater	B. Roshini
	G. Pravalika	3241D326203?	CSM-1	1st		G.pravalika
	B. mrudula	3241D3282018	CSm-1	1st		B. mrudula
9	A. Prasanthi	3241D3282003	CSM-1	1st	Purification of Waste Water	A.Prasanth
	G. Manasa	3241D3282045	CSM -1	1st		G.Hanasa
10	R. Rishitha	3241D3214031	EEE	1st	WIRELESS Electicity Transmission	P.Rishitha
	S. Babyvaralakshmi	3241D3214036	EEE	1st		Svaralshmi
	k. Sivesh	3241D3214019	EEE	1st		K.Sivesh

S. No	Name of the Participant (As required on certificate)	Roll Number	Branch	Year of Study	Title of the Model (Description)	Signature
11	C.V. KAMALINI	32410321D020	ECE-I	I	LASER FENCING	CVKamalini
	G. THANMAIE	32410321D034	ECE-I	I	&	Thanmaie
	G.V.S. GEETHIKA RAO	32410321D033	ECE-I	I	MOISTURE, TEMP DETECTOR	Methila
12	K. Divyasri	324103219206l	CSM-I	I	Auvdino Powdered hand geesters	K. Divyasri
	M. Suguna	3241032192083	CSM-I	I		M. Suguna
	B. Swetha	324103292088	CSM-I	I		G. Swetha
13	CH. Naga Shivani	32210321002 7	CSE-I	III	Gas Sensor with Auvdino	Shivani
	CH. Sai Shehitta	32210321002 8	CSE-1	III		Snehita
	CH. Tejaswini	322103210026	CSE-1	III		Tejaswini
14	P. Asha Jyothi	322103292005	CSM-1	III	virtual science lab.	Asha Jyothi
	K. Subha Avi Patro	322103292048	CSM-1	III		Subha
	B. Chitta Sourodarya	322103292012	CSM-1	III		Sourodarya

MATHEMATICAL SCIENCES CLUB

Empowering Minds in Exploring Thoughts

Ignite Innovators: Model Exhibition by Students

Date: 27-02-2025

Timings: 02:30 PM - 4:30 PM

S. No	Name of the Participant (As required on certificate)	Roll Number	Branch	Year of Study	Title of the Model (Description)	Signature
15.	N. Pravallika	324103211119	ECE-2	1st year	Touch-switch Amplifier	N. Pravul.
	Y. chandini	324103212124	ECE-2	1st year		Y. chnd.
	V. Upeshini	324103212114	ECE-2	1st year		V. upeshini
	G. Srivalli					
	V. Devika	323103212035	ECE-2	2nd year		V. Devika
16.	D. Samatha	323103214035	ECE	2	GREEN BUILDING	D. Samatha
	B. Saroni	323103214034	ECE	2		B. Saroni
	I.					
	P. Rohini	323103214037	ECE	2		I. Rohini

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A Report on "Session on Accelerators/Incubation -Opportunities for Students & Faculties – Early-Stage Entrepreneurs"

13-04-2025

Event: Session on Accelerators/Incubation – Opportunities for Students & Faculties – Early-Stage Entrepreneurs

Organized by: GVP College of Engineering for Women (GVPCEW) in association with Institute Innovation Council (IIC)

Date: 10th April 2025

Participants: CSM Students

Resource Persons:

Dr. Ramadugu Praveen, Founder & CEO, Farm Vaidya AI Tech – Shared insights on an agriculture-based project for farmers developed using a multi-language AI model, aimed at addressing farmer challenges and enabling inclusive access to technology.

Dr. Manduvakurti Patnaik Giridhar, Founder, Dream Bot – Introduced the concept of a Kitchen Bot, an innovation in smart homes that supports efficiency, automation, and safety in day-to-day cooking tasks.

Dr. Tirumalesh Konatala, CEO, Data i2i – Delivered a session on entrepreneurship opportunities and internships, guiding students on bridging the gap between academics and industry through incubation support.

Objectives of the Session:

- To create awareness about accelerators and incubation facilities available for early-stage entrepreneurs.
- To inspire students and faculty to convert innovative ideas into viable start-ups.
- To provide exposure to real-world entrepreneurial journeys, challenges, and opportunities.

Session Highlights:

The session began with a formal welcome and introduction of the speakers.

- Dr. Praveen demonstrated how AI in agriculture can empower farmers through multilingual models that break language barriers and improve access to agri-tech solutions.
- Dr. Giridhar explained the development of the Kitchen Bot, highlighting the importance of innovation in household automation and how incubation support accelerates product development.
- Dr. Tirumalesh emphasized the value of entrepreneurship, incubation ecosystems, and internships for students to gain real-world exposure, mentorship, and networking opportunities.
- Speakers collectively underlined the importance of early-stage incubation, idea validation, and prototype development to achieve business readiness.

Outcome of the Session:

- The session inspired participants to think about innovation-driven entrepreneurship.
- Students and faculty understood the pathways for incubation support and funding opportunities.
- Practical examples (Agri-Tech, Kitchen Bot, and Data-driven Start-ups) motivated the audience to develop solutions for societal needs.
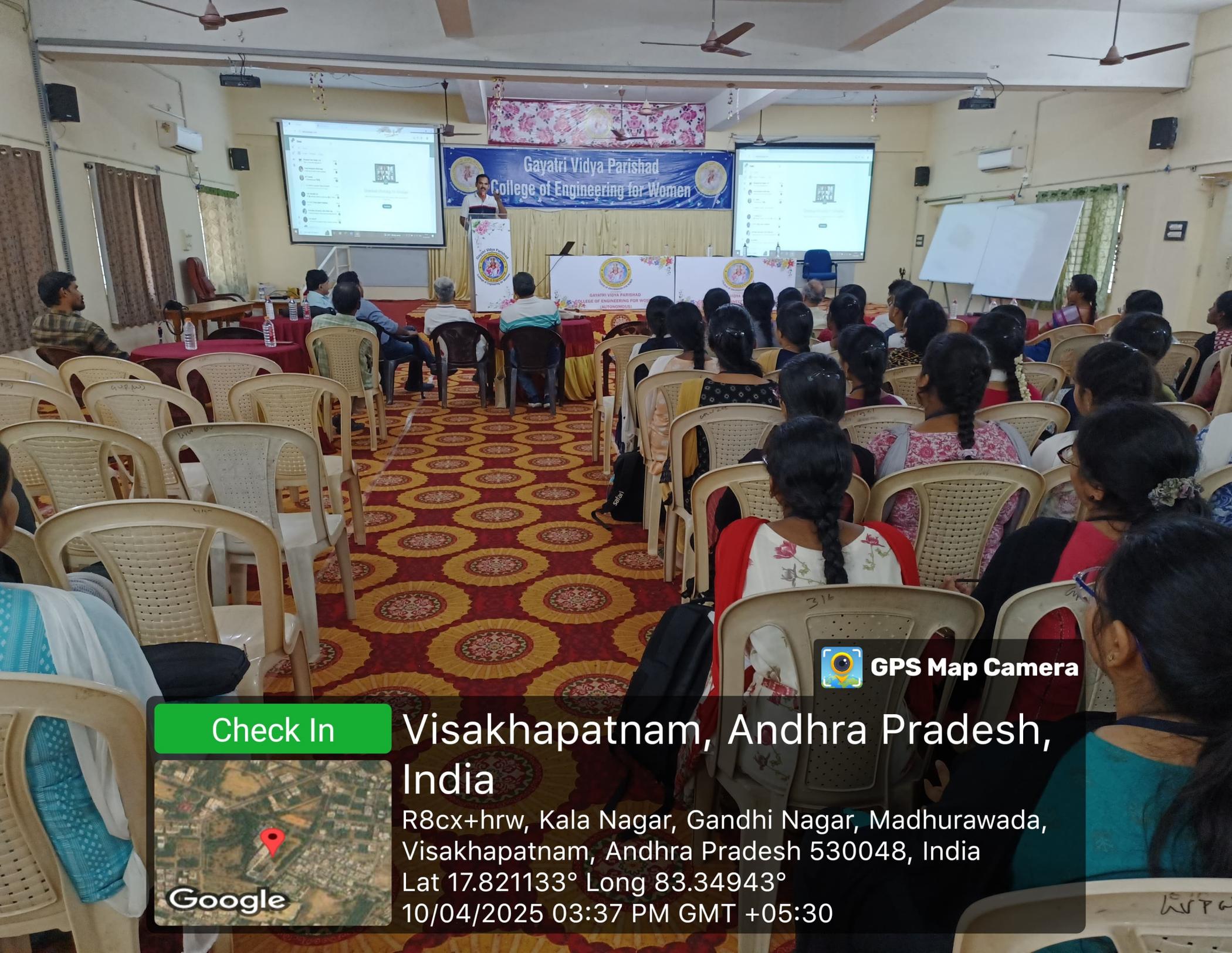
Institute Name:
Gayatri Vidya Parishad College of Engineering for Women

Title of the Innovation/Prototype:
AI-Based Predictive Control for Enhanced Regenerative Braking in Electric Vehicles

Team Lead Name:	Team Lead Email:	Team Lead Phone:	Team Lead Gender:
kudumula komali	**kudumulakomali@gmail.com**	**8897931924**	**Female**

FY of Development:	Developed as part of:	Innovation Type:	TRL LEVEL:
2024-25	**Academic Requirement/Study Project**	**Product**	**4**

MRL Level:
MRL 5: Capability to produce prototype components in a production relevant environment

IRL Level:
IRL 1: Basic Research (Need Identification & Peer Review Publications) & Completed First-Pass Business Model Canvas (BMC)

Theme:
Smart Vehicles/ Electric vehicle/ Electric vehicle motor and battery technology.,Manufacturing,

Define the problem and its relevance to today's market / sociaty / industry need:
Conventional regenerative braking systems in electric vehicles use fixed control strategies, resulting in poor energy recovery and inefficiencies under varying driving conditions. This project proposes an AI-driven braking system that dynamically adjusts the power converter's duty ratio using real-time sensor data like brake pressure, SOC, and input voltage. It maximizes energy recovery, prevents overcharging, and improves vehicle efficiency. With the rapid shift toward electric mobility, this solution aligns with market demands for sustainable, intelligent transport technologies. It supports reduced emissions, enhances battery life, and lowers operating costs, addressing both industrial innovation and societal needs for cleaner, energy-efficient transportation systems.

Describe the Solution / Proposed / Developed:
The proposed solution is an AI-based regenerative braking system that intelligently controls a bidirectional DC-DC converter to optimize energy recovery in electric vehicles. Using real-time sensor inputs—brake pressure, supercapacitor state of charge (SOC), and input voltage—the AI model predicts and adjusts the converter's duty ratio to maximize energy capture during braking. The system is simulated in MATLAB/Simulink for optimization and later implemented on a Jetson Nano board for real-time control. By preventing overcharging and improving energy utilization, the solution enhances braking efficiency, extends battery life, and supports sustainable transport. It is adaptable for various EV types, ensuring broad applicability.

Explain the uniqueness and distinctive features of the (product / process / service) solution:

The uniqueness of the proposed solution lies in its AI-powered predictive control, which replaces traditional fixed-rule strategies in regenerative braking. Unlike conventional systems, it dynamically adjusts the power converter's duty ratio based on real-time sensor data, enabling adaptive energy recovery under varying driving conditions. Implemented on the Jetson Nano board, it ensures fast, real-time processing for high-performance braking scenarios. The system intelligently prevents overcharging and underutilization of the supercapacitor, enhancing safety and efficiency. Its scalability across different EV types and integration of machine learning for continuous improvement make it a cutting-edge, flexible, and future-ready solution for sustainable transportation.

How your proposed / developed (product / process / service) solution is different from similiar kind of product by the competitors if any:

The proposed AI-based regenerative braking system stands apart from existing solutions by replacing static, rule-based controls with dynamic, data-driven optimization. While competitors typically rely on fixed thresholds and conventional microcontrollers, our system uses real-time sensor inputs and machine learning algorithms to predict the optimal duty ratio of the power converter. Implemented on the Jetson Nano platform, it offers high-speed, intelligent control even during rapid braking events. Additionally, the system ensures better energy recovery, prevents overcharging, and adapts to varying driving conditions—capabilities often lacking in existing commercial solutions. Its modular design makes it scalable for diverse electric vehicle platforms.

Is there any IP or Patentable Component associated with the Solution?:
No

Has the Solution Received any Innovation Grant/Seefund Support?:
No

Are there any Recognitions (National/International) Obtained by the Solution?:
No

*Is the Solution Commercialized either through Technology Transfer or Enterprise Development/Startup?:
No

Had the Solution Received any Pre-Incubation/Incubation Support?:
No

Video URL:
https://www.mediafire.com/file/o0a8zmoaa40e06c/eectrical_vehicle_video.mp4/file

Innovation Photograph:
View File

INSTITUTION'S INNOVATION COUNCIL
MOE'S INNOVATION CELL

Institute Name:
Gayatri Vidya Parishad College of Engineering for Women

Title of the Innovation/Prototype:
IoT-Based Real-Time Condition Monitoring of Insulators Using the YOLO Object Detection Model

Team Lead Name: Korupolu Susritha	Team Lead Email: Korupolususritha53@gmail.com	Team Lead Phone: 9032205561	Team Lead Gender: Female
FY of Development: 2024-25	Developed as part of: Academic Requirement/Study Project	Innovation Type: Product	TRL LEVEL: 4

MRL Level:
MRL 1: Basic manufacturing implications identified

IRL Level:
IRL 1: Basic Research (Need Identification & Peer Review Publications) & Completed First-Pass Business Model Canvas (BMC)

Theme:
IoT based technologies (e.g. Security & Surveillance systems etc),

Define the problem and its relevance to today's market / sociaty / industry need:
Insulators in high-voltage transmission systems are prone to damage from environmental stress, leading to failures, power outages, and safety hazards. Traditional inspection methods are manual, time-consuming, and error-prone. This project proposes a real-time condition monitoring system using IoT sensors and the YOLO object detection model to automatically detect insulator defects. It offers a smart, efficient, and cost-effective solution for predictive maintenance. This is highly relevant to the current power industry's shift toward smart grids and digitalization, ensuring grid reliability, public safety, and reduced operational costs. The system supports Industry 4.0 goals and contributes to sustainable infrastructure management.

Describe the Solution / Proposed / Developed:
The proposed solution uses IoT-enabled cameras or drones combined with the YOLO object detection model to monitor the condition of insulators in real time. Images or video streams of insulators are captured and analyzed using YOLO to detect defects such as cracks, contamination, or damage. Once a fault is identified, the system sends instant alerts to maintenance teams through cloud-based dashboards or mobile apps. This enables remote, automated, and continuous monitoring, reducing the need for manual inspections. The solution supports predictive maintenance, enhances grid reliability, ensures timely fault detection, and aligns with the digital transformation goals of the power sector.

Explain the uniqueness and distinctive features of the (product / process / service) solution:

The uniqueness of this solution lies in its integration of IoT technology with the YOLO deep learning model for real-time, automated detection of insulator faults. Unlike traditional manual or periodic inspections, this system provides continuous, remote monitoring with instant alerts, enabling predictive maintenance. YOLO's fast and accurate object detection ensures even minor defects are identified early. The use of edge devices or drones makes it scalable for remote and hard-to-reach areas. This solution minimizes human error, reduces operational costs, and enhances safety.Its real-time data analytics and cloud integration make it a smart, adaptive, and industry-ready innovation in power infrastructure monitoring.

How your proposed / developed (product / process / service) solution is different from similiar kind of product by the competitors if any:

The proposed solution stands out from similar products by combining IoT-based image acquisition with the YOLO object detection algorithm for real-time, on-site fault analysis of insulators. While many existing solutions rely on manual image inspection or scheduled drone surveys, this system offers continuous, automated monitoring with instant alert generation. Unlike competitors using slower or less accurate detection models, YOLO ensures high-speed and precise fault identification. Additionally, the system's cloud integration, scalability to remote areas, and support for predictive maintenance give it a competitive edge. It reduces downtime, enhances grid reliability, and is a cost-effective, intelligent alternative for modern power systems.

Is there any IP or Patentable Component associated with the Solution?:
No

Has the Solution Received any Innovation Grant/Seefund Support?:
No

Are there any Recognitions (National/International) Obtained by the Solution?:
No

*Is the Solution Commercialized either through Technology Transfer or Enterprise Development/Startup?:
No

Had the Solution Received any Pre-Incubation/Incubation Support?:
No

Video URL:
https://www.mediafire.com/file/b6n76wnqup4zonn/WhatsApp+Video+2025-07-04+at+18.00.37.mp4/file

Innovation Photograph:
View File

Institute Name:
Gayatri Vidya Parishad College of Engineering for Women

Title of the Innovation/Prototype:
AIDDM: AI-Powered Interior Design Diffusion Model for Generating Aesthetic and Context-Aware Room Designs

Team Lead Name: Raga Deepika	Team Lead Email: ragadeepika040@gmail.com	Team Lead Phone: 6303837348	Team Lead Gender: Female
FY of Development: 2024-25	**Developed as part of:** **Independent Assignment/Non-academic Study Project**	**Innovation Type:** **Product**	**TRL LEVEL:** **5**

MRL Level:
MRL 4: Capability to produce the technology in a laboratory environment

IRL Level:
IRL 4: Prototype Low-Fidelity Minimum Viable Product (MVP): "Low-fidelity" - A representative of the component or system that has limited ability to provide anything but initial information about the end product.

Theme:
ICT, cyber-physical systems, Blockchain, Cognitive computing, Cloud computing, AI & ML.,Software - Web App Development,Smart Cities,

Define the problem and its relevance to today's market / sociaty / industry need:
Interior design generation is often time-consuming, costly, and lacks customization. Designers and consumers face challenges in visualizing how furniture styles fit diverse room contexts. There's a growing market need for intelligent, AI-driven solutions that provide rapid, personalized, and aesthetically pleasing design options. The demand spans real estate, retail, education, and smart home applications, where efficient and aesthetic visualization is essential.

Describe the Solution / Proposed / Developed:
Our solution, AIDDM (Aesthetic Interior Design Diffusion Model), is an AI-powered diffusion model trained on curated multi-style room datasets. It generates room designs that align with user-specified styles and context images using a ControlNet architecture. Built with PyTorch and Hugging Face Diffusers, it leverages conditioning inputs to retain spatial layouts while creatively synthesizing style-compliant interiors. The model supports personalization, fast prototyping, and scalable deployment.

Explain the uniqueness and distinctive features of the (product / process / service) solution:
AIDDM integrates ControlNet with Stable Diffusion to generate context-aware room designs while preserving spatial constraints and user intent. Unlike traditional models, it uses real-world style-room pair datasets and supports caption-based and conditioning-image-based generation. It's customizable across styles, scalable for industry use, and optimized for aesthetic coherence. The training pipeline is modular, supports GPU acceleration, and is compatible with emerging AI benchmarks.

How your proposed / developed (product / process / service) solution is different from similiar kind of product by the competitors if any:
Unlike generic generative models, AIDDM is tailored for interior design, trained on domain-specific datasets with a unique folder-style hierarchy. It combines functional realism with aesthetic fidelity using control images and semantic captions. Competing tools like Planner5D or IKEA's scene visualizers lack AI-driven generation from arbitrary images. AIDDM bridges this gap, offering higher realism, automation, and customization.

Is there any IP or Patentable Component associated with the Solution?:
No

Has the Solution Received any Innovation Grant/Seefund Support?:
No

Are there any Recognitions (National/International) Obtained by the Solution?:
No

*Is the Solution Commercialized either through Technology Transfer or Enterprise Development/Startup?:
No

Had the Solution Received any Pre-Incubation/Incubation Support?:
No

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