



THIAGARAJAR COLLEGE OF ENGINEERING

(A GOVT AIDED AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY)



DEPARTMENT OF MECHATRONICS ENGINEERING

2024 - 2025



WHERE
PRECISION
MEETS
POWER

FUSION

ABOUT THE DEPARTMENT

Vision : Be a globally renowned school of engineering in Mechatronics

Mission: As a department, we are committed to

- Develop ethical and competent engineers by synergizing world class teaching, learning and research
- Establish state-of-art laboratories and to provide consultancy services to fulfil the expectations of industry and needs of the society
- Inculcate entrepreneurial qualities for creating, developing and managing global engineering ventures
- Motivate the students to pursue higher studies and research

Mechatronics Engineering blends mechanical engineering, electronics, computer science, and control systems to create smart, automated systems. From factory robots to medical devices and consumer tech, it powers the intelligent solutions shaping our world. As industries evolve, mechatronics stands at the forefront — driving innovation and defining the future of engineering.

The Mechatronics Engineering department at TCE has experienced faculty and modern labs that support both learning and research. The department uses innovative teaching methods and practical training to help students understand real-world applications. With strong connections to industries, students get valuable exposure and opportunities to grow in their careers.

Program Educational Objectives (PEOs)

PEO 1: The programme will prepare graduates to synergistically integrate mechanical engineering with electronic and intelligent computer control in the design and manufacture of industrial products and processes.

PEO 2: The programme will prepare graduates with strong team skills to solve multi disciplinary problems using Mechatronics approach.

PEO 3: The programme will prepare graduates with an understanding of their ethical and social responsibility.

GRATITUDE IN EVERY GEAR

In every successful department, behind every inspired student, and within every milestone reached—there lies a guiding force. For the Department of Mechatronics Engineering, that force has been Dr. Palaninatharaja Sir. Serving as the Head of the Department from 2017 to 2025 and as the Principal of Thiagarajar College of Engineering from 2021 to 2024, Sir's leadership has not just steered us—it has transformed us. With an unwavering commitment to excellence, innovation, and holistic development, he embedded the values of precision, passion, and perseverance into the DNA of our department. Under his guidance, we witnessed remarkable strides in academics, research, infrastructure, and student development. His vision elevated Mechatronics at TCE into a powerhouse of interdisciplinary learning and futuristic thinking. Whether it was enabling innovative labs, encouraging student-led projects, or simply being the calm mind behind countless challenges, he stood as both our compass and our backbone. This magazine, and every achievement it showcases, carries his imprint. We thank you, Sir—not just for the roles you played, but for the impact you made.

You didn't just lead us—you engineered a legacy.

With heartfelt gratitude,

Team Fusion

Department of Mechatronics Engineering

Thiagarajar College of Engineering



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Welcoming Leadership



With great pride and anticipation, we welcome Dr. L. Ashok Kumar as the new Principal of Thiagarajar College of Engineering (TCE), Madurai. A visionary academic leader with over 24 years of experience. Dr. Ashok Kumar's illustrious career includes numerous accolades such as the Outstanding Engineer Award 2024 by the Institution of Engineers (India) and the BHAVAN Fellowship by the Indo-US Science & Technology Forum, which led to his postdoctoral research at San Diego State University, California. He holds a strong academic background in Electrical and Electronics Engineering, complemented by an M.E. in Electrical Machines and an MBA in HRM. With over 24 funded projects worth ₹12.5 crores, 27 product developments (23 transferred to industries), and guidance to numerous Ph.D. and postgraduate scholars, Dr. Ashok Kumar exemplifies research-driven leadership. Under his guidance, TCE is poised for a new era of academic and technological excellence. Recent achievements like the ₹45 LPA Amazon placement offer for two students highlight the institution's growing prominence under his leadership. We look forward to reaching new milestones together under Dr. L. Ashok Kumar sir's inspiring vision.

HOD'S MESSAGE



I am truly delighted to witness the launch of our student magazine, a vibrant reflection of the talents, creativity, and perspectives within our Mechatronics community. Our department's multidisciplinary and systems approach has fostered an environment where innovation thrives, leading to numerous accolades and accomplishments. This publication is a proud testament to the spirit of innovation, dedication, and passion that defines our students and faculty members. It is heartening to see how ideas have been brought to life through thoughtful articles, showcasing technical knowledge and our community's artistic and intellectual depth. I extend my heartfelt gratitude to all the students and faculty who have contributed their time, effort, and insights. Your valuable contributions have enriched this magazine, offering diverse viewpoints and experiences that truly capture the dynamic world of Mechatronics. Every piece within these pages highlights the collaborative spirit and curiosity that drive our department forward. I hope this magazine inspires readers to explore, innovate, and challenge themselves continually. May it inspire you to push limits and strive for excellence in the exciting field of Mechatronics. I wish this spirit of creativity, innovation, and collaboration continues to flourish in our community, and I look forward to seeing the impact it will have on the future of Mechatronics.

CHIEF EDITOR'S MESSAGE



It is with great excitement and pride that we present to you this edition of Fusion, the official magazine of the Department of Mechatronics Engineering. This magazine is more than just a collection of articles, it's a reflection of the creativity, hard work, and innovation that define our department. Over the past year, our students and faculties have been at the forefront of academic excellence, technical innovation, and collaborative spirit. From hosting national-level events like Synergicz 2.0 to showcasing groundbreaking student projects and participating in prestigious competitions, we have consistently pushed boundaries and redefined what's possible. This edition captures the essence of our journey highlighting achievements, sharing knowledge, and celebrating the vibrant culture of our department. You'll find a blend of technical write-ups, creative expressions, event highlights, and student contributions that showcase the diverse talents within our community. We extend our heartfelt gratitude to every student, staff member, and contributor who made this edition possible. Your support, guidance, and enthusiasm have helped us bring this vision to life. As you turn these pages, we hope you feel inspired, informed, and connected to the spirit of Mechatronics. Here's to many more milestones and memories to come.

EDITORS

CHIEF EDITOR



DR. S. JULIUS FUSIC
ASSISTANT PROFESSOR



S. ANGURAJ
IV YEAR



T. THANGA TAMIL SELVAN
IV YEAR



PRIYADHARSHINI G
III YEAR



RANJANA S
III YEAR



SRIDHARA PRASATH S
III YEAR

Meet the team!



AKSHAYA SWETHA S
II YR



RAJAPRIYA D
II YR



JENITA KAMALI J A
II YR



SHRUTHI M
II YR



RAMASHRI T
II YR



RAJI R S
II YR



SARAVANAN M
II YR



PERINBA MANI KUMAR E
II YR



HARISH J H
II YR

ASSOCIATION HEAD



ASSISTANT PROFESSOR
Dr. S. JULIUS FUSIC



ANGURAJ S
IV YEAR



DEVIKA C G
IV YEAR

GENERAL SECRETARY

GENERAL TREASURER



THANGA TAMIL SELVANT
IV YEAR



AISHWARYA M
IV YEAR



SRIDHARA PRASATH S
III YEAR



PRIYADHRSHINI G
III YEAR

JOINT SECRETARY

JOINT TREASURER



RAJI G
III YEAR



ARJUN V
III YEAR



RANJANA S
III YEAR



HARI SARAVANAN C P
III YEAR



ATCHAYA
III YEAR



MARUTHAPPAN N
III YEAR

EVENT COORDINATORS

REPORTER



HEMALATHA M
III YEAR

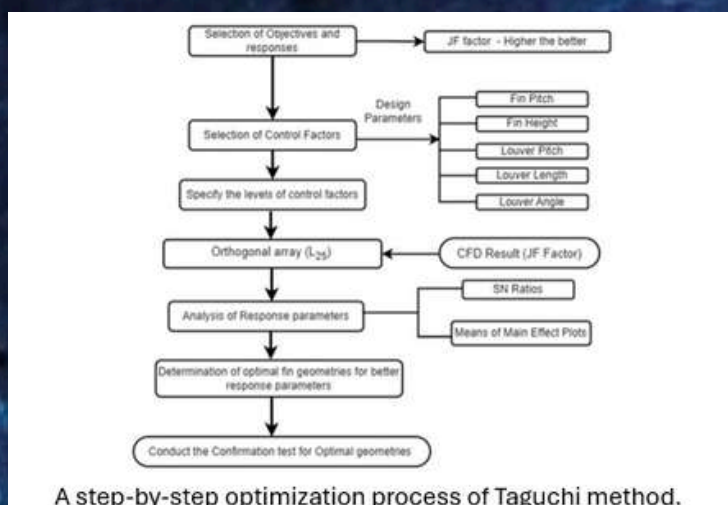


FACULTY CONTENT

Optimization of Louver Fin Geometries for Miniature Microchannel Condenser by Taguchi and CFD Method

Authors: S. Satheesh Kumar, G. Kumaraguruparan, T.S. Senthilkumar

The work focuses on optimization of louver fin geometries to improve thermal hydraulic performance of a multilouvered microchannel heat exchanger using CFD. Five geometries considered are fin pitch, fin height, louver pitch, louver angle, and louver length. Airside performance is analyzed using airside heat transfer coefficient and pressure drop through Colburn-j factor and f factor for Reynolds numbers 100–600. Two factors are studied for individual and combined effects. Literature shows increase in Reynolds number increases Colburn-j (improving heat transfer) but also increases f factor (raising pressure drop). The aim is to maximize heat transfer and minimize pressure drop, using JF factor to combine both. Taguchi analysis reveals fin pitch is the most influential, contributing 94.33% to JF factor. Taguchi-confirmation test shows 5.97% improvement in JF factor over initial design. CFD comparison shows Colburn-j and JF factor improvements of 24.42% and 18.23%, respectively. Regression models predict performance with adj. R^2 value of 99.05% for Reynolds numbers 100–850.



Cost-efficient design and optimization of robotic assembly lines using a non-dominated sorting genetic algorithm framework

Authors: R. Naresh, G. Kanagaraj JayantGiri Vincent F.Yu, Amanullah Fatehmulla & Saurav Mallik

Received: 18 May 2024; Accepted: 8 January 2025

Published online: 18 March 2025

The research presents a generalized framework leveraging meta-heuristic algorithms to solve inverse kinematics, 3D trajectory planning, and obstacle avoidance for redundant robotic manipulators in dynamic environments. Meta-heuristic algorithms offer robust solutions by exploring high-dimensional search spaces and avoiding local optima, enhancing computational efficiency and enabling real-time decision-making. The proposed framework, implemented in MATLAB's app designer, supports any type of robot manipulator with customizable trajectories and allows the use of any meta-heuristic algorithm. It was tested with six different algorithms and evaluated for its ability to generate 3D paths, follow trajectories, and adapt to dynamically changing environments. Simulations demonstrated robust, collision-free performance in workspaces with moving obstacles.

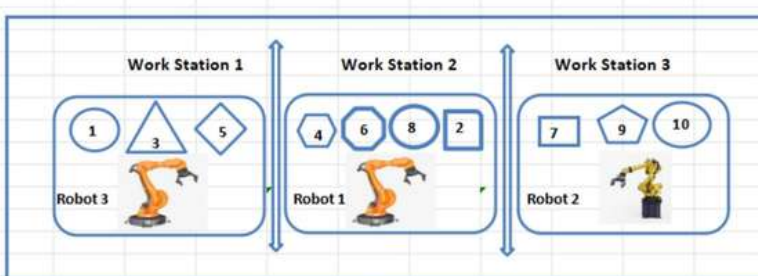


Fig. 4. Illustration of solution representation.



Self-Adaptive Learning PSO-Based Path Planning for Mobile Robots Using 2D Lidar

Authors: Julius Fusic S and Sitharthan R.

Published : 2024

This research introduces an Improved Self-Adaptive Learning Particle Swarm Optimization (ISALPSO) algorithm for efficient path planning in mobile robots operating in logistics applications. Leveraging 2D Lidar data and Hector SLAM within the ROS framework, the system constructs binary occupancy grids to model complex environments. The ISALPSO algorithm dynamically adjusts parameters like inertia weight, mutation rate, and learning coefficients to avoid obstacles and optimize path length, smoothness, and computation time.

Key contributions include:

- Development of a Lidar-based SLAM navigation system.
- Integration of ISALPSO for real-time path prediction with adaptive behavior.
- Validation through simulations across four environments using MATLAB and hardware implementation on Quanser Kobuki robots.
- Demonstrated superior performance over five PSO variants in terms of accuracy, convergence speed, and violation-free navigation.

The proposed method proves highly effective for smart logistics by ensuring obstacle-free, optimized navigation in complex and dynamic environments.



Quantum Computing and the Majorana Chip

Author: Mr.S.Parthasarathi

Quantum computing is a new and powerful approach to computation that uses the principles of quantum mechanics to process information. Unlike traditional computers that use bits (which can be either 0 or 1), quantum computers use qubits, which can be in a state of 0, 1, or both at the same time, thanks to a property called superposition. This allows quantum computers to perform certain types of calculations much faster than classical computers.

One of the major challenges in quantum computing is keeping qubits stable and free from errors. This is where the Majorana chip comes in. Majorana particles are special because they are their own antiparticles. In certain conditions, these particles can be used to create qubits that are more stable and less affected by noise. These are called topological qubits, and they have the potential to solve the problem of decoherence that affects most quantum systems today.

Researchers, including teams at Microsoft and other institutions, are working on using Majorana zero modes to build these kinds of chips. Although the technology is still in the experimental stage, the idea is promising. If successful, Majorana-based chips could make quantum computers more practical and reliable in the future.



Industry 5.0: Transforming Smart Manufacturing

Author: Dr.H.Ramesh

Industry 5.0 represents a shift where humans and smart technologies like AI, IoT, and robotics work together to create more personalized, sustainable, and resilient manufacturing. Unlike previous revolutions that focused on automation, Industry 5.0 emphasizes human-centric design, valuing human creativity alongside machine efficiency. Sustainability is deeply integrated by aligning with the UN's Sustainable Development Goals and adopting the Triple Bottom Line approach. The COVID-19 pandemic highlighted the need for resilient supply chains, pushing industries to build robust systems. Human workers are seen as assets, not resources, with technology enhancing their abilities instead of replacing them. This collaboration leads to smarter, more adaptive production processes. Industry 5.0 aims for sustainable growth while prioritizing social value and environmental responsibility. It envisions a future where technology truly serves people, empowering innovation and resilience. Ultimately, Industry 5.0 is about harmonizing human and machine strengths to shape a better, more sustainable industrial future.

Key principles:

- Sustainability
- Resilience
- Human-Centric

Industry 5.0 redefines manufacturing by blending human creativity with advanced technology, focusing on sustainability, resilience, and personalization. It envisions a future where technology empowers people and drives meaningful, responsible growth.



Automated license plate authentication framework using multi-view vehicle images

Authors: M.A. Ganesh, S. Saravana Perumaal, and S.M. Gomathi Sankar

Published in: March 22, 2024

This paper introduces a robust framework for real-time detection of Fake License Plates (FLP), designed to operate efficiently on edge devices. The research highlights the following

Key contributions:

1. Comprehensive License Plate Database: A curated database of 547 Indian cars serves as the foundation for the study.
2. Diverse Image Dataset: The framework leverages an extensive dataset comprising 3173 images across 8 distinct classes.
3. Innovative Ensemble Model: An ensemble model capable of recognizing vehicle make and model from frontal, rear, and side images ensures enhanced accuracy.
4. Multi-View Authentication: A unique framework authenticates license plates using inputs from multiple views, significantly improving FLP detection accuracy.

The ensemble model, with a compact size of 303.2 MB, achieves an impressive 89% accuracy. The lightweight and memory-efficient Easy OCR is employed for license plate recognition, enabling seamless implementation on edge devices. The full framework occupies a modest 308 MB, ensuring practical deployment. The results demonstrate the efficacy of this approach, particularly in leveraging side image recognition, which proves crucial in enhancing FLP identification. This innovative framework presents a significant step forward in real-time vehicle authentication systems. This research exemplifies how cutting-edge technology can address real-world challenges, ensuring accuracy and efficiency while being resource-conscious.

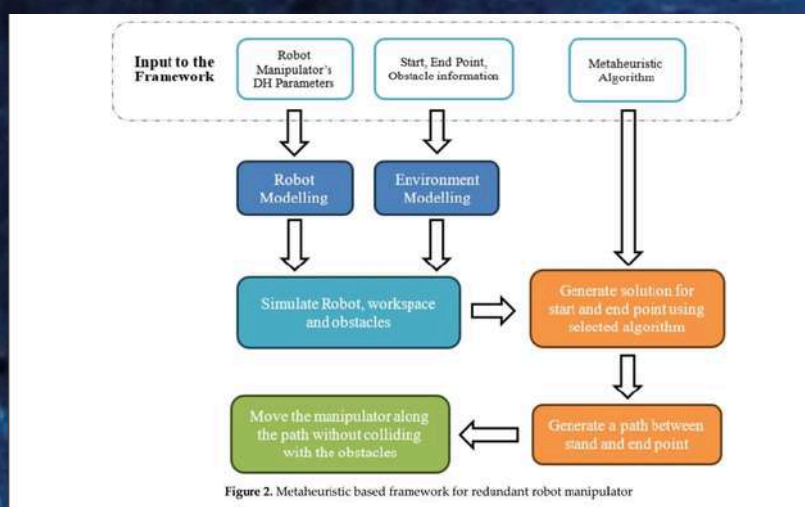


Adaptive Meta-heuristic Framework for Real-time Dynamic Obstacle Avoidance in Redundant Robot Manipulators

Authors: Sheik Masthan Shahul Abdul Rahim, Kanagaraj Ganesan and Mohammed Shafi Kundiladi

Published: 1st July 2024

The research presents a generalized framework leveraging meta-heuristic algorithms to solve inverse kinematics, 3D trajectory planning, and obstacle avoidance for redundant robotic manipulators in dynamic environments. Meta-heuristic algorithms offer robust solutions by exploring high-dimensional search spaces and avoiding local optima, enhancing computational efficiency and enabling real-time decision-making. The proposed framework, implemented in MATLAB's app designer, supports any type of robot manipulator with customizable trajectories and allows the use of any meta-heuristic algorithm. It was tested with six different algorithms and evaluated for its ability to generate 3D paths, follow trajectories, and adapt to dynamically changing environments. Simulations demonstrated robust, collision-free performance in workspaces with moving obstacles.



Development of AgNPs-TEMPO Oxidized Cellulose Composite from Jackfruit Peduncle Waste for Thermal Management in Biomedical Electronics

Authors: M.M.Devarajan

This study presents a sustainable method for fabricating a hybrid AgNPs–TEMPO-oxidized cellulose strands (TOCS) composite using jackfruit peduncle (JFP) waste as a cellulose source. The process involves water retting, acidified chlorination, alkaline treatment, acid hydrolysis, and TEMPO oxidation, followed by in-situ silver nanoparticle synthesis.

The resulting composite, with cellulose strands (27.3 μm) embedded with spherical AgNPs (16.3 nm), exhibited thermal stability up to 269°C and strong antibacterial activity (15.2 mm inhibition zone against *E. coli*). Carboxylation from TEMPO oxidation enhanced AgNPs loading and dispersion.

A non-solvent vacuum filtration and hot/cold pressing technique was used to fabricate paper substrates with excellent properties:

- Tensile strength: 65 ± 2 MPa
- Thermal conductivity: 5.8 ± 0.2 W/m·K
- Electrical resistivity: 0.0575 K Ω ·m

Characterization via FE-SEM, XRD, FT-IR, EDS, TGA, and UV-Vis confirmed structure, crystallinity, and AgNP distribution. This eco-friendly composite is highly suitable for biomedical electronic thermal management, offering a green alternative for applications such as wearable sensors and electronic skins.



Offline Based On Field Fruit Ripeness Detection System

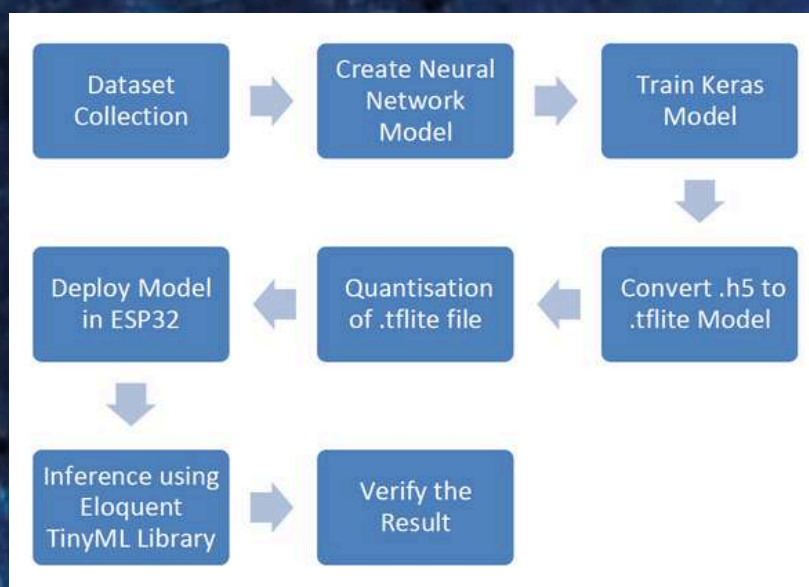
Author: S.Rajkumar

This study proposes an offline, on-field fruit ripeness detection system using a CNN-based machine learning model integrated with an ESP32 camera. Datasets for apple, orange, and banana were collected from Kaggle and Chrome, and a multi-class CNN model was developed, initially achieving 92% accuracy. Due to ESP32 memory limitations, the model was optimized for apple detection alone, achieving near 100% accuracy with a reduced model size of 273 KB.

Key highlights of the system include:

- Use of ESP32-CAM for low-cost, on-field deployment.
- Real-time fruit ripeness detection without internet dependency.
- High precision achieved through model optimization techniques (Lambda layer and TensorFlow Lite conversion).

The system was programmed via Arduino IDE, utilizing TinyML libraries for lightweight inference. Characterization involved training accuracy/loss graphs, model size reduction, and real-time predictions via a web server. This approach demonstrates significant potential to improve agricultural productivity by assisting farmers in optimal harvesting, reducing food waste, and minimizing costs associated with manual inspection.



Deep Learning-Based Prediction of Flank Wear During Turning of EN8 Steel Using Cutting Force Signals

Author: Dr.M.Rajalakshmi

Introduction:

EN8 steel, commonly used for shafts and gears, poses tool wear challenges during turning. Continuous contact causes flank wear, affecting surface finish and dimensional accuracy. Traditional monitoring is either manual or expensive. This study offers a deep learning-based approach for real-time tool condition monitoring using cutting force signals.

Key Results:

- The LSTM model showed superior accuracy, leveraging its strength in sequential data analysis.
- Deep learning outperformed traditional regression in capturing complex, non-linear patterns in force signals.
- The system enables real-time predictive maintenance, minimizing downtime and enhancing efficiency.

Conclusion:

Deep learning offers a scalable, real-time solution for flank wear prediction in machining. This AI-driven system paves the way for intelligent, cost-effective, and reliable manufacturing.





DEPARTMENT HIGHLIGHTS

BEST OUTGOING STUDENT

ANGURAJ



I'm Anguraj, a final-year student from a humble family in Pollachi, carrying not just responsibilities but also big dreams. My college life has been a story of persistence, growth, and deep involvement made possible through scholarships from the SDF Foundation and Schaeffler Hope Foundation. At the start of my journey, I had financial constraints that I couldn't afford the hostel accommodation. I stayed in a private room and managed my own cooking and daily tasks. That experience shaped my resilience and independence from day one. In my first year, I joined NCC to build discipline and physical fitness, and I became actively involved in cultural clubs for creative expression and fun. I was elected class representative, maintaining strong peer relationships while also topping my academics. These early days laid the foundation for everything that followed.

Over the years, I embraced leadership roles across every facet of campus life:

- Company Sergeant Major in NCC, where I built courage, leadership, and team coordination.
- Overall Organising Secretary of the College Cultural Association – organizing 60+ events, learning every aspect of event management from the ground up.
- General Secretary of the Mechatronics Department Association – focusing on student development and technical growth.
- Secretary of ISHRAE TCE Student Chapter – promoting excellence in HVAC and engineering practices.
- Sports Captain of the Mechatronics Sports Team – leading with consistency and competitive spirit.
- Finalist at Smart India Hackathon 2023 – solving real-time societal problems as part of a national-level innovation challenge.
- Chief Financial Officer (CFO) at Ewin Labs – our student startup, where I explored entrepreneurship and financial planning.

My heartfelt thanks to the Alumni Association of TCE for providing free lunch support during difficult times it was more than just a meal, it was encouragement. I'm also deeply grateful to the faculty of TCE, who guided me, mentored me, and believed in my potential every step of the way. I'm also proud to share that I got placed during my third year through campus placements, securing a job with a decent CTC, which brought immense relief and pride to my family. Through the years, I rarely left campus before 7 PM, spending extra hours beyond class to give my best in every role I undertook. This dedication wasn't fueled by obligation, it was driven by passion and purpose.

My Real Backbone - My Friends . If there's one group that truly held me together and pushed me forward it's my friends. Their support, motivation, and belief in me have been the real engine behind all my achievements. Alagu, Swetha, Tamil, Vishnu, Rishenath, Suriya, Farith, Guhan, Hemanth and brothers - Dhiyanesh , Nandha and seniors - Appraketh , Ismail were more than friends. You were my constant source of strength, laughter, comfort, and drive. In every challenge, you stood by me. In every success, you celebrated me. Without you all, this journey would not have been the same. This award belongs to you just as much as it does to me.

This recognition as the Best Outgoing Student is not just a title. It's a reflection of years of effort, challenges overcome and most importantly, the incredible people who stood by me. This is not just a story, it's proof that money doesn't define life. Dedication, support, and sincere effort always shine through. To me, every person I meet is a chapter in my life. From good people, I learn. From difficult ones, I gain experience. And from true friends, I build a life worth remembering.

"Everything happens for a reason. Go with the flow."



ANGURAJ
IV YEAR

BEST OUTGOING STUDENT (YRC)

THANGA TAMIL SELVAN T



With immense pride and gratitude as I have received the Best Outgoing Student Medal from the Youth Red Cross Society. This recognition is more than just a medal, it's a symbol of the journey I've walked, the values I've upheld and the service I've committed myself during my years as a student. Throughout this journey, I've strived to embody the principles of compassion, leadership, and community service, values that are at the very heart of the Youth Red Cross. From organizing blood donation drives to participating in first aid preparedness camps and awareness programs, every experience has shaped me into the person I am today. I am much obliged to my program officer Dr. B. Velkannan sir for his esteemed support and blessings for me always.

But what truly made this recognition even more unforgettable was receiving it from none other than Dr. Mylswamy Annadurai, the renowned former ISRO scientist and the man affectionately known as the Moon Man of India. Dr. Annadurai has been a beacon of inspiration to countless Indians, especially youth like me who dream of reaching for the stars literally and metaphorically. To be acknowledged by someone of his stature, a visionary who played a pivotal role in India's Chandrayaan missions is a moment of deep honor that I will cherish for the rest of my life. It reminds me that no dream is too big, no act of service is too small.

As I move forward in life, I carry this medal not just as a token of my past accomplishments, but as a constant reminder of my duty to continue serving, leading, and inspiring others as the Youth Red Cross.

If your door is closer, don't knock, just break the door.

THANGA TAMIL SELVAN T
IV YEAR

Synergicz 2.0's and 24-Hour Hackathon



The Department of Mechatronics Engineering proudly hosted Synergicz 2.0, a national-level technical symposium that stood out as the most successful in the institution's history. With a unique theme inspired by Stranger Things, the event creatively fused pop culture with advanced technology, drawing over 500 participants from colleges across India—a record-breaking turnout. The symposium offered a dynamic mix of technical and non-technical events, ensuring something for everyone. From high-stakes coding battles and intricate design challenges to engaging games and strategy-based contests, participants experienced a vibrant atmosphere of learning, competition, and fun. Two hands-on workshops added a practical edge to the event, offering students direct exposure to real-world tools and techniques. Winners were rewarded with cash prizes, boosting excitement and acknowledging their efforts.

A standout feature of this year's edition was the 24-hour Hackathon, centered around sustainability—a pressing global concern. Divided into software and hardware tracks, the Hackathon challenged participants to devise innovative solutions to environmental problems. The event was met with enthusiastic participation and received widespread appreciation for its relevance, execution, and impact. The success of Synergicz 2.0 was a result of seamless coordination between dedicated student committees and supportive faculty members. Weeks of planning went into every aspect - registrations, logistics, event design, and venue setup - ensuring a smooth and memorable experience for all. More than just a symposium, Synergicz 2.0 was a celebration of creativity, collaboration, and the engineering spirit. It reaffirmed the department's capability to lead and inspire, setting a new standard for national-level academic and technical events. As we look ahead to the next chapter, the legacy of Synergicz 2.0 continues to raise the bar for excellence.



ACHIEVEMENTS

1. Sanjay.B (IV Year), C.P.Hari Saravanan (III Year)

The team won the first place in both Paper Presentation and Circuitrix events conducted by KLN College of Engineering.



2. Lingeshwer S (III Year), Priyadharshini G (III Year)

II Runner Up in IASF 2025 project expo held at Hyderabad and won a cash price of 10000 rupees



3. Lingeshwer S (III Year)

Shortlisted among the top 10 team in the Hackathon conducted by Honeywell



4. Adhila Banu M (III Year)

I Runner in Mystic Circuits event conducted by IOT club at Thiagarajar College of Engineering and II Runner in IDEATHON Competition conducted by Velammal college of Engineering



5. Muthu Viveghaa J (III Year), Thilagavathi V (III Year)

Runner in Tamil Nadu Women in Science and Engineering (TNWISE 2025)



6. Harish J H (II Year)

Shortlisted among the top 10 team in Honeywell Hackathon



TEAM PROMETHEANS:



SAE BAJA 2025

AIR 2 – VirtuSync

AIR 2 – Validation Event

AIR 3 – Design

AIR 3 – Vehicle Design Evaluation

AIR 3 – Overall Statics

AIR 4 – Sled Pull

AIR 7 – Endurance



MEGA ATV CHAMPIONSHIP 2025

AIR 1- Overall

AIR 1- Endurance

AIR 1- Drag Race

TEAM YUKTA:



AIR 5- Cost and manufacturing

AIR 13- BPP

AIR 11- Statistics

AIR 13- Overall

10k cash prize for simulation challenge

TEAM MECHADRONEX:



In SAEISS Autonomous Drone Development Challenge: All India Rank 4 (AIR 4)

TEAM EUREKA:



SIEP 2025

AIR 5 -Overall Performance

AIR 1 - Design

AIR 2 -Durability

AIR 3 -Both the Rulebook Test and Innovation

AIR 6 -B-Plan and Cost Evaluation.

AIR 10 -Hill Climb challenge

AIR 12 -Weight and Acceleration Tests

MEGA E-BIKE CHAMPIONSHIP

AIR 3 – Overall Performance

AIR 1 – Business Plan & Cost

AIR 1 – Innovation Award

AIR 1 – Overall Static Events



STUDENT LEADS

STUDENT LEADS



THANGA TAMIL SELVAN T
IV YEAR

- YRC - GENERAL SECRETARY
- SHRISHTI - OGS
- IITM BUILD CLUB - OFFICE BEARER



ANGURAJ S
IV YEAR

- ISHRAE - SECRETARY
- SHRISHTI - OOS
- NCC - CSM
- ID TEAM - CAPTAIN - MECT



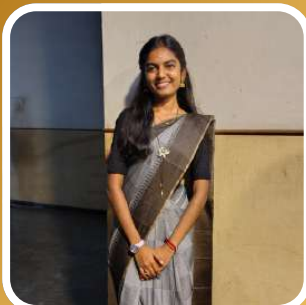
GUHAN S
IV YEAR

- IETSC - PROJECT AND SCHEDULING TEAM LEAD
- IOT CLUB - CS - MECT



MARUTHA SHRI M G
IV YEAR

- CULTURALS - OVERALL FINANCE AND DOCUMENTATION INCHARGE
- WEC - TREASURER
- NCC - LANCE CORPORAL



DEVIKA C G
IV YEAR

- TENNIS - CAPTAIN
- PROMETHEANS - ROLL CAGE LEAD



AISHWARYA M
IV YEAR

- PROMETHEANS - COST AND SALES LEAD



DHARANESWARAN S U
IV YEAR

- PROMETHEANS - STEERING LEAD



SATHISHKUMAR M
IV YEAR

- EUREKA - CHASSIS LEAD



SWETHA
IV YEAR

- WEC - PRESIDENT OF MECT DEPT

STUDENT LEADS



RESHMA EVANGELIN A
IV YEAR

- WEC - VICE PRESIDENT
OF MECT DEPT



SRI ROOPIKA N S
IV YEAR

- EUREKA -
ELECTRICALS LEAD



PRATHIKSHA S
IV YEAR

- EUREKA - MANAGER
ACCOUNTS



NANDHA HARISH
IV YEAR

- WEC - VICE PRESIDENT
OF MECT DEPT



HARI SARAVANAN C P
III YEAR

- TCE CODERS CLUBS -
GENERAL SECRETARY



SRIDHARA PRASATH S
III YEAR

- IIC - COORDINATOR
- PALS TCE STUDENT
CHAPTER - STUDENT
LEADER
- ROTRACT CLUB OF TCE
- MEMBERSHIP CHAIR



ARJUN V
III YEAR

- PHOTONS - JOINT
SECRETARY



LOKESHWARAN M
III YEAR

- PHOTONS - JOINT
SECRETARY



VISHNU VARTHAN.B.K
III YEAR

- VISUAL ARTS CLUB -
EXTERNAL COORDINATOR

STUDENT LEADS



CHARAN VIGNESH K
III YEAR

- **VISUAL ARTS CLUB -
JOINT SECRETARY**



PRIYADHARSHINI G
III YEAR

- **IETSC - DEPARTMENT
REPRESENTATIVE**



RANJANA S
III YEAR

- **IIC - DEPARTMENT
REPRESENTATIVE**



MOHAMED SAAD ASRARI M
III YEAR

- **IAEMP - GENERAL
SECRETARY**



VETRIVEL V
II YEAR

- **IAEMP - JOINT SECRETARY**



AISWARYA M
II YEAR

- **INNOV CHEM CLUB -
VICE PRESIDENT**



HARIHARAN L
II YEAR

- **INNOV CHEM CLUB -
PRESIDENT**



RESEARCH AND INNOVATIONS



START UP

EWIN LABS: From Vision to Venture

Our Story: Born from a Challenge, Built on Vision

Every startup has its spark. For Ewin Labs, that spark lit up on our journey to Jaipur.

As a passionate team of Mechatronics students from Thiagarajar College of Engineering, we entered the Smart India Hackathon 2023 with grit, determination, and an ambitious solution. Over 36 sleepless hours, we developed a highly advanced, real-time system with unmatched precision. The result? No prize ,but the feedback? Life-changing.

“You’ve outdone the problem. Your solution is so advanced that the organization can’t adopt it right now.”

That moment didn’t mark an end, it marked a new beginning. Fueled by that experience, Ewin Labs was born not out of victory, but from the realization that we could build technology far ahead of its time. Led by our founders Abdulfarith R A and Rishenath E, we turned that turning point into a tech startup focused on creating real-world, scalable, AI-driven solutions. Our journey started with a challenge and grew into a community of problem solvers, creators, and innovators. We are Team Ewin Labs and this is just the beginning.

What do we do?

Ewin Labs is committed to developing meaningful technology with practical applications. We focus on domains where innovation is essential education, smart systems, automation, and artificial intelligence.

Our Products Include:

- Meva – AI-based fish quality analysis and delivery optimization
- UNIT_ED – Personalized, 3D-based smart learning platform
- Ewin Chat – A generative AI platform built on open-source LLMs
- And others like the Face Authentication, AI Supervision Systems, and custom-built tech for institutions and industries

Our Mission:

To democratize intelligent technology making it accessible, impactful, and easy to deploy. We believe innovation shouldn't be locked behind paywalls or corporate labs it should serve people, solve real problems, and elevate communities.

“Everything happens for a reason, go with the flow, but make your flow meaningful.”

Milestones & Achievements:

- Pre-incubated at TCE-TBI
- Incubated at MAKERGHAT, a joint initiative by IIT Madras and Stanford University
- Represented TCE-TBI at Startup Thiruvizha 2024, Madurai
- Finalists – Smart India Hackathon 2023
- These recognitions reflect not just our innovation but our commitment to building tech that matters.

Core Team:

Chief Executive Officer:
Abdulfarith R

Chief Operating Officer:
Rishenath E

Chief Technology Officer:
Abdul Kasif R A

Chief Product Officer:
Dhanshree N J K

Chief Financial Officer:
Anguraj S

Chief Marketing Officer:
Guhan S

Chief Development Officer:
Alagupariksit A



RESEARCH PAPERS

ResRNN: A Hybrid Deep Learning Approach by The Integration of ResNet-50 and BiLSTM for MRI Analysis

This work proposes a novel hybrid deep learning-based method for brain tumor classification using ResRNN—a deep model that integrates the powerful feature extraction capabilities of ResNet-50 with the sequential learning provided by Bidirectional Long Short-Term Memory (BiLSTM). The model is trained on MRI images categorized into four classes: Glioma, Meningioma, Pituitary Tumor, and No Tumor.

The proposed ResRNN model obtained a classification accuracy of 96.23% on an augmented test set and outperformed models like ResNet, RNN, and CNN that are individually applied on the same dataset. Particularly, ResNet-50 performs very well in spatial features extraction but fails to realize temporal understanding, and conversely, RNN captures sequence dependency without realizing spatial detail. Hence, it justifies the need for the hybrid approach, in which ResNet-50 processes spatial feature extraction and BiLSTM realizes sequential dependencies over slices.

Both methodologies are integrated to obtain better classification performance than the traditional CNN-based models. Apart from high performance, the computational efficiency of the model makes it suitable for clinical use. Class imbalance and advanced architectures, such as transformers, will be addressed in future work. Explainability techniques like Grad-CAM will also be integrated to provide deeper insights into the model's decision-making process.



Dr.S.JULIUS FUSIC
ASSISTANT PROFESSOR



Ranjana S
III Year



Manoranjan I
III Year



Hari Saravanan C P
III Year

Rethinking Reach: A Mechatronic Approach to Ceiling Fan Accessibility

In our day-to-day lives, ceiling fans often go unnoticed—until it's time to clean them. Despite being such a common fixture, cleaning a ceiling fan remains an inconvenient and risky chore, especially due to its height. Inspired by this overlooked problem, I designed an attachable mechanism that allows ceiling fans to be safely and easily lowered for cleaning, and raised back into position, all without the need for ladders or additional support.

The mechanism uses a motor-driven lead screw system to convert rotary motion into linear motion, allowing the fan to move up and down vertically. A threaded rod, connected to a 12V DC motor, rotates to drive a hollow rod with an internal nut. This controlled movement lifts or lowers the fan smoothly. The direction of movement is managed using a DPDT (Double Pole Double Throw) switch, making the system both practical and user-friendly.

The project is currently in the patent application stage, aimed at safeguarding the originality of the design and exploring future development opportunities. This work is a reflection of the core principles of Mechatronics merging mechanical systems with electronic control to solve real-world challenges. Through this innovation, I hope to inspire others to recognize problems in the everyday and build meaningful solutions



Dr.M.RAJALAKSHMI
ASSISTANT PROFESSOR



YUVASREE M
II YEAR

Comparative Analysis of A* Algorithm and Improved Q Learning Algorithm For An Optimal Path Planning Of Autonomous Mobile Robotis

Path planning is a critical task in robotics, where efficient navigation through static grid-based environments is essential. This study compares two popular approaches—Q-learning and the A* algorithm by evaluating their path quality, learning speed, and computational efficiency.

A*, a heuristic search algorithm, performs well in structured grids but struggles with large or complex environments due to high computational demands. In contrast, Q-learning, a reinforcement learning method, adapts to various grid patterns through experience, enabling efficient navigation with lower resource usage.

Simulation results show that Q-learning converges faster and performs better in complex grids, while A* remains effective in simple, well-structured layouts but lacks adaptability. This study offers valuable insights into the strengths and limitations of both methods, contributing to advancements in path planning for robotics and autonomous systems.



ASSISTANT PROFESSOR

Dr.S.Julius Fusic



Maruthappan N
III Year



Lingeshwer S
III Year



Guru Prakash A
III Year

PATENTS

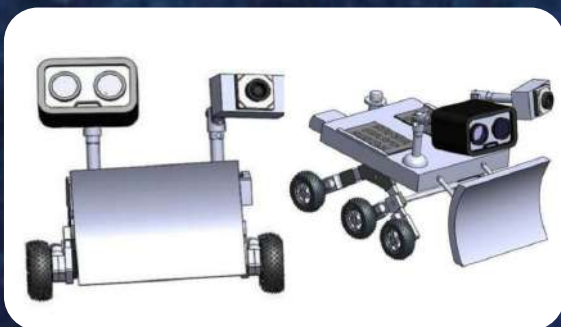
SNOWBOT:

It is an advanced ice robot combines a height-adjustable rocker-bogie mechanism, differential steering, fully adjustable camera and LIDAR systems, solar panels, yaw sensors for traction, snow depth sensors, snow specialized tires and an ice plow. These features collectively empower the robot for autonomous and efficient exploration, data collection, and maintenance in cold climates, making it an invaluable asset for scientific research, environmental monitoring, and infrastructure maintenance in icy and challenging environments.

The height-adjustable rocker-bogie mechanism forms the core of the robot's mobility. It ensures stability on uneven ice surfaces while enabling precise adaptation to varying snow and ice depths, optimizing traction and maneuverability. Differential steering offers precise control, enabling the robot to navigate gracefully through icy terrains. The fully adjustable camera system with pan-tilt functionality offers panoramic visibility, facilitating obstacle avoidance, navigation, and data collection.

The addition of a fully adjustable LIDAR unit enhances perception and mapping capabilities, allowing the robot to autonomously map its surroundings with high precision, even in challenging visibility conditions. Integrated solar panels harness renewable energy, extending the robot's operational range and sustainability for prolonged missions in remote icy landscapes. Yaw sensors for wheel traction enable the robot to make real-time adjustments, ensuring optimal traction on slippery ice and preventing slips or skids during movement.

Snow depth sensors provide invaluable data for route planning and terrain assessment, allowing the robot to adapt to variable snow conditions effectively. The incorporation of snow-specialized tires enhances traction and flotation on snow and ice, optimizing the robot's mobility in the harshest winter conditions. The ice plow attachment extends the robot's utility, enabling efficient snow clearing and maintenance operations in icy environments.



ASSISTANT PROFESSOR

Dr.S.Julius Fusic



ASSISTANT PROFESSOR

Mr. Ramesh Hildas



DHARANESWARAN S
IV YEAR



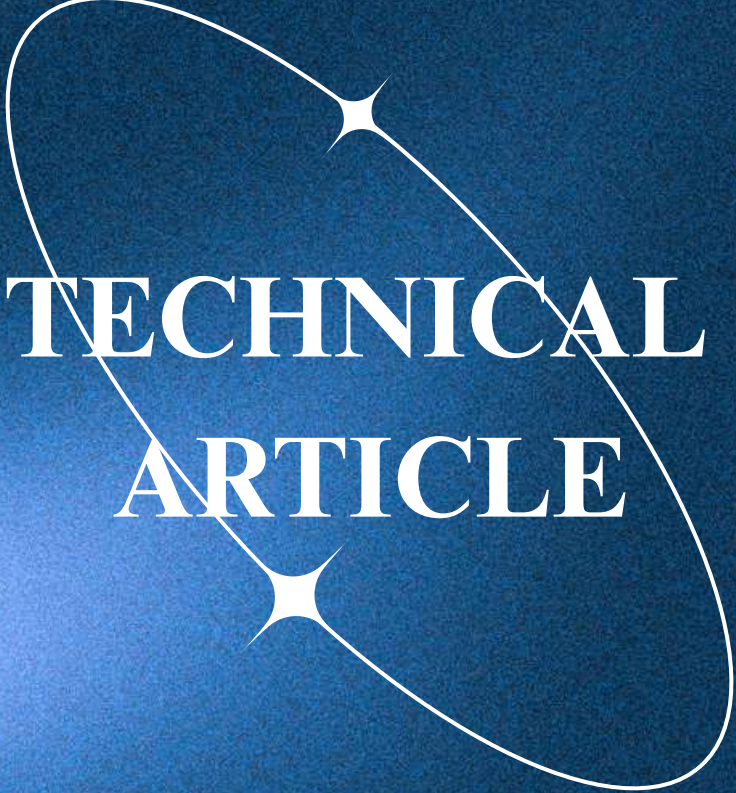
SUSENDHRA S
IV YEAR



AADHAVAN P
IV YEAR



MOHAMED ASHWAQUE M
IV YEAR



TECHNICAL ARTICLE

IoT in Agriculture

A New Era for Farmers The Internet of Things (IoT) is one of the most powerful technologies today. It allows us to control and access devices from anywhere using the internet. IoT is used everywhere-from small industries to smart homes. But one of its most exciting uses is in agriculture, where it is changing how farming is done.

Across the world, the farming industry is using IoT to monitor crops, manage animals, save resources, and automate tasks. It helps farmers increase crop yield, reduce waste, and deal with environmental changes like weather and soil conditions.

Ways IoT is Used in Agriculture:

- **Precision Farming:** This method uses IoT devices to watch and measure the health of crops and animals. It then uses the data to give exactly what each plant or animal needs- no more, no less.
- **Drone Technology:** Drones with IoT systems fly over farms to check crop growth, animal health, and even weather conditions. They help farmers monitor large areas quickly and efficiently.
- **Livestock Monitoring:** Farmers use smart wearables for animals. These devices track the location and health of livestock, helping prevent illness and loss.
- **Smart Greenhouses:** These are advanced farming structures that use IoT sensors to control temperature, light, humidity, and water levels, giving plants the best possible growing environment.

Challenges in Using IoT:

IoT in Agriculture:

A New Era for Farmers While IoT is useful, it also brings some challenges, that include:

Security issues (protecting data)

Adaptability (not all farmers are tech-savvy)

Data storage and processing- High cost of setup

Still, IoT offers a bright future for farming, helping farmers grow more crops with less effort and make better profits



SANJAY.B
IV YEAR

From Parts to Propellers: Crafting My Custom Quadcopter



Building a drone from scratch was a rewarding endeavor that blended technical expertise with creative exploration. From the initial planning stages to the final flight test, each step brought a new set of challenges and learning opportunities. Assembling the frame, motors, electronic speed controllers (ESCs), and flight controller not only deepened my understanding of aeronautical systems but also instilled a strong sense of accomplishment. The process wasn't without its setbacks—troubleshooting wiring issues, calibrating components, and optimizing flight stability tested both my patience and problem-solving abilities. However, each resolved issue served as a valuable learning milestone, contributing to the final success of the project. For those interested in embarking on their own drone-building journey, here is a list of essential components I used:

1. F450 Quadcopter Frame with integrated landing gear
2. Emax MT2213 935Kv Brushless Motors paired with Readytosky 30A SimonK ESCs
3. Arducopter APM 2.8 flight controller with built-in compass
4. GPS Module for improved navigation and positioning
5. Mission Planner Software for drone configuration and flight path planning

Building a drone requires patience, persistence, and practice. With dedication, you can create a custom drone tailored to your needs and flying style.



Rishi
I YEAR

Can Robots Feel? The Emergence of Tactile Sensors and Artificial Skin

Robotic technology is going through a revolution as tactile sensors and artificial skin allow robots to feel a sense of "touch." This mechatronics innovation is opening doors for robots to interact with their surroundings in a more natural way, transforming industries and medicine.

The Science Behind Robotic Touch:

Robots have historically depended on vision and movement sensors for communication, but tactile sensing brings a new level. Scientists have created artificial tactile sensors that emulate the ability of human skin to recognize surface textures, forms, and patterns. The sensors make use of piezoelectric materials, which produce electrical signals from stress applied to them, enabling the robot to sense roughness and smoothness, among other sensations, with great accuracy.

Applications Across Industries:

1. Manufacturing: Artificially skinned robots can safely work in conjunction with humans, sensing collisions and compensating for them.
2. Consumer Goods: Tactile sensors test product textures in industries such as cosmetics and textiles to ensure quality control.

Challenges and Future Prospects

Though promising, there are challenges. Scalable manufacturing of artificial skin and durability under dynamic conditions are challenges that continue. Nonetheless, innovations like self-healing living skin models—made with collagen gels—are advancing. Such systems repair themselves upon injury, making robots more flexible to use in actual environments

Conclusion

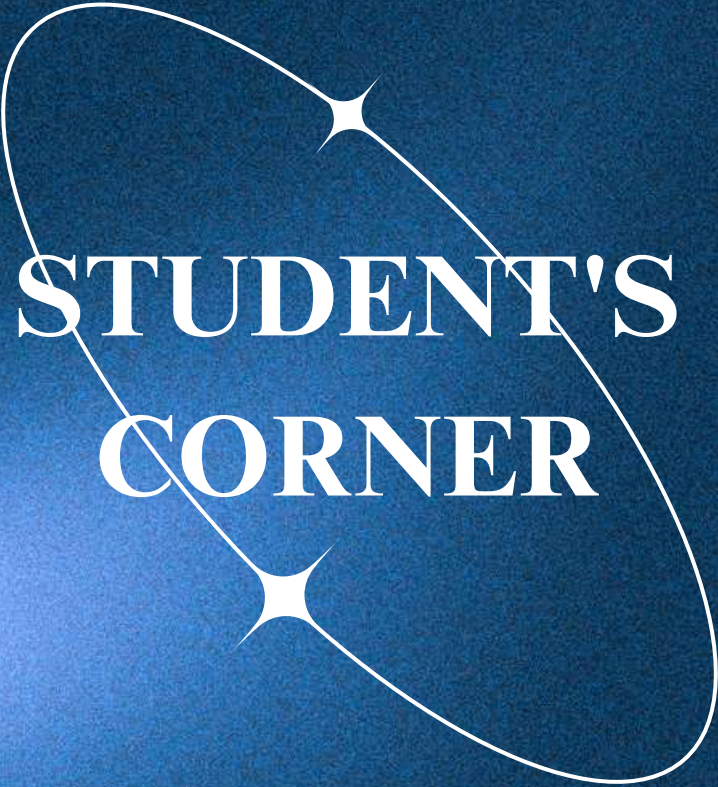
Tactile sensors and artificial skin are redefining what robots can achieve. From healthcare to industry, these technologies promise a future where robots not only "think" but also "feel," enhancing their ability to coexist and collaborate with humans.

SOURCES:

1. "Artificial Skin Advances Tactile Sensing in Robotics" - Innovations Report
2. "Tactile Sensors Need a Greater Sense of Purpose" - Science Robotics



KAMALESH R
II YEAR



STUDENT'S CORNER

Smart irrigation system to improve the quality and quantity of crops

I had the opportunity to set up a stall at the Open Air Auditorium at TCE during the NAAC visit. I showcased my innovation to NAAC members, students, staff, faculty, and industry professionals. I received both positive and constructive feedbacks, which helped me improve my idea. This experience gave me great exposure and allowed me to interact with diverse minds and gain insights from their expertise in the field. I was selected as a finalist in Anveshana 2024, a project expo conducted by the Agastya organization. Guided by Dr. S. Julius Fusic and Dr. M. M. Devarajan, I showcased my DL and IoT-based product for fishermen to the jury and organization members. As part of the event, we also trained two students from the Government School of Thirupparankundram, who effectively presented our idea to the jury. Additionally, we shared our knowledge with school students in Bangalore and had valuable interactions with fellow participants and startup founders, gaining meaningful connections and insights.



SANJAY.B
IV YEAR

Exploring Innovation & Leadership at IIT Madras – Our Experience at the PALS RSW 2024



We, a group of five students from Thiagarajar College of Engineering, had an unforgettable opportunity to attend the PALS Residential Student Workshop (RSW) 2024, held at IIT Madras on December 28, 29, and 30. Representing the Mechatronics and EEE departments, this workshop was more than just a learning experience—it was a journey of discovery, teamwork, and inspiration. What the Workshop Was All About. Organized by PALS (Pan IIT Alumni Leadership Series), the workshop aimed to bring together passionate engineering students from across Tamil Nadu and provide them with a platform to grow as future leaders. The focus was on leadership, innovation, collaboration, and real-world engineering applications.

Interactive Sessions – We attended insightful talks by IIT professors, alumni, and industry professionals. Topics ranged from innovation and emerging tech to career guidance and critical thinking. **Hands-on Challenges** – Through team-based activities and problem-solving tasks, we learned how to apply our classroom knowledge in practical scenarios. **Living at IIT** – Staying on the IIT Madras campus gave us a true sense of what life is like in one of India's top institutions.. **New Connections** – We met students from various colleges, exchanged ideas, and even made a few friends along the way. We gained and sharpened our leadership and communication skills. Learned how engineering can directly impact the real world. Got a clearer picture of career paths—be it higher studies, startups, or industry. Most importantly, we came back more confident, focused, and ready to take on challenges. The PALS RSW 2024 wasn't just another workshop it was a turning point. It showed us what's possible when like-minded students come together with curiosity and a willingness to learn. We're thankful to PALS and IIT Madras for this incredible opportunity, and we're excited to bring this energy back to our college and projects

Learning by Doing: Exploring THE Embedded Systems

I am Hariharan.L, 2nd year from Mechatronics Department. I have always been enthusiastic about learning new things in the field of robotics and technology. One of the memorable experiences I had was participating in a “Line Follower Robot” competition held at our college. The event was a great learning experience where I gained practical knowledge about sensor integration, motor control, and the logical programming involved in building an autonomous robot.

In addition to that, I attended a workshop titled “Touch Tech Unleashed: Master Displays” conducted by PSG College of Technology. This workshop introduced me to advanced concepts related to display technologies such as OLED, capacitive touch, and flexible displays.

I also had the opportunity to gain hands-on experience and deepen my understanding of how these display technologies are used in modern electronic devices.



These experiences have helped me build a strong foundation in electronics and embedded systems. They have also boosted my confidence to explore more advanced topics in robotics. I look forward to learning through more such opportunities and contributing to innovative projects in the future.



HARIHARAN L
II YEAR

TNWISE Hackathon 2025

Our Experience at TNWISE Women's Hackathon, Kumaraguru College of Technology Participating in the TNWISE Women's Hackathon hosted by Kumaraguru College of Technology was a truly transformative experience that blended innovation, collaboration, and purpose-driven problem-solving.

As a Mechatronics Engineering student with a passion for real-world applications of technology, this event offered the perfect opportunity to showcase our skills on a broader platform. We proudly represented our Drone Club, taking our collective knowledge and enthusiasm into the hackathon arena. Our team, comprising my talented department mates Arthi, Ananda Praveena, and myself—chose to work under the theme "Transport and Mobility," focusing on a project that aimed to improve emergency medical supply drones.

Our solution aimed to enhance the safety, speed, and intelligence of medical drones using sensor-based obstacle detection, real-time GPS tracking, battery health monitoring, and emergency alert systems. Out of over 400 participating teams, we were thrilled to be selected among the top 100 teams for the second round a moment of great pride for us and our club.

This recognition validated our efforts and motivated us to refine our prototype with even greater dedication.

What made the TNWISE Women's Hackathon stand out was its mission to empower women in technology. The event fostered a supportive, fast-paced, and intellectually stimulating environment. The mentorship, networking, and feedback sessions were incredibly valuable, giving us new perspectives on both technical design and user-centered innovation.

Beyond just building a prototype, this experience honed our teamwork, critical thinking, and presentation skills. I am immensely grateful to TNWISE and Kumaraguru College of Technology for organizing such an empowering event. It has strengthened my passion for innovation and reaffirmed my commitment to developing tech solutions that make a real difference.



RITHIKA S
I YEAR

Meet the Mectians!

An insightful interview was conducted with the General Secretary (GS) “DEVIKA C G and ANGURAJ S of 4TH YR” and General Treasurer (GT) “ AISHWARYA M and THANGA TAMIL SELVAN T of 4TH YR “ of our department. They shared valuable perspectives on the management and organization of department activities. This interview offers a closer look at the leadership driving our academic and extracurricular growth."

SHRUTHI: How do you manage your studies along with all your responsibilities in the department?

DEVIKA: Balanced studies and duties by planning ahead, delegating tasks, and staying organized with a tight schedule.

ANGURAJ: I prioritize my responsibilities first, then i'll go on with my studies.

AISHWARYA: Prioritized academics and finance work weekly, used tools like Excel to streamline tasks, and avoided last-minute rushes.

THANGA TAMIL SELVAN: It's not just studies; I'm also a GS for another club. It's more like a 50-50 commitment, but I have to prioritize my department. I've given my best as the General Treasurer for my department.

RAJAPRIYA: How do you deal with disagreements or differences of opinion within the team?

DEVIKA: I listened to everyone's views calmly, found common ground, and reminded the team of our shared goal.

ANGURAJ: Of course, there will be disagreements when working as a team. We should listen to everyone's opinions and make decisions wisely. Our own opinions should be expressed confidently and backed with strong reasons.

AISHWARYA: I focused on facts, stayed neutral, and proposed practical solutions to ease tension and move forward.

THANGA TAMIL SELVAN: We have to be patient and listen to everyone's opinions. Together, we need to consolidate the opinions and choose the right one to solve the problem.

SHRUTHI: What would you say to someone who wants to take up your position in the future?

DEVIKA: Go for it! It's a chance to lead, learn, and leave a legacy—just stay organized, listen to people, and be proactive.

ANGURAJ: “Do your duty, don't expect the result”

AISHWARYA: Go for it! It's a chance to lead, learn, and leave a legacy—just stay organized, listen to people, and be proactive.

THANGA TAMIL SELVAN: First of all, Juniors and seniors should be friendly beyond disagreements and quarrels. Listen to everyone's opinion and act wisely.

RAMASHRI: What's one event or initiative you feel was a big success under your leadership?

DEVIKA: One event I'm particularly proud of was the VALEDICTORY 2023 - 2024 ! It brought together students from all disciplines, and with proper planning, we made sure everything ran smoothly. The turnout and energy were incredible, and it really helped build a sense of community across departments.

ANGURAJ: A major success under my leadership was the TechUtsav event. It wasn't just me who made it happen—my friends from the final year and I came together, took charge of the entire event, and made it a big hit with 430 enrollments.

AISHWARYA: As Devika said, I loved organising the VALEDICTORY 2023 - 2024 . We managed to secure sponsorships, effectively allocate the budget, and still had funds left over for post-event activities. The financial planning was spot-on, and the event's success helped us establish a better funding model for future initiatives.

THANGA TAMIL SELVAN : Techutsav was an absolute blast! Along with the association members, all our friends pitched in — we worked together and made it a huge success!

SHRUTHI: What's your approach to planning and executing events for the department?

DEVIKA: I keep communication clear and consistent by using multiple channels—WhatsApp groups, notice boards, and emails—to reach students and faculty. I also schedule regular check-ins with both sides to stay updated and address concerns quickly. Keeping everything transparent and documented helps avoid confusion.

ANGURAJ: I ensure clear and consistent communication to stay connected with both students and faculty. I also hold regular check-ins to keep everyone on the same page and quickly resolve any issues. By keeping everything transparent and well-documented, I help prevent misunderstandings and keep things running smoothly.

RAMASHRI: How do you keep track of all the spending and financial details?

AISHWARYA: I start by estimating all potential costs—venue, equipment, refreshments, and any other logistics. Then, I compare it with our available funds and seek sponsorships or collaborations to fill gaps. I always keep a buffer for unexpected expenses. Communication with the event team is key to ensure we stay within budget, and I track every expense for transparency.

THANGA TAMIL SELVAN: Actually, me and anguraj work together on planning financial tracking. Throughout the process, we focus on allocating funds strictly to essential items, avoiding unnecessary expenditures. This approach helps us maintain transparency and ensures that every expenditure serves a clear purpose.

A final quote by ANGURAJ :

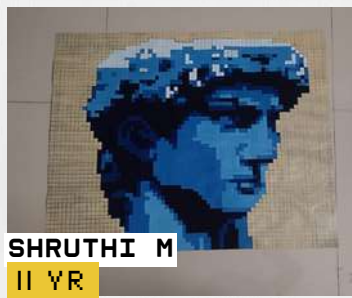
“Life is like a book - if the chapter is good, enjoy it; if it's bad, learn from it.
Every page matters.”



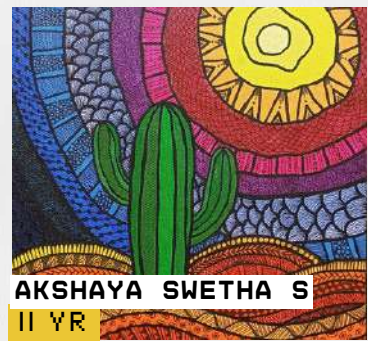
Riverie and Lightcatchers



RAMASHRI T
II YR



SHRUTHI M
II YR



AKSHAYA SWETHA S
II YR



RAJI RS
II YR



LOKESHWARAN M
III YR



MIRIAM ANCY V
II YR



PRATHEESH KANNA
II YR



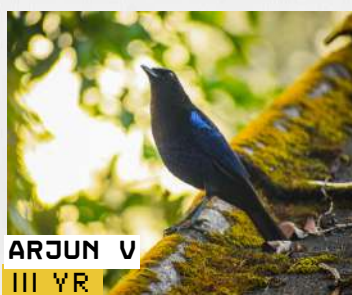
PRATHEESH KANNA
II YR



AKILESHWARAN
II YR



ARJUN V
III YR



ARJUN V
III YR



RATHISH SARAVANAN
II YR

Lines of Thoughts

Stepping into the new phase of life
With doubts ,different notions that pervades the air
With the enthrallment to experience the new
beginning
Trying to fight back the discouraging thoughts
Endeavoring to keep the fire alive inside
But stumble and fall
Raise up with the realization of embracing

- Jenita

JENITA KAMALI
II YEAR

அம்மா
வானம் முழுதும் சூழ்ந்தாலும்,
உன்மடிபோல் உறைவிடம் இல்லை,
தங்கம் வெள்ளி ஒளிவிடினும்,
உன்கண் பார்வை ஒளி போல் இல்லை,
உன் கைகள் தீண்டும் போதெல்லாம், மழை தொட்ட
பசுமை காண்கிறேன்.
உன் குரல் கேட்கும் ஒவ்வொரு நாளும், சூரியன் எழு
இனிய காலை போல.

அம்மா நீ இருப்பதாலே, உலகம் அழகான ஒருவீடு!

யுவாஸ்
இரண்டாம் ஆண்டு
ஜயந்திர மின்னணுவியல் துறை

BOOK NAME : MALARGALIN MANAM
YUVASHREE M
II YEAR

பெண் எனும் பேராளுமை

வீட்டிற்குள் பூட்டி வைத்து
விடுமுறையே இல்லாமல் அவள்
வீட்டாருக்கு வேலை செய்து
வாழ்நாள் கழித்து வந்தாள் பெண்!!

பாரதி என்னும் மகாகவி வந்தார்
படிக்கத் துடித்த பாசம் நிறைந்த தாய்மையின்
பதவி வகிக்கும் அழகு நிறைந்த பாவைக்கு
சிறகினைத் தந்தார் படிப்பதற்கு!
படிக்காத பேதையை மேதை ஆக்கினார்!!

தற்போது பெண் சக்தியின் உருவமாய்த் திகழ்கிறாள்
"தன்னால முடியும்" என்ற நம்பிக்கையுடன்
தன் கனவிற்கு வானம் தேடி,
தன் கூட்டைவிட்டு பறந்து சாதிக்கிறாள்!!!

போராட்டமும் வீரமும் கொண்டு
வீறு கொண்ட வேங்கையென
வீரமங்கையாய் ஒளிர்கிறாள்!
தான் வாழும் உலகை
பெருமையுடன் ஆள்கிறாள்!!!

AROKYA VARSHA D
I YEAR

புரிந்துக்கொள்வதற்கு புத்தகம் இல்லை-இது
பூமியின் புன்னகை
பூக்களின் பூரிப்பைப் பார்பதற்கு
தேனீக்கள் தேடி அழையும்
மழை!!

-MANISHA G
III YEAR

MANISHA G
III YEAR

Mecha-Mind Challenge!

How sharp is your tech radar? Spot the hidden gems from the world of sensors, circuits, and systems in this electrifying puzzle.

S	W	I	T	C	H	B	Q	P	P	L	C	R
E	N	C	O	D	E	R	T	T	N	U	U	U
V	W	R	I	N	G	T	N	U	U	U	U	N
M	O	T	O	R	S	E	R	V	O	S	R	S
I	N	W	I	R	I	N	G	T	N	U	U	U
M	S	E	S	S	A	M	M	E	V	O	E	F
N	W	R	P	A	R	D	U	I	N	O	K	K
M	O	T	O	R	M	T	N	U	U	U	U	U
S	E	N	S	O	O	R	T	M	I	I	O	L
S	M	M	U	L	I	N	K	S	W	T	C	H
W	I	R	I	N	G	A	W	R	I	R	N	G
W	W	R	N	G	W	I	R	N	G	D	Q	W
W	I	R	I	N	G	T	V	W	I	R	N	G

ACTUATOR ARDUINO
BATTERY CAMERA
CONTROLLER SIMULINK
SERVO SWITCH
ENCODER GEAR MOTOR
PLC

A white graphic consisting of an oval shape with two four-pointed starburst elements at the top and bottom, framing the text.

SPOTLIGHT SECTION



ISHRAE



The ISHRAE TCE Student Chapter is a student branch of ISHRAE (Indian Society of Heating, Refrigerating and Air Conditioning Engineers) at Thiagarajar College of Engineering (TCE). Here's what we do:

1. Technical Workshops & Seminars
2. Student Competitions
3. Networking & Career Development
4. Social and Awareness Activities

In this Academic Year 2023 - 2024 ISHRAE TCE STUDENT CHAPTER has had Great Success having conducted 3 K-12 Events in the Topics of

- Introduction to Rapid Prototyping in KLN Vidyalaya
- Introduction to 5S System in KLN Vidyalaya
- 2 Day Hands on Training for Robotics Program using LEGO Mindstorme EV3 Kit in TCE

We have also achieved great success in Competitions having received the First Prize in ISHRAE's Annual Hackathon

The prize winners are :

Swetha S
Anguraj S
Alagu Parakshit A
Guhan S

We hope to carry forward this momentum in the following years and increase our knowledge



Mr. S. Anguraj
Secretary



Mr. Seshdevanadh
Treasurer



Mr. A. Alagu Pariksit
CWC Member



Ms. S. Swetha
CWC Member



Mr. S. Guhan
CWC Member

The RSI TCE Student Chapter is a budding student branch of the Robotic Society of India (RSI) at Thiagarajar College of Engineering (TCE). Established with the aim of fostering innovation, hands-on learning, and interest in robotics among students, RSI TCE has made a strong start in the academic year 2023-2024.

We successfully organized our first workshop cum competition, marking a major milestone for the club:

Workshop on Mobile Robotics and Control:

A highly engaging and educational session that witnessed an overwhelming response with 150+ participants from various departments.

Line Follower Competition:

A thrilling event that tested the application of robotics and automation concepts, attracting 30+ participating teams who showcased their innovative designs and problem-solving skills.

This event set a strong foundation for the future of the club. The enthusiastic participation and positive feedback reflect the interest and potential of robotics among students.

We look forward to expanding RSI TCE by conducting more technical workshops, competitions, and actively participating in intercollegiate and national-level robotics events in the coming years.



JESHURAN CORNELIUS K S R
GENERAL SECRETARY



SREENIDHI KAMALAM M
GENRAL TREASURER



LINGESHWER S
JOINT SECRETARY



MARUTHAPPAN N
JOINT TREASURER





MECHADRONEX

On August 16, 2024, Thiagarajar College of Engineering (TCE) launched the MechaDroneX Club under the Department of Mechatronics Engineering, marking a major step in student-driven drone innovation. The event featured aerospace experts like Mr. Madhan Balachandramohan (Vimaana Aerospace) and Mr. Jeevaranjan Sundareswaran (Urban Matrix), who inspired students with real-world insights.

Led by faculty mentors and student office bearers, the club quickly kicked off with a Tech Talk on “Opportunities in Drone Technologies” by Mr. Jeya Prasanna from Aerosquad Pvt. Ltd. The session highlighted drone applications in logistics, surveillance, and agriculture.

Committed to hands-on learning, MechaDroneX began building its first drone, dividing members into subsystem teams—Electrical, Electronics, IoT, Battery & Power, and Design—to reflect real engineering workflows.

Now with 26 active members from all years, the club conducted entrance tests and peer mentoring to build a strong, collaborative community. Their dedication led them to the SAEISS Autonomous Drone Development Challenge 2024–25, where they were among 11 out of 63 teams to successfully complete the flight and landing tests.

Currently, the club is participating in the ISRO Drone Challenge and preparing for the NIDAR Challenge, focusing on national applications in space, defense, and disaster management.

From launch to national recognition, MechaDroneX is fast becoming a hub for drone innovation at TCE—empowering future engineers to soar high.



TEAM PROMETHEANS

The roar of engines, the grit of terrain, and the adrenaline of racing—this is more than a sport; it's our engineering battlefield. In the world of All-Terrain Vehicles (ATVs), Team Prometheans from Thiagarajar College of Engineering, Madurai, stands as one of India's leading student-led ATV constructor teams.

Founded in 2015, we began with a bold vision: to push the limits of student engineering through off-road motorsport. What started as a small group has evolved into a high-performing team with a strong presence in national competitions like BAJA SAE India, Mega ATV Championship, and ATVC.

Each vehicle follows a rigorous process—from budgeting and design iterations to prototyping, assembly, and testing. Our workspace becomes a round-the-clock lab of creativity, where academic pressure meets hands-on innovation.

Every model, from Genesis to Icarus, tells a story of teamwork, resilience, and progress. Now, we turn to the future with E-BAJA, embracing electric mobility with a focus on lightweight design, smart telemetry, and sustainability.

To build. To break. To rise again—that's the Prometheans way.

TEAM MEMBERS



AISHWARYA S
IV YEAR



DHARANEESHWARAN S U
IV YEAR



RAKESH VM
IV YEAR



DEVIKA C G
IV YEAR



VENKATESHWARAN S
III YEAR



PRIYADHARSHINI G
III YEAR



VISWA S
III YEAR



HARISH JH
II YEAR

TEAM EUREKA

Eureka is the official Electric Bike Club of Thiagarajar College of Engineering, dedicated to innovating, designing, and building sustainable electric mobility solutions. Formed by students with a shared passion for green technology and real-world engineering, Eureka thrives on turning bold ideas into high-performance electric bikes.

Our multidisciplinary team handles every aspect of development from mechanical design and electrical integration to battery management systems, drivetrains, braking, and aerodynamics. Organized into specialized subsystems, including Chassis, Brakes & Wheels, Electrical, drivetrain, Innovation, and Business, each member plays a key role in the complete in-house fabrication and testing process.

We compete in national-level electric bike competitions and emphasize not only performance but also sustainability, cost-efficiency, and industry-aligned engineering standards. Alongside technical work, members gain experience in business planning, budgeting, documentation, and presentations.

At Eureka, students don't just build bikes they build futures. It's where innovation meets impact, and every ride is a step toward a greener tomorrow.

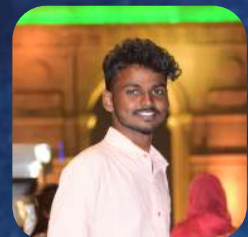
TEAM MEMBERS



PRATHIKSHA S
IV YEAR



SRI ROOPIKA N S
IV YEAR



SATHISH KUMAR M
IV YEAR



VETRIVEL V
II YEAR



PERINBA MANI KUMAR E
II YEAR



RAJAPRIYA D
II YEAR



YUVASREE M
II YEAR

TEAM YUKTA

The sport of F1 is fascinating and truly mind-boggling. How does it feel to witness cars flying by at 200 miles per hour? Imagine drivers enduring 6–8 G's of force, the stress on the machines at such high speeds, and the precision required to navigate tight corners. Now, think of the engineers who build these machines yes, that's what it takes to be a constructor.

We, at Team Yukta Racing, take on that very challenge. We construct a racing machine that embodies every aspect of engineering and the core principles of human nature. Practicality is a virtue in disguise. TYR began with go-kart championships, winning numerous awards our peak being in 2019. From there, we set our sights on a more complex goal: the Formula Student Series, India Chapter where pinnacle meets innovation.

In 2024, we participated in our first SAE SUPRA competition. The team cleared Technical Inspection on the first attempt, surprising the judges, and went on to secure a position in the sub-AIR 15 category of this prestigious event.

Preparation for Formula Bharat begins the very next day after the event.

Stage 1: Planning the schedule for the upcoming year.

Stage 2: Initiating design procedures and budget approvals.

Stage 3: Prototyping through multiple iterations to perfect dimensions our vehicle is custom-fit to the driver, just like in F1.

Stage 4: The build physically and mentally demanding, as we balance college work with sleepless nights to create this masterpiece.

As a new team, our achievements are commendable. We've learned, grown, built connections, and set our sights high toward the prestigious Formula Student Germany. Together, we are one family

TEAM MEMBER



RATHISH SARAVANAN
II YEAR

NCC

The National Cadets Corps (NCC) is one of India's leading youth organizations, aiming to instill discipline, leadership, and a spirit of service among students. With its motto "Unity and Discipline," NCC helps mold young minds into responsible and confident individuals.

In our department, students have proudly taken part in a wide range of NCC activities. From leading the flag march and sword drills on national occasions to piloting VIPs during college events, our cadets have showcased excellence and dedication. Many have also represented the college in Combined Annual Training Camps (CATC), Army Attachment Camps (AAC), and Inter-Directorate Camps (IDC).

Cadets from our department have held ranks such as Cadet Under Officer, Corporal, and Lance Corporal. They've participated in yoga displays, firing competitions, and taken up volunteering roles during college functions like graduation day and sports meets.

These experiences not only build physical fitness and discipline but also develop leadership, teamwork, and a deep sense of national pride. Our NCC cadets continue to uphold the values of commitment, courage, and unity—making our department proud.



DINESH E
CUO



AAKASH G R
CPL



NEELGATS V
LCPL



NAGESWARI
LCPL



MYDEEN
ZAHEER KHAN M
CDT



BALAJI R
CDT



GOPIKRISHNA R
CDT

NSS

The National Service Scheme (NSS) is a public service program under the Ministry of Youth Affairs and Sports, Government of India, aimed at developing the personality of students through community service. Established in 1969, NSS encourages students to actively participate in social service activities and contribute to the welfare of society. Through various initiatives such as blood donation camps, cleanliness drives, awareness rallies, and rural development programs, NSS instills values of social responsibility, leadership, and teamwork among students.

Our college actively participates in various National Service Scheme (NSS) activities aimed at promoting social responsibility and community service among students. As part of these initiatives, our college has successfully organized blood donation camps, NSS camps, and trekking programs that promote both health and teamwork. Students have also taken part in awareness rallies, cleanliness drives, classroom-based activities, and volunteering efforts, all of which contribute to their overall personality development.



YRC

The Youth Red Cross (YRC) is a student-led movement rooted in the principles of humanity, service, and compassion. It encourages young minds to actively engage in social welfare activities, promote health awareness, and develop a sense of responsibility toward the community. At our college, the YRC unit plays an active role in organizing blood donation camps, first aid awareness sessions, health camps, and volunteer services during emergencies. Through these efforts, YRC fosters leadership, empathy, and a spirit of unity among students.

“As the General Secretary of the Youth Red Cross Society, I’ve embarked on a journey of service and compassion. Coordinating blood donation drives, health programs, and first aid training has been a rewarding experience. My role has allowed me to witness the true power of youth in bringing change. This journey is a reflection of how service transforms us and helps build a better society”.

-Thanga Tamil Selvan(General Secretary YRC)

The YRC continues to inspire a culture of giving back, encouraging students to serve not just with their hands—but with their hearts.





SPORTS HIGHLIGHTS

Interzone Participants



BALL BADMINTON INTERZONE



KAVYA S (II YEAR)



HANDBALL INTERZONE



THILAGAVATHI (III YEAR)



HOCKEY INTERZONE



**MIRIAM ANCY V (II YEAR)
GAYATRI C (II YEAR)
SUDESANA (II YEAR)**

Zonal Winners



**ATHLETICS ZONE
WINNERS**



**DINESH E
III YEAR**



**VIJAY ANANTH S
III YEAR**



**CRICKET ZONE
RUNNERS**



**KHO KHO ZONE
WINNERS**



**SATHISH KUMAR R
(III YEAR)**



BASKET BALL
ZONE WINNER



DHIYANESH - IV YEAR
AADHAVAN - IV YEAR
JASWANTH REDDY - IV YEAR
BHUVANAMATHESH - IIIYEAR



HANDBALL
ZONE WINNER



ABILASH - IIIYEAR
RAVITEJA -III YEAR
ARJUN - III YEAR

Inter-Department Match Winners



BASKETBALL RUNNERS



HOCKEY RUNNERS



YUVASREE M

CHESS TOURNAMENT - SECOND
PLACE
DISC THROW - FIRST PLACE



KRISH JOHNSON PANDIAN.C

CHESS TOURNAMENT -FIFTH
PLACE



GUHAN S

JUDO - FIRST PLACE



PRATHEESH KANNA A

JUDO - SECOND PLACE



PLACEMENT HIGHLIGHTS

Core companies visited

Honeywell



TITAN
COMPANY

CATERPILLAR®



HYUNDAI



TCS | DIGITAL



TEXAS
INSTRUMENTS



Larsen and Toubro

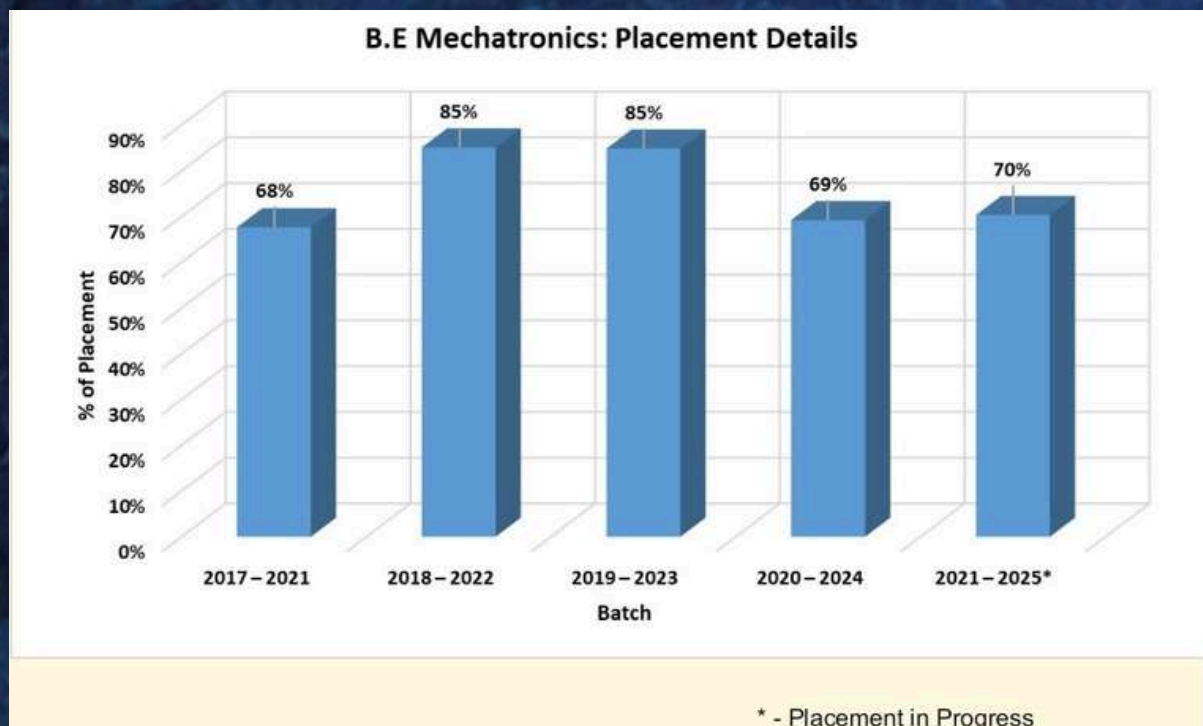


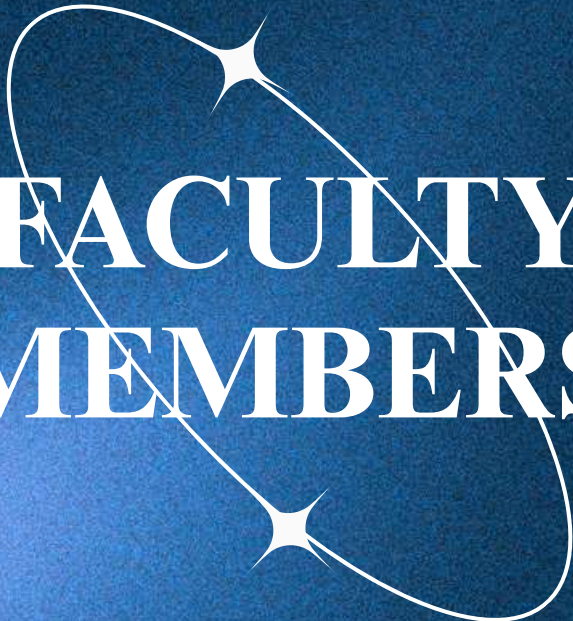
Kaar
In Pursuit of Excellence



MICROCHIP

Placement Graph (2017-2025)





FACULTY MEMBERS

Faculty Members



Dr. G. Kumaraguruparan
Head Of the Department



Dr. G. KANAGARAJ
PROFESSOR



Dr. S. JULIUS FUSIC
ASSISTANT
PROFESSOR



Dr. H. RAMESH
ASSISTANT
PROFESSOR



Mr. S. PARTHASARATHI
ASSISTANT
PROFESSOR



Mr. M. A. GANESH
ASSISTANT
PROFESSOR



Mr. S.A.R. SHEIK MASTHAN
ASSISTANT
PROFESSOR

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ASSISTANT
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Mr. S. RAJKUMAR
Assistant
Professor



Dr. M. RAJALAKSHMI
ASSISTANT
PROFESSOR

Lab Technicians



MR. R. VIJAYAKUMAR
LAB TECHNICIAN



MRS. M. VANJIKODI
LAB TECHNICIAN



MR. G. ARUN KUMAR
LAB TECHNICIAN



MR. S. SENTAMILSELVAN
LAB TECHNICIAN



MR. M. D. THANGAPANDI
LAB TECHNICIAN

SWEET RECAP



PHOTO GALLERY

2024-2025







BATCH

2024-2028

BATCH

2023-2027



BATCH

2022-2026



BATCH

2021-2025



A MAGAZINE BY

MECTIANS



