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REDEEM

**EMPOWERING INNOVATION,
CONNECTING FUTURES!**

RESET RECHARGE RISE

VOLUME 14 | ISSUE 1 | JULY 2025

**DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING
SSN COLLEGE OF ENGINEERING**

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THE CREW

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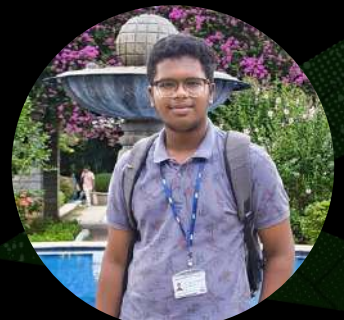
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FROM THE HOD DESK

A message from the Head of the Department



The true measure of success is the impact we generate, and the July 2025 issue of RedEEEm stands as a vibrant testament to the strides our department made in the second quarter of 2025. Every page spotlights the ingenuity and dedication of our faculty, students, and alumni -showcasing fresh knowledge, bold ideas, and collaborative spirit.

My heartfelt thanks go to the newly elected editorial team, whose keen eye and tireless effort have woven these achievements into a single narrative. I hope you enjoy exploring this edition.

May these pages not only celebrate a successful quarter, but also spark new collaborations in the year ahead. I hope you feel as proud reading RedEEEm as I do introducing it.

Dr. Rajini V,
Head of the Department, EEE



PREFACE

A heartfelt message from the Editorial Board

Welcome all to new academic year! Fresh thinking leads to explore the unknown for new possibilities. There is always a war when we try to take a step out of our comfort zone. A war between the self you pretend to be and the self you truly are. A war born not of weakness but of childhood survival. The hiding became a habit that habit became a personality and that personality became a prison. What was once necessary to survive is now keeping you from living. It's within you and the truth is no one can win it for you; People can guide you; books can awaken you; ideas can shake you to your core. But in the end the choice is yours. Will you keep running, keep blaming, keep pretending as if the pain doesn't exist or will you finally stop turn inward and face the enemy that has always lived in your own reflection, often disturbing you.

The psychic wounds don't heal with age they deepen until one day you look in the mirror and feel like a stranger to your own soul. We should acknowledge and integrate the repressed, unconscious aspects of the self, rejected traits and learn to be comfortable living with it. Healing begins with awareness, acceptance (embracing these traits without judgment), and integration (bringing them into conscious balance). Through self-reflection, dialogue, and creative expression, we can transform the source of inner conflict into a wellspring of wholeness and authenticity. Universe don't respond to what you want but what you are.

Our thoughts if you notice carefully, you will see we are not really thinking them. They bubble up from inside somewhere and then we put them into action. it is a subtle impulse coming up from unknown depths like a little bubble coming up from deep inside the lake when it comes to the surface, it becomes noticeable then it takes possession of us then we make it a conscious thought then we say something and do something.

Thoughts are from our tendencies and preconditioning, but a particular thought, particular desire or particular pattern of thinking comes up based on our sanskar as tendencies inherited from our past experiences, for which we are not responsible. But as it bubbles up, there is a window of opportunity where the tendency as it comes to the surface and before it becomes an expressed thought at the surface of the mind, there is a point where you can assent to it, you can say yes or no. But the window is very small, and it happens so quick, we miss it all the time due to lack of



PREFACE

A heartfelt message from the Editorial Board

awareness and allow the default, auto pilot mode to react according to our sanskar and face the consequences. We associate meaning to the sensation in conjunction to our sanskar. A moment of choice is a moment of truth. It's the testing point of our character and competence.

In the battle between mongoose and snake, when the snake bites mongoose, instead of dying, the mongoose ran to a nearby herb, chewed healing leaves, and returned—fully healed and energized and fight again. Each time the snake bit the mongoose the mongoose ate the magical leaves and came back stronger. Exhausted and out of venom, the snake finally collapsed in defeat. The mongoose had won, not just by strength, but by its knowledge of healing and unwavering determination. No matter how many times negativity strikes, Wisdom, spiritual knowledge and practices (like the healing leaves) helps us rise and conquer. Those who experience this understand their true self and become simple in their life.

They no longer try to impress others.

They don't carry the burden of being someone.

They speak truth without fear, love without condition and live without resistance.

Their actions come from silence not from ego.

They don't chase success but do what needs to be done. They don't compare because they know each being is unique. They don't cling because they trust the flow of life. They no longer get trapped in petty arguments because they don't feel the need to defend a false image. They don't suffer from insults because they understand that they are not labels. They don't seek constant approval because they are rooted in their own presence and that presence is not arrogant, not passive, but alert and alive. They respond with intelligence, not with habit. They see the beauty of the world without wanting to possess it. They listen deeply, feel deeply and move without conflict. They realize that life is not about being perfect, it's about being present, it's about falling, learning and rising, not as a performer but as a witness. In that witness even failure shines. When you stop being what the world expects, you start becoming who you truly are.

And that's when your real life begins.



NEW BEGINNINGS

A welcome note for the freshers

So, twelve years of school life have passed. Twelve years of sweat and hard work have made you stand here proud (I hope), choosing Electrical and Electronics Engineering at SSN College of Engineering. This will be your first step towards the remaining 75% of your life (not inherently, but still) and there are fears, don't get me wrong. I had it too. To the fact that EEE has a stigma of being one of the most hardest engineering streams, and in an truly Indian standpoint, "not having as much of placements as CSE".

But, since this is your first exposure to the RedEEEEm Magazine ran by the EEE department, I feel like its necessary to first reduce the fear of studying EEE. I also don't want to sugarcoat it too, EEE is hard, yet its one of the most fundamental and beautiful engineering streams. The discovery of electricity improved the quality of human life drastically, and if we think for a minute, we cant survive without electricity or electronic devices. We will be spinning shawarma if we didn't have fans, our world will be dark without lights and obviously, cellphones. I think its pretty self explanatory. Our entire lives starts and ends with electronic devices surrounding us, whether we know it or not. Just think of the world where there is nothing related to electricity and suddenly 98% of the things that surrounds you just vanishes. And it has every right to say that it is the backbone of a modern human's life.

So, lets go back a bit. Electrical students (even preschoolers) say the name "Edison" when the word electricity is mentioned, but the development which happened after that laid the modern foundations of electricity, and of many people who had contributed to it, we must know about the real father of Electrical Engineering, Charles Steinmetz, a hunchback, unmarried and an unmatched genius. In the early 1910s, where the discovery of things became the next step for a human life, General Electronics has a problem. One of their complex Electrical systems is malfunctioning and it is costing hundreds of thousands of dollars of Henry Ford's money.

Desperate to find a solution, they called Steinmetz, their former consultant who worked in the Union College as a professor at that time, to give a solution. He walked into that labryynth of a machine, traced the problem painstakingly and marked that location with a X mark by chalk. He sent an invoice of \$10,000 for consulting, and the GE engineers are shocked by the bill and pressured for reason, so he modified the invoice which said the following:

"\$ 1 for chalk, \$ 9999 for consultation"



NEW BEGINNINGS

A heartfelt message from the Editorial Board

In case if you still don't know he is, then look at your 11th and 12th textbooks. You might have heard about the "Law of Hysterisis", It states that the hysteresis loss per cycle is proportional to the frequency and the material's maximum magnetic flux density raised to a power.

The beauty of EEE is not just discovery or invention, it's the ability to solve problems. Since our daily life involves around electricity and electrical devices, its obvious to know how to solve issues and either provide up solution or accidentally discover another brach of Electrical. And nothing can be more heartwarming then to see the surge of interest in Electrical subjects again, which ranges from developments in EV vehicles, trying to make their cars more efficient, powerful and performance oriented to semiconductor industries fighting to bring the next generation of chips to improve computing experience. Or there is Robotics, if you are really into automation, or power systems, if you want to improve electricity supply even in the most remote and bleak areas, or Signal and communications, if you don't want your phone call audio to break when you come out an inch out of hostel etc.

That's quite a lot isn't it?

There is more, and new fields will emerge in future (this is NOT a threat, in fact it's a happy news, more employment for us!). This field of study is equivalent to the giving tree, and it has no plans to stop at anytime. And for me personally, it allows us to expand our knowledge about the fundamentals and the path we came until now and the one we are going to be taking in the future. It always makes us to learn and that is what makes us human, and if not electrical, there is nothing more stream in engineering that captures this quality.

So, I hope this made you slightly lighter, and your department subjects might not start immediately, but its an motivation to keep pursuing this path. Its worth the journey, every twist and turns makes us to discover something more about this vague and detailed field of study and at the end, there will be absolutely no regrets.

-Elamvazhuthi A , 2nd year



FACULTY HIGHLIGHTS

Success through knowledge

1) External recognition

Dr. R. Ramaprabha, Prof./EEE attended Academic Audit meeting of Department of EEE, St. Josephs College of Engineering, Chennai in the capacity of Academic Expert on 02.04.2025.

Dr. M. Balaji, ASP/EEE served as an academic expert in the Preliminary Design Review (PDR) Committee constituted by CVRDE, Chennai, to review the development of Engine Starting Sequence and Controlled Power Relay Assemblies on 16.04.2025

Dr. M. Senthil Kumaran, ASP/EEE delivered a guest lecture on Circuits and Simulators at the department of ECE, Sri Venkateswara Institute of Science and Technology, Thiruvallur on 21.04.2025.

Dr. K. Murugesan, ASP/EEE delivered a guest lecture on Study of Transients at the department of EEE, Sri Venkateswara Institute of Science and Tecnology, Thiruvallur on 21.04.2025.

Dr. R. Leo, ASP/EEE delivered a keynote speech on Value based Education and IoT and Machine learning based Building Energy Management at Ist International Conference, APWEN NSUKKA Chapter at Faculty of Engineering, University of Nigeria, on 5.03.2025 2025.

Dr. Rajesh Panda, AP/EEE Promoted to IEEE Senior Member.

Dr. Sajjan Kumar, AP/EEE delivered a guest lecture on Applications of IoT in Electrical Engineering in online mode at Department of Electrical Engineering, Swami Vivekananda School of Diploma, Durgapur, West Bengal on 26.04.2025.

Dr. R. Seyezhai, P/EEE acted as an external examiner for the project viva-voce examination for M.E, PED at Anna University, Chennai.

Dr. K. K. Nagarajan, ASP/EEE acted as session chair in the IEEE co-sponsored International Conference RAEEUCCI 2025, organized by Department of ECE, SRMIST, Kattankulathur, on 23/04/2025

Dr. S. Krishnaveni, ASP/EEE acted as session chair in the IEEE co-sponsored 11th International Conference on Communication and Signal Processing, organized by Adhiparasakthi Engineering College, Melmaruvathur - 603319, TamilNadu, India on 6.6.2025.

Dr. K. Murugesan, ASP/EEE served as a distinguished resource person in the six days Faculty Development Program (FDP) on Foundations of Digital Systems and Computer Organization, organized by the department of ECE and delivered a guest lecture on Combinational Logic Circuits and Design at Rajalakshmi Institute of Technology (RIT), Chennai, on 24.06.2025.



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Dr. M. Senthil Kumaran, ASP/EEE delivered a Invited lecture on " Sequential Logic Circuits" in the FDP Program on Foundations of Digital System and Computer Organization at department of ECE, Rajalakshmi Institute of Technology , Chennai on 25.06.2025.

Dr. M. Balaji ASP/EEE delivered a guest lecture on" Fundamentals of Computer Architecture" at six days FDP on "Foundations of Digital Systems and Computer Organization" organized by Rajalakshmi Institute of Technology Chennai on 26.06.2025.

Dr. V. Thiyagarajan, ASP/EEE, has delivered the guest lecture on Power Converter Design and Optimization using AI Techniques during the for Faculty Development Programme on AI-Driven Innovations in Power Converters for Optimized Renewable Energy Utilization organized by Kongunadu College of Engineering & Technology, Namakkal on 23/06/2025.

Dr. V. Thiyagarajan, ASP/EEE, has been appointed as a Member of the Board of Studies (BoS) for M.E. (Power Systems Engineering) program offered in Affiliated Institutions (non-autonomous) under the ambit of Anna University for a period of three years from 20/06/2025.

2) Research Publication

Benneth C. Oyinna, Kenneth E. Okedu, Gauri Kalnoor, Leo Raju, V B Murali, Ilhami Colak, "Economic Analysis of Off-grid Energy Projects: A FINPLAN Model Approach", IEEE Access, April, 2025, Vol. 13, pp. 83916-83929. ISSN Online: 2169-3536, Impact Factor: 3.4, DOI: <https://doi.org/10.1109/ACCESS.2025.3561631>.

Sunanda Hazra, Dipanjan Datta, Chandan Paul, Provas Kumar Roy, Sneha Sultana, Sajjan Kumar, Soham Dutta, "Electric vehicle integrated tidal-solar-wind-hydro-thermal systems for strengthening the microgrid and environment sustainability", Scientific Reports, April 2025, Vol. 15(1), 14888, pp. 1-31. ISSN Online: 2045-2322, Impact Factor: 4.3, DOI: <https://doi.org/10.1038/s41598-025-98594-9>.

Karthika Maripandi, Balaji Mahadevan, Fantin Irudaya Raj Edward Sehar, "Influence of Silicon Steel Laminating Material on vibrational and electromagnetic characteristics of switched reluctance motor configurations-A detailed investigation", Journal of Mechanical Engineering Service, February 2025, Vol. 239, pp. 4647-4660. ISSN Print: 0954-4062, Impact Factor: 0.440, DOI: <https://doi.org/10.1177/09544062251322657>.

Mohideen Abdulkader M, M. Senthil Kumaran, Vijay Keerthika, Polu Srinivasa Reddy, Alla Rajendra, Subbulakshmi R "Rural Ecosystem Monitoring in Food Security Analysis Based on Sustainable



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Agriculture: Artificial Intelligence Application, Remote Sensing in Earth Systems Sciences, 2025, Vol. 8, pp. 56-64. ISSN Print: 2520-8195, ISSN Online: 2520-8209, Impact Factor: 1.6, DOI: <https://doi.org/10.1007/s41976-024-00166-4>.

Thiyagarajan Venkatraman, Ragul Duraisamy, "A Generalized Symmetrical and Asymmetrical Multilevel Inverter Topology with Reduced Number of Components", Springer LNEE, 2024, Vol. 1139, Pages 123-133. Impact Factor: 0.148, DOI: https://doi.org/10.1007/978-981-99-9439-7_10.

Saurabh Mani Tripathi, Raghavendra Rajan Vijayaraghavan, Thiyagarajan Venkatraman, Adesh Kumar Mishra, Ankit Kumar Srivastava, Omveer Singh, Lucian Mihet-Popa, Sachin Kumar, Rajvikram Madurai Elavarasan, "Performance assessment of VSC-based HVDC system in asynchronous grid interconnection: Offline and real-time validation of control design with symmetric optimum PI tuning", Helion, 2024, Vol. 10, pp. 35624-356242. ISSN Print: 2405-8440, ISSN Online: 2405-8440, Impact Factor: 3.4, DOI: <https://doi.org/10.1016/j.helion.2024.e35624>.

Duraisamy Ragul, Venkatraman Thiyagarajan, "A Novel Fault-Tolerant Generalized Symmetrical Topology for Renewable Energy and Electric Vehicle Applications", RRST-EE, Journal of Romanian Academy, 2024 Vol. 69, pp. 383-388. ISSN Print: 0035-4066, ISSN Online: 0035-4066, Impact Factor: 0.7, DOI: <https://doi.org/10.59277/RRST-EE.2024.69.4>.

R. Deepalaxmi, C. Vaithilingam, "Micro-controller Based Condition Monitoring System for Induction Motor" Journal of Electrical System, 2025, Vol. 21, pp. 1-20. ISSN Print: 1112-5209, ISSN Online: 1112-5209, Impact Factor: 0.5, DOI: <https://doi.org/10.52783/jes.8685>.

3) Book chapters

Tamil Selvi S, Karuppiah, N, Mounica, P, Murugaperuma L. k, Shanmugasundaram, ShivaBhargavi, K., Assessing Solar Energy Potential for Green Energy Production Across Indian Regions Using SAM Software, IGI Global, 2025, pp. 19-36. ISBN Print: 9798369399248, ISBN Online: 9798369399262, DOI: 10.4018/979-8-3693-9924-8.ch002.

S. Vidhya, V. Kamaraj, Balaji Mahadevan "The Role of Blockchain Technology with IoT for Revolutionizing Waste Management", Integrated Approaches for Sustainable E-Waste Management, IGI Global, pp. 177-214, June 2025. DOI: 10.4018/979-8-3693-7383-5.ch007

4) Conference activity

Shalinie S, R. Ramaprabha, Sharmila H, Arivazhagan J, "Design and Implementation of Boost Multilevel Inverter for Flywheel Energy Storage System", 2025 International Conference on Recent Advances in Electrical, Electronics, Ubiquitous Communication, and Computational Intelligence (RAEEUCCI), Chennai, India, 2025, pp. 1-6, DOI: 10.1109/RAEEUCCI63961.2025.11048301

Anjana Ethirajan and R. Ramaprabha, "Implementation of Hybrid Powered DC



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Charging Station”, 2025 International Conference on Recent Advances in Electrical, Electronics, Ubiquitous Communication, and Computational Intelligence (RAEEUCCI), Chennai, India, 2025, pp. 1-6, DOI: 10.1109/RAEEUCCI63961.2025.11048257

N B Muthu Selvan, Smithaa M, Aarthi R, Sangamithirai S , IoT Driven Smart Energy Metering and Load Control System, 13th International Conference on Contemporary Engineering and technology, organized by: Prince Shri Venkateshwara Padmavathy Engineering College, Chennai, during March 22-23, 2025

Muthu Selvan N B, Abdul Baaqi - Shunt Active Power Filter for Power Quality Enhancement, 6th International Conference on Computational Intelligence and Industry 5.0 ICCII- 2025, organized by Vellammal Institute of Technology, Chennai, during Mach 21-22, 2025

S.Krishnaveni, “Design and Stability Analysis of dual PI control Method for low power Boost converter,” International Conference on Recent Advances in Electrical, Electronics, Ubiquitous Communication, and Computational Intelligence (RAEEUCCI) held at SRM University, Chennai, on 23rd April 2025.

S.Krishnaveni, Melviah.H, Harini.M, Vishnupriya. B, “Harmonic Analysis of Boost Inverter for Grid Application,” International Conference on Advances in Modern Age Technologies for Health and Engineering Science (AMATHE 2025), PES Institute of Technology and Management Shivamogga, Karnataka between 24 – 25, April 2025.

Seyezhai Ramalingam, Sudhakaran M (Assp/Mahaveer Institute of Science and Technology, Vyasapuri, Hyderabad) , **“Exploring the Modulation Methods for Unleashing Asymmetric Multilevel Inverter Potential for Renewable Energy Systems”** in the 1st Springer Sponsored International Conference on Recent Innovations and Trends in Electrical & Electronics Engineering and Computing (RITEEC-2025), organized by NIT, Patna during May 22-23, 2025 .

Katari Deepesh, Mahalakshmi K, Mahesh M. Balaji M, “Development of Voice-Activated Assistance System for the Disabled and Elder Citizens”, at 6th International Conference on Intelligent Communication Technologies and Virtual Mobile Networks (ICICV-2025) organized by Francis Xavier Engineering College, Tirunelveli, Tamil Nadu during June 17-19,2025.

J. Sam Infant Jude, J. Sri Vidhya, S. Varshini, M. Balaji, "Low-Latency Smart Traffic Control for Emergency Vehicles Using IoT and Edge Computing", at 6th International Conference on Inventive Research in Computing Applications organized by R V S College of Engineering and Technology, Coimbatore, India during June 25-27,2025.

Ramanathan G, M Senthil Kumaran, H. Mickle Aancy, U. Rajesh Kumar, Jyotirmayi Purohit, S. Kaliappan,“AI-Enhanced Predictive Control in Power Electronics”, in First international conference



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on Frontier Technologies and Solutions - 2025 : (ICFTS - 2025) at St Joseph's College of Engineering, Chennai, held during March 27-28, 2025.

Paari A, S.Monish Kumar, Dheva S L and M. Balaji, "HydroNet: A Deep Reinforcement Learning Framework for Automated Reservoir Management and Optimal Irrigation Scheduling", at 6th International Conference on Inventive Research in Computing Applications organized by R V S College of Engineering and Technology, Coimbatore, India during June 25-27, 2025.

Ravikrishna R, Krishnaveni S, "Power Quality Monitoring System Using Spectrogram 1D-CNN," in the 11th International Conference on Communication and Signal Processing, ICCSP 2025 at Adhiparashakthi Engineering College, Melmaruvathur, TamilNadu. held during June 5-7, 2025

Ravikrishna R, Krishnaveni S, "Efficient Integration of Photovoltaic Systems into the Power Grid using DC-DC Boost Converter," in 2nd International conference on Advancements in Power, Communication, and Intelligent systems (APCI 2025) technically co-sponsored by IEEE Kerala Section at Government College of Engineering Kannur, Kerala, held during June 27-28, 2025.

S. Sathya Agila, V Thiyagarajan, "New Multilevel Inverter Design with Minimal Switch Configuration for Green Energy Integration" in International Conference on

Power Electronics and Renewable Energy Systems (ICPERES 2024), organized by the Department of Electrical and Electronics Engineering, Rajalakshmi Engineering College, Chennai during December 20 -21, 2024.

R Parameshwaran, M S Sanjay, V Thiyagarajan, "Analysis of Asymmetrical Multilevel Inverter with Reduced Voltage Stress", in the Scopus Indexed International Conference on Science, Technology, Engineering and Management (ICSTEM 2025), organized by Kalaignar Karunanidhi Institute of Technology, Coimbatore during March 14-15, 2025

L Anshul, V Thiyagarajan, " Simulation Analysis of Pencil Shaped Multilevel Inverter for Electric Vehicle Applications", in the Scopus Indexed International Conference on Science, Technology, Engineering and Management (ICSTEM 2025), organized by Kalaignar Karunanidhi Institute of Technology, Coimbatore during March 14-15, 2025.

V Thiyagarajan, "Design of a 7-Level Switched Capacitor Multilevel Inverter with Fewer Switches and Reduced Voltage Stress" in the 6th International Conference on Computational Intelligence and Industry 5.0 (ICCII 2025), organized by Velammal Institute of Technology, Chennai during March 21-22, 2025.

V Thiyagarajan, "High-Efficiency Inverter Module with Reduced Components for Renewable Systems" in the 6th International Conference on Computational Intelligence and



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Industry 5.0 (ICCII 2025), organized by Velammal Institute of Technology, Chennai during March 21-22, 2025.

S. Sathya Agila, V Thiagarajan, “A Novel Multisource Multilevel Inverter Using Minimal Switches for Renewable Energy Systems” in the IEEE Sponsored First International Conference on Frontier Technologies and Solutions (ICFTS-2025), organized by the Department of Electrical and Electronics Engineering, St Joseph’s College of Engineering, Chennai during March 27-28, 2025.

Sumaithri P, Shruthieshreyaa R, Sri Vidhya J, V Thiagarajan, “Design and Implementation of 21 Level Asymmetrical Multilevel Inverter with Reduced Number of Components” in the IEEE Sponsored First International Conference on Frontier Technologies and Solutions (ICFTS-2025), organized by the Department of Electrical and Electronics Engineering, St Joseph’s College of Engineering, Chennai during March 27-28, 2025.

S. Selvamani, V Thiagarajan, “Integrating IoT and Machine Learning for Optimized Electric Vehicle Performance: A Comprehensive Review”, in the Scopus Indexed First International Conference in Pathway of Electrical, Automation, Communication and Electronics (PEACE 2025), organized by K.Ramakrishnan College of Technology, Trichy during April 11-12, 2025.

Leo Raju, Arthika N, Lokapriya V “LoRaWAN and STM32 based Lighting System for Smart Campus” in 5th International Conference on Advanced Computational and Communication Paradigms 2025 (ICACCP2025) at NIT SIKKIM Manipal University Sikkim during June 6-7, 2025 (Lecture Notes in Networks and Systems)(Impact factor 0.166, Q4, Scopus)

Leo Raju , Mani Krishna E , Monishkumar R “IoT based Smart and Cost-Efficient Building Energy Monitoring and Management System” in the 5th International Conference on Intelligent Vision and Computing (ICIVC 2025) held at The ICFAI University, Dehradun during June 13 – 14, 2025. (Lecture Notes in Networks and Systems) (0.166 Q4 Scopus)

Leo Raju , Mani Krishna E , Monishkumar “Advanced Machine learning Algorithms for Energy Prediction and Analysis in Academic Buildings” in International Conference on Innovations in Cybersecurity and Data Science (ICICDS-2025) held virtually at REVA University, Bengaluru, during June 2-3, 2025, (Algorithms for Intelligent Systems, Springer)

Nagarajan V S, Rajini V and Bharatiraja C “Comparative Multi Physics based Analysis of IPMSM and Induction Motor for Last Mile Delivery Application”, in the National Conference titled “The Scope and Adoption of Electric Vehicles and Public Charging Station Infrastructure for Sustainable Bharat”, organized by Dr.N.G.P. Institute of Technology, Coimbatore. on 4th June 2025.



FACULTY HIGHLIGHTS

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Rajini V, Nagarajan V S and Bharatiraja C "Investigations on half bridge resonant converter for Electric vehicles", in the National Conference titled "The Scope and Adoption of Electric Vehicles and Public Charging Station Infrastructure for Sustainable Bharat", organized by Dr.N.G.P. Institute of Technology, Coimbatore, on 4th June 2025.

Dr. K.K.Nagarajan, ASP/EEE, **Ms. Suganthi Stephen** (UG EEE) and **Ms. R. Vinodhini** (UG EEE) presented a paper titled "Detection and Isolation of Broken Strands in Power Transmission Line" in the IEEE Technical co-sponsored International Conference on "Computational Innovations and Engineering Sustainability" **RAEEUCCI 2025**, organized by Department of EEE, PSG College of Technology, Coimbatore during April 24-26, 2025

5) Projects Applied

Project Title: **Two Days Workshop on Manufacturing & Industry 4.0 (Industrial Automation through PLC)** under the aegis of VAANI scheme-AICTE In Tamil Language. PI: **Dr. K. Murugesan**(PI); **Dr. R. Arun**(Co-PI). Total Budget (INR): 2,00,000. Funding Agency: AICTE

Ms. Anjana Ethirajan's application has been shortlisted for **CSIR HRDG SRF** and she attended personal interview on 22.04.2025 at New Delhi. She is full-time PhD candidate of **Dr. R. Ramaprabha**. Title: **Development of User-friendly IoT interface for PV fed bi-directional high gain converter-based E-bike charging station.**

Project Title: **"Fostering Sustainable Livelihoods through Advancements in 3D Printing Technology for Weavers in Kancheepuram District"**, **Dr Muthu Selvan N B** (PI), **Dr. Balaji M**(Co-PI), Total Budget (INR): 1,12,48,000/-. Funding Agency: Science for Equity Empowerment and Development (SEED).

Project Title: **Edge-AI Driven Early Detection of Myopia in Children Using Explainable AI and Embedded Vision Systems** PI: **Dr.M.Balaji**, Co-PI : **Dr. V. Kamaraj , Dr. R. Seyezhai & Dr. R. Ramaprabha**, Total Budget Rs. 64.91 Lakhs (Indian Team) and SGD. 2,41,800 (Singapore Team) Funding Agency: Department of Science & Technology (DST), Govt. of India and Agency for Science, Technology and Research (A*STAR), Singapore.

Interaction of Sanctioned DST project – May-June 2025. Title: **Design and Development of Replicable and Scalable Cyber Physical Micro Grid System** sanctioned by DST International Bilateral Co-operation Division (India-Serbia, Bilateral Scientific and Technological Cooperation). Duration: 2023–2026. **Dr. R. Deepalaxmi**, ASP/EEE (India side Co-PI) and **Dr. C. Vaithilingam**, Prof /SELECT (India side PI), Vellore Institute of Technology, Chennai, visited Department of Power Systems, School of Electrical Engineering, University of Belgrade, Bulevar Kralja, Aleksandra, Belgrade, Serbia during May 27, 2025 to June 2, 2025. They interacted with **Dr. Zoran Stojanovic**, ASP (Serbia side PI) and **Dr. Mileta Zarkovic**, AP (Serbia side Co-PI), Department of Power Systems, School of Electrical Engineering, University of Belgrade. They also visited the Power System Protection Laboratory.



FACULTY HIGHLIGHTS

Success through knowledge

Project Title : **Investigation of Solar Powered High Gain DC-DC converter for Fast Charging Mechanism** , Mentor : **Dr R Seyezhai** , PI : **Dr.P.S.Suvedha**, for the National Post Doctoral Fellowship (NPDF) Funding Agency: ANRF

Dr. R. Ramaprabha (PI), **Dr. M. Balaji** (Co-PI) & **Dr. V. Kamaraj** (Co-PI) submitted the project proposal titled **Development of Controller for Hybrid Photovoltaic System to Enhance the Grid Resiliency** to Central Power Research Institute under the call on Research Scheme on Power (CPRI RSoP 2025) scheme for an amount of Rs. 39.52 lakhs on 10.06.2025

Dr. V. Thiyagarajan (PI), **Dr. R. Ramaprabha** (Co-PI) & **Dr. S. Radha** (Co-PI) submitted the project proposal titled **Solar - Powered Borewell Automation and Water Purification System for a Coastal Fishing Community** to IEEE EDS & Tech4Good 2025 scheme for an amount of USD. 10,000 on 06.06.2025

Dr. P. Rajesh (PI) & **Dr. R. Ramaprabha** (Co-PI) submitted the project proposal **Modified Bridgman Assembly for Semiconductor Crystal Growth** to AICTE under the call on Research Promotion Scheme (AICTE-RPS 2025) scheme for an amount of Rs. 40 lakhs on 28.06.2025- Application No. 1-1229101-2025-5808

Dr. Rajini V, HoD/EEE and **Dr. Nagarajan V S**, ASP/EEE along with **Bharatiraja C** of SRM Institute of Science and Technology, SRM University, Chennai have applied a project

titled "A novel, rare earth magnet free, electrically excited Synchronous motor for resilient Indian EV market" to AICTE, under Lab to market Scheme during June 2025.

6) Patents

Paari A, Sai Krishna Karthik P, Nikesh D (UG students, 2024 passed out), **Dr. M. Balaji, Dr. R. Ramaprabha, & Dr. V. Kamaraj** submitted the patent titled "**Weed Management System with Image Processing and Machine Learning**" (Application Number: 202541046444) filed on 14/05/2025 & Published on 30/05/2025

Rajamithra K, Rashmika M, Renuka B (UG students, 2025 passed out), **Dr. R. Ramaprabha & Dr. M. Balaji**, submitted the patent titled "**Smart Thermal Vest for Soldier Safety**" (Application Number: 202541057237) filed on 14/06/2025 & Published on 27/06/2025.

7) Scholar Info

Dr. V. Thiyagarajan, ASP/EEE, conducted the Synopsis DC meeting for his research scholar **Mr. D Ragul** on 29/04/2025.

Dr. Muthu Selvan N B, ASP/EEE conducted the synopsis DC Meeting for his part-time research scholar, **Mr. P. Vivek** on 07.05.2025.

Dr. R.Seyezhai, P/EEE conducted the Synopsis DC meeting for the full-time scholar **Ms.S.Devi** on 12.05.2025.



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Dr R Seyezhai, P/EEE conducted the synopsis DC meeting for her full-time research scholar **Ms.B.Lakshmi Prabha** on 06.06.2025

Dr. V. Thiyagarajan, ASP/EEE has conducted the Confirmation DC Meeting for his research scholar, **Mr. Selvamani S** on 22/05/2025.

Dr. K. Murugesan, ASP/EEE conducted the confirmation DC Meeting for his part-time research scholar, **Ms. Padmavathy. N** (Reg No: 22223997108) on 09.06.2025.

Dr.S.Krishnaveni, ASP/EEE conducted Annual Progress Review meeting for her part-time research scholar, **Ms.K.K.Uthira Ramya Bala** on 8.5.2025.

Dr. K. K. Nagarajan, ASP/EEE conducted Viva Voce examination for his full time PhD scholar, **Ms. Ramya**, in the Seminar Hall, EEE Department SSNCE on 2.5.2025.

Dr. S. Tamilselvi ASP/EEE conducted the Viva Voce Public Oral Examination for her part-time research scholar, **Mr. M.Aravindan** on 6. 6, 2025

8) Events Attended

8 a) DC Meetings

Dr. V. Thiyagarajan, ASP/EEE, served as a Doctoral Committee (DC) member and attended the Annual DC Meeting of the research scholar **Mr. F. Max Savio** on 11/06/2025. The scholar is supervised by **Dr. D. Kalpana**, MIT, Anna University, Chennai

Dr. V. Thiyagarajan, ASP/EEE, served as a Doctoral Committee (DC) member and attended the Synopsis Meeting of the research scholar **Ms. Resma KK** on 10/02/2025. The scholar is supervised by **Dr. R. Femi**, Assistant Professor, Department of Electrical and Electronics Engineering, SRM Institute of Science and Technology, Kattankulathur.

Dr. S. Tamilselvi ASP/EEE has attended DC Meeting of a part-time Ph.D research scholar, **Mr. Dhananjeyan, S.** (Reg No: 21133991134) pursuing Ph.D under the guidance of **Mr.R Muniraj**, ASP & Head/Dept of EEE, PSR Engineering College, Sivakasi (AU Affiliated) on 12.06.2025

Dr R Seyezhai, P/EEE attended the Synopsis DC Meeting for the scholar **Ms. Nithya Devi S M**, full-time scholar guided by **Dr.K.Vijayakumar**, Professor and Chairperson, Department of Electrical and Electronics Engineering, Faculty of Engineering and Technology, SRM University, Kattankulathur, on 24.06.2025.

8 b) Workshops, STTPs, FDPs

Dr Muthu Selvan N B, ASP/EEE, attended 5 day Online IKS-TKDL Workshop-7 on "Traditional Knowledge - Intellectual Property & People's Rights," organized by the Indian Knowledge Systems (IKS) Division, Ministry of Education, in collaboration with the CSIR-Traditional Knowledge Digital Library (CSIR-TKDL), Ministry of Science & Technology, Govt. of India scheduled from 1.04.2025 to 07.04.2025



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Dr. M.Senthil Kumaran, ASP/EEE, and **Dr. K. Murugesan**, ASP/EEE attended three Days Short Term Training Programme (STTP) on **Python for Machine Learning and Deep Learning** Conducted by Mepco Schlenk Engineering College, Sivakasi, Tamil Nadu from 23.04.2025-25.04.2025.

Dr. K. K. Nagarajan, ASP/EEE attended a Hands-on Workshop on **Semiconductor Fabrication & Characterization**, which is part of the Semiconductor Skills Development through SEMulator3D initiative. This program is supported by the Ministry of Electronics & Information Technology (MeitY), Government of India, and conducted in association with Lam Research India at IISc Bengaluru from 1st to 9th May 2025 followed by an Online Lecture and Demo Session (part of the Lam Research India-CeNSE IISc Semiconductor skills development through SEMulator3D) from 12th to 23rd May 2025.

Dr.S.Krishnaveni, ASP/EEE attended 6 days online Faculty developed programme (FDP) on **Power Electronics Applications in Renewable Energy Systems and E-Vehicles** conducted by Indian Institute of Information Technology Design and Manufacturing, Kancheepuram in Association with E & ICT Academy, PDPM IIITDM Jabalpur from 22.04.2025 - 27.4.2025.

Dr V Thiyagarajan, ASP/EEE has participated & completed successfully AICTE Training And Learning (ATAL)

Academy sponsored Faculty Development Program on **Digital Transformation in Manufacturing- Industry 4.0 and 5.0** at Sri Manakula Vinayagar Engineering College, Pondicherry from 09/12/2024-21/12/2024

Dr R.Leo, ASP/EEE, attended 10 days Online Faculty Development Program (FDP) on **Theoretical Insights and Practical Strategies: Optimization, Control, Game Theory, and Reinforcement Learning (OCGR-2025)**, organized by NIT Patna from 2-6-2025 to 12-6-2025.

9) MoU Related News

An MoU was signed between **M/S. Atribs Software Systems Pvt Ltd** and **Sri Sivasubramaniya Nadar College of Engineering** on 12.04.2025. This MoU envisages scientific collaboration for joint product development, internships and other corporations of mutual value. **Dr. V. Rajini** HoD/EEE, **Dr Muthu Selvan N B** ASP/EEE and **Dr. V. Thiyagarajan**, ASP/EEE coordinated the MoU process.

An MoU was signed between **M/S Krishna Blu Metals** and **Sri Sivasubramaniya Nadar College of Engineering** during April 2025. This MOU is for collaboration on consultancy work related to "**Renewable Energy-based Electric Drive Solutions for Extraction and Processing of Rocks**". **Dr. Balaji**, ASP/EEE coordinated the MoU process.



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11) Other items

The department of EEE conducted the sixth **BoS meeting** on 26-4-2025. The agenda for the meeting was to consider and approve the R 2024 curricula & syllabi from sem III to sem VIII of UG EEE and to consider and approve the curricula & syllabi of all semesters of ME PED R2025. The members were,

1. **Dr Sanjib Kumar Patnaik** (University nominee), Prof/EEE, CEG campus, AU
2. **Dr Selvajothi** (academic expert), Prof, IIITDM, Kanchipuram
3. **Dr S Moorthi** (Academic expert), Prof/EEE, NITT
4. **Dr Arun Arumugam** (Industry Expert), Group Lead Innovation & Development, Versuni India Home Solutions Limited.
5. **Mr. C. J. Manoj Shyam**, (Meritorious Alumnus - UG), IITM
6. **Mr. S. Iyappan**, (Meritorious Alumnus- PG), Senior Electronics Engineer, VALEO India Private Limited

Dr. R. Ramaprabha attended UG R2024 curriculum review meeting with **Dr. Ganesh Samudra** on Apr 15, 2025. .

Dr. Sajjan Kumar, AP/EEE mentored two school students under SHAPE program and successfully completed two projects.

Dr. Sajjan Kumar, AP/EEE coordinated the SHAPE program from EEE department side.

Dr R Leo reviewed two international journal papers one in IET Renewable Power Generation and other in Internet of Things and Cyber-Physical Systems during April 2025.

Dr N.B. Muthu Selvan reviewed a research paper for the International Journal of Electrical Power and Energy Systems on 14.05.2025

Dr Muthu Selvan N B reviewed a research manuscript submitted to International Journal of Electronics on May 23, 2025

Dr Muthu Selvan N B reviewed a research manuscript submitted to International Journal of Electronics on May 23, 2025

Dr. Muthu Selvan N. B. attended the "**Critical Design Review (CDR)**" meeting at the Combat Vehicles Research & Development Establishment office (CVRDE), Aavadi, on 16.04.2024.

Dr. Muthu Selvan N. B. attended the Annual Doctoral Committee Meeting for a PhD research scholar on May 30, 2025, as a doctoral committee member.

Dr.R.Seyezhai, P/EEE attended the discussion on GPP on 26.05.2025 along with **Dr Vimal Samsingh**, ASSP/Mech, and **Ms. Roopa, SSNiFound.**

Dr. Rajesh Panda, AP, EEE mentored one student under SHAPE program on 2nd May 2025.



FACULTY HIGHLIGHTS

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Dr R Leo reviewed three international journal papers – one in Energy & Buildings and other two in Computers and Electrical Engineering

Dr. M. Senthil Kumaran, ASP/EEE guided one student for the SHAPE Program conducted by SSN College of Engineering on 2nd May 2025.

Dr.M.Senthil Kumaran ASP/EEE acted as an external examiner for PhD Viva Voce Examination for the research scholar **Mr. Thanigaivelraja M** (RC2113005011009) at SRM University, Chennai.

Dr. M. Senthil Kumaran served as an Anna University Representative for the conduct of End semester examination at Loyola ICAM Engineering College from June 4th to June 10th of 2025.

Dr Muthu Selvan N B, ASP/EEE, reviewed a research manuscript for the journal **Electric Power Systems Research** on 04.06.2025.

Dr Muthu Selvan N B ASP/EEE attended South/West Turnitin Webinar on "Empowering Classrooms Based Workflow with Turnitin Feedback Studio" on 04.06.2025.

Dr. Muthu Selvan N. B. attended the Annual Doctoral Committee Meeting for a PhD research scholar on June 13, 2025, as a doctoral committee member.

Dr. Rajesh Panda reviewed one journal in **Sustainable Energy, Grids and Networks, Elsevier** on 18/06/2025.

Dr. R. Deepalaxmi, ASP/EEE served as an Internship Co-ordinator (EEE) for student summer research internship at Department of EEE, SSNCE 2025 from February 2025. She had coordinated the activities mentioned by **Dr. R. Amutha**, Professor/ECE (Overall coordinator-SSNCE).

Dr. Rajesh Panda reviewed one paper in IEEE Transactions on **Automation Science and Engineering** on 23rd June 2025.

Dr. R. Seyezhai, P/EEE attended the 8th ACM meeting with regard to the UG R2024 Curriculum & syllabi and PG R2025 Curriculum & syllabi at SSNCE on 04.06.2025.

Dr. R. Seyezhai, P/EEE evaluated the POC/Prototype ideas submitted in **YUKTI PORTAL** with respect to the electrical and electronics domain on 26.06.2025.

Dr. R. Seyezhai, P/EEE completed the online course titled, "1 Day MVP 2.0 | Go from idea to MVP in just 1 day" from Udemy on 26.06.2025.

Dr. V. Thiyagarajan, ASP/EEE, reviewed a research paper submitted to the **International Journal of Renewable Energy Research (IJRER)** on 07/05/2025.

Dr. V. Thiyagarajan, ASP/EEE, reviewed a research paper submitted to the international journal "**Energy Reports**" on 24/05/2025.



FACULTY HIGHLIGHTS

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Dr. R. Leo has reviewed five international journal papers during June 2025. The journals are listed below:

- IEEE Transactions on Systems, Man and Cybernetics: Systems
- Elsevier Computers and Electrical Engineering
- IET Renewable Power Generation
- e-Prime – Advances in Electrical Engineering, Electronics and Energy
- Franklin Open

Tanish Trivedi (I Year B.E. – ECE) of Department of Electronics and Communication Engineering, Priyadarshini College of Engineering, Nagpur, completed internship titled **Switched-Capacitor Boost Inverter Topology with Reduced Switch Count for Renewable Energy Applications** (4 weeks), from May 19, 2025 to July 16, 2025 under the mentorship of **Dr. R. Ramaprabha**, ASSP/EEE and completed the procedures on June 16, 2025.

12) Consultancy Details

M/s. Ayya Traders has released the Year 3 consultancy fee of 1,00,000/- (Rupees One Lakh only) towards the services rendered by the team comprising **Dr. M. Balaji**, ASP/EEE, **Dr. R. Ramaprabha**, Prof/EEE, and **Dr. V. Kamaraj**, Prof/EEE related to the consultancy titled **Solar-Based Drive for Scrap Compaction**. The consultancy period is from April 2023 to April 2026, with a total consultancy amount of Rs 3,00,000.

Dr R Seyezhai, P/EEE received the second instalment amount of Rs.94,068.00 with regard to the consultancy project titled,

"Performance Assessment and Degradation Analysis of Solar PV Modules", from JP Solar, Chennai on 19.06.2025

Dr R Leo and **Dr. M. Senthilkumaran** Associate Professor, Department of EEE visited Niraltek Solutions Pvt Ltd, Chennai to discuss about their ongoing consultancy work titled **"Advanced Energy management with Dynamic cloud operation using Osmotic computing"** on June 3rd, 2025. After the visit, they received Rs 50,000 as second payment for their consultancy work on June 9, 2025. The total consultancy amount was 2,00,000.

13) Student Activity

The name list of 25 final year students admitted under **SPURS (Scholarship for potential Undergraduate Rural Students)** schemes were submitted to **Mr. Cooper** company, Chennai for Internship opportunities. After the interview, 10 of them were shortlisted. The selected ten students will undergo 6 weeks of internship at Mr. Cooper, Chennai, India, on Data Science, from July 2025 to August 2025.

The Student Project Proposal titled **Smart EV charging station locator using IoT** has been selected for funding of Rs. 7500/- under Student Project Scheme 2024 - 2025 by Tamilnadu State Council for Science and Technology, by **S. Thirukkumaran, J. Rohit Shravan and Veeresh S R** (III EEE students) mentored by Dr. R. Ramaprabha, Prof., EEE.



EEE PULSE

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BoS meeting for curriculum R2024

Dr V Rajini and Dr V S Nagarajan conducted an upskilling hands on program on "Electric Motor - From Fundamentals to Recent trends" to all the non teaching staff during May 20-22, 2025



29th College day was held on 1st April, 2025. Harini Sree V.S, President, AEEE read the EEE Department report for the academic year 2024-25.



EEE PULSE

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MoU signed between SSNCE and Atribs Software Systems on 12/04/2025, marking a new partnership in the presence of Dr. Muthu Selvan N B, Dr. V Thiagarajan, and Dr. V Rajini.

Dr Ramaprabha conducting an academic audit at Department of EEE, SJCE



Presentation in SRMIST for RAEEUCCI



EEE PULSE

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Professors from Rutgers University, New Jersey visited the facilities at Solar Lab on June 18, 2025.



**Feedback by Tanish Trivedi
about his internship,
mentored by
Dr. R. Ramaprabha**

Feedback about the internship *

My first profession-related experience was this internship, and it was a huge stepping stone in my career journey. I sincerely appreciate the mentorship I received from Dr. Ramaprabha ma'am who is very well-experienced, knowledgeable, humble, and so encouraging.

She was always calm and absolutely patient throughout the internship, even though I asked numerous questions. I questioned her about so many topics, and she never got irritated or impatient, but rather encouraged and allowed me to be curious and learn. She broke things down and made difficult concepts easier to understand, and helped me develop and grow both technically and personally.

This internship has been an incredibly rewarding experience, and I would like to thank my mentor for her continuous support and motivation.



EEE PULSE

Highlighting our department dynamic events

Cinema to Silicon Valley

-Vishnu Sharan P, 2nd yr.

Introduction:

Films have always played a powerful role in shaping how we imagine the future. While they are mainly created to entertain, many movies have introduced ideas and technologies that were far ahead of their time. Over the years, some of these fictional concepts have gone on to inspire real inventions. In fact, several well-known scientists, engineers, and inventors have admitted that their work was influenced by what they saw in movies. This article explores how certain technologies – such as mobile phones, artificial intelligence, and virtual reality – were directly inspired by films. It also highlights the strong connection between creative storytelling and real-world innovation. Here are the few inventions that made to Silicon Valley from the Cinemas:

Mobile Phones (Inspired by Star Trek):

“That was not fantasy to us – that was an objective.”

– Martin Cooper, inventor of the first mobile phone, referring to Star Trek’s communicator.

Captain Kirk’s hand held communicator in the original Star Trek (1966) was one of the first examples of a portable communication device on screen. Martin Cooper, who led the team at Motorola to create the first cell phone in 1973, has consistently credited Star Trek as his inspiration. The flip-style of early phones even mimicked the communicator design.

Virtual Assistants like J.A.R.V.I.S (Inspired by Iron Man)

“J.A.R.V.I.S. is the dream.”

– Mark Zuckerberg, on building his own smart home AI

Zuckerberg once built a home AI system called “Jarvis” (voiced by Morgan Freeman) to manage lighting, music, and appliances – a clear homage to Iron Man’s J.A.R.V.I.S. This fictional assistant has inspired developers and researchers working on smart assistants like Siri, Alexa, and Google Assistant.



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Neural Interfaces (Inspired by The Matrix)

"I want to be able to learn a language in seconds, like in The Matrix."

– *Elon Musk, on Neuralink*

Elon Musk has repeatedly mentioned The Matrix as one of the inspirations behind Neuralink – a startup developing brain-computer interfaces. In the film, Neo learns kung fu by having knowledge directly uploaded into his brain. Musk says this concept sparked his vision for rapid information transfer between humans and machines.

Conclusion:

Cinema has often served as a spark for real-world innovation. Many technologies we use today were once just ideas shown on screen. From mobile phones to artificial intelligence, films have inspired inventors to turn fiction into reality. As we move forward, the connection between storytelling and technology will continue to shape how we imagine – and build – the future.



EEE PULSE

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AI's Footprint: How It's Changing the Game in EEE

-I.R.Boobesh - 2nd yr

Things are moving fast in Electrical and Electronics Engineering (EEE). It feels like just yesterday we were learning the basics, and now, Artificial Intelligence (AI) is already everywhere. It's not just a trend; it's honestly changing how things work, and I'm realizing this is super important for anyone studying EEE right now.

I've been looking into where AI is really making its mark across the EEE field. It's pretty wild to see.

- **Embedded Systems:** You know those tiny computers in everything? It seems they're
- getting smarter. AI is letting them process data, predict problems before they happen, and even work on their own. Think about how smart cars or health devices might get even more capable. They can now make decisions right there on the spot, which saves power and time.
- **VLSI (Chip Design):** Designing computer chips always seemed incredibly complex. But now, I'm seeing that AI is helping out, automating parts of the design, making better layouts, and finding errors much faster. It looks like AI is speeding up chip development and making them better quality.
- **Power Systems:** Managing our power grids, especially with all the new renewable
- energy coming online, is a huge job. It seems AI is becoming crucial for keeping these smart grids stable and efficient. AI can help predict how much power we'll need, spot problems, and control everything in real-time.
- **Robotics:** For robots, AI is giving them more freedom and helping them work better with people. This means we'll probably see robots used in even more places like factories, hospitals, and logistics.

So, what does this all mean for us, the EEE students getting ready to graduate? It seems like new jobs are popping up, like roles focused on "Embedded AI" or "AI for VLSI Design." It's clear we'll need a different set of skills: not just our core EEE stuff, but also strong programming, understanding AI tools, and knowing about things like smart devices.



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Old EEE jobs aren't just disappearing; they're evolving. It feels like you'll need a mix of your traditional engineering knowledge and these new AI skills and universities seem to be catching on, changing their courses to include more AI and hands-on projects. My simple takeaway for students like us: It's probably a good idea to really dive into AI and data science, get involved in projects that mix hardware and AI, maybe even get some certifications. Connecting with people in the industry seems crucial. And honestly, it just feels like we need to keep learning, always.



EEE PULSE

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Powering the Future: Recent Innovations in Electrical and Electronics Engineering

-Shreemathi, 2nd yr

Electrical and Electronics Engineering (EEE) is at the forefront of technological transformation, redefining how we generate, distribute, and use energy. Around the globe, groundbreaking innovations are driving the shift toward a more efficient, intelligent, and sustainable future. Here are four recent advancements that are shaping the modern EEE landscape.

1. Smart Grids – The Digital Backbone of Modern Power Systems

Smart grids have brought a paradigm shift to traditional electrical infrastructure. Unlike conventional power grids, smart grids are equipped with advanced communication systems, real-time sensors, and automated control features that significantly enhance grid reliability and efficiency.

These systems enable continuous monitoring of power flow, rapid fault detection, and dynamic load balancing. For consumers, smart meters offer real-time insights into electricity consumption and pricing, encouraging energy-saving behavior and optimizing overall demand.

However, the integration of digital technologies brings new challenges, particularly in cybersecurity. Electrical engineers play a vital role in designing secure systems to protect against data breaches and ensure the stability of power delivery. As a result, smart grids are not just technological upgrades—they are essential steps toward a cleaner and more intelligent energy future.



SMART GRID



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2. Internet of Things (IoT) – Building the Intelligent Power Ecosystem

The Internet of Things (IoT) is redefining the boundaries of electrical engineering. By enabling devices to collect and exchange data, IoT facilitates intelligent control systems across residential, industrial, and urban environments.

Electrical engineers are leveraging IoT to design energy-efficient solutions, such as smart lighting, automated power distribution, and remote equipment diagnostics. A key feature is predictive maintenance—sensors embedded in electrical systems can detect faults before they cause failures, reducing downtime and repair costs.

IoT also plays a crucial role in renewable energy integration. Real-time data from solar panels or wind turbines helps manage variability in energy production and supports smart grid operations. As IoT continues to evolve, its convergence with artificial intelligence and data analytics opens doors to even smarter, self-optimizing systems.



INTERNET OF THINGS



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3. Electric Vehicles (EVs) – Driving Sustainable Transportation

Electric Vehicles are a major innovation in both transportation and electrical engineering. Engineers are focused on optimizing various components, from motor design and regenerative braking to efficient power electronics and thermal management systems.

One of the most significant advancements lies in battery technology. Enhancements in energy density, reduced charging times, and improved battery lifespan are making EVs more accessible and practical. Fast-charging networks, often powered by smart grid technology, are being developed to ensure seamless energy access across cities and highways.

An emerging innovation is Vehicle-to-Grid (V2G) technology. This allows EVs to not only draw energy from the grid but also supply excess power back to it during peak demand or emergencies. This bidirectional flow transforms EVs into mobile energy storage units, contributing to grid resilience.



ELECTRIC VEHICLES



EEE PULSE

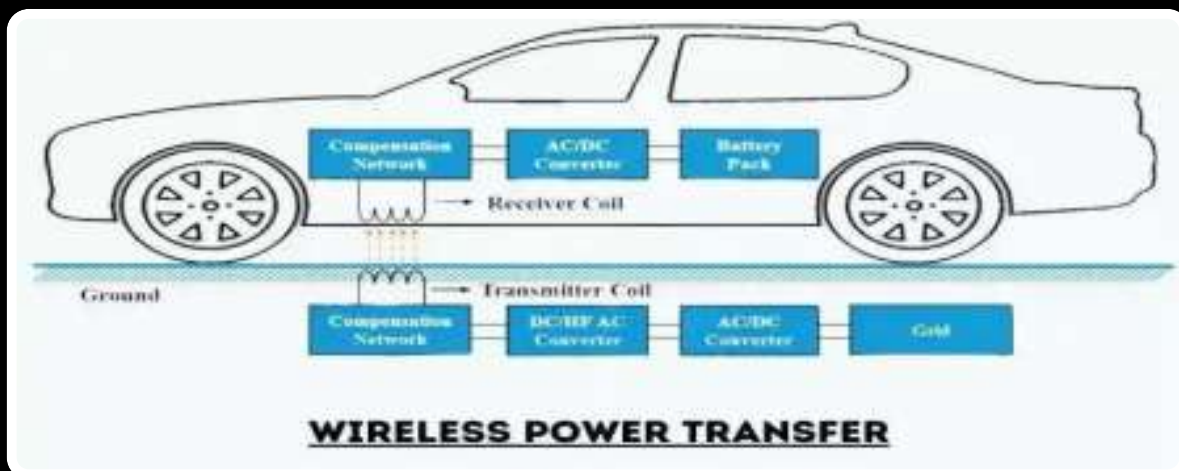
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4. Wireless Power Transfer (WPT) – Redefining Convenience and Connectivity

Wireless Power Transfer (WPT) is reshaping the way we think about electrical energy transmission. Using electromagnetic fields to transmit power without physical connectors, WPT offers a cleaner, more flexible solution for powering devices.

Initially adopted for charging smartphones and wearable devices, WPT is now expanding into more complex areas like electric vehicle charging and biomedical implants. In EVs, it enables contactless charging systems embedded in roads or parking spaces, reducing dependency on manual plug-in systems.

In the medical field, WPT supports the charging and operation of implants, eliminating the need for invasive surgeries or battery replacements. Despite current limitations such as power loss and limited range, researchers and engineers are actively working to enhance the efficiency, safety, and scalability of this technology.



From smart grids and IoT to electric vehicles and wireless power transfer, these innovations are transforming the field of electrical and electronics engineering. Engineers are not only solving existing challenges but also laying the foundation for a smarter, more sustainable world. As these technologies continue to evolve, the role of electrical engineers becomes ever more critical in shaping a future driven by intelligence, efficiency, and environmental responsibility.



EEE PULSE

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CONTROL SYSTEMS IN SPACE MISSIONS

THE INVISIBLE FORCE BEHIND EVERY LAUNCH

- Vennela SRPNS 2nd yr

A Crucial Role of Control Systems

Control systems are the silent heroes of space exploration. While rockets, satellites, and space probes steal the spotlight, it is the control system that ensures each one performs precisely as planned, from liftoff to mission completion. These systems are both essential and sophisticated, enabling spacecraft to function reliably and autonomously in the harsh environment of space.

Control systems monitor and adjust a system's behavior to achieve a desired operational state. In space missions, they maintain the trajectory of rockets, ensure the orientation of satellites, guide reentry vehicles, and enable interplanetary rovers to navigate independently.

Space is unpredictable and precludes any manual intervention once a spacecraft departs from Earth. Consequently, automated control systems become indispensable. For instance, the Attitude Determination and Control System (ADCS) uses gyroscopes, magnetometers, and reaction wheels to maintain satellite orientation.

Why Space Needs Control

In Chandrayaan-2, a closed-loop control system was used in the Vikram Lander for real-time adjustments. Although the Vikram Lander did not achieve a soft landing, it showcased India's advances in guidance and feedback control. Chandrayaan-3 built on this progress, achieving a precise landing through the use of throttleable engines, inertial sensors, and a Navigation, Guidance, and Control (NGC) system. The Pragyan Rover employed autonomous mobility, path planning, and obstacle avoidance, proving the strength of India's control engineering.



EEE PULSE

Highlighting our department dynamic events

Control Systems and EEE

Control systems are a core part of the EEE curriculum, with concepts such as block diagrams, PID controllers, and transfer functions find direct application in space missions. Sensors for measuring conditions Signal processors to analyze data, Actuators to make corrections, Microcontrollers for real-time control. These systems rely on electronics, embedded systems, and signal processing, all of which are foundational disciplines within EEE.

Challenges and the Future of Autonomy:

In deep space, control systems must adapt to unexpected events, such as micrometeoroid impacts or system failures. Fault-tolerant designs enable spacecraft to stabilize and reconfigure themselves automatically, thereby ensuring the success of long-duration missions.

With advances in AI and machine learning, spacecraft are now capable of adaptive, context-aware responses to environments. This is crucial for deep-space missions, where communication delays make manual control impossible. For example, a Mars rover may leverage AI to perform autonomous navigation, obstacle avoidance, and energy management.

India's Space Capabilities:

ISRO is renowned for its cost-effective and reliable space missions, with control systems playing a critical role in their success. In missions ranging from the PSLV launch vehicle to the Mangalyaan Mars orbiter mission, control systems ensure attitude control, trajectory correction, fault detection, and thermal regulation, all managed by embedded software developed through principles of EEE.

The upcoming Gaganyaan mission incorporates human-rated control systems designed to manage life support, ensure crew safety, and guide atmospheric reentry—each of which demands exceptional precision and system redundancy.

ISRO's work in reusable launch vehicles, space robotics, and satellites systems such as RISAT and Cartosat demonstrate the integral role of control systems in India's space technology—an area fundamentally driven by EEE.



EEE PULSE

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Control Systems Beyond Space

The application of control systems extends well beyond spacecraft and satellites. The underlying principles of control theory are also employed in modern defence systems and strategic operations. Recently, during Operation Sindoor –a high-altitude military mission conducted by India –sophisticated control systems were deployed in drones, surveillance radars, and electronic warfare equipment functioning in the extreme Himalayan environment. These systems rely on high-precision sensors, embedded electronics, and adaptive feedback loops to operate effectively in real-time conditions, despite challenges posed by snow, high altitude, and rugged terrain.

Missiles, Aircraft, and Naval Systems

Control systems play a vital role in modern warfare by enabling accurate targeting, real-time responses, and guided maneuvering across air, land, and sea. These systems rely on real-time sensors, feedback loops, navigation algorithms, and embedded processors, each of which is grounded in the foundational principles of EEE.

- The BrahMos missile employs an Inertial Navigation System (INS) integrated with GPS/GLONASS to enable mid-course corrections for precision-guided strikes.
- The Agni-V missile is equipped with ring laser gyroscopes and accelerometers and utilizes a closed-loop control system to maintain long-range flight stability.
- The Tejas fighter jet incorporates a quadruplex digital fly-by-wire system that continuously adjusts control surfaces during high-speed maneuvers to ensure stability and responsiveness.
- The Akash missile is a surface-to-air weapon system guided by real-time command and control infrastructure, capable of intercepting and neutralizing drones and enemy aircraft.
- The INS Kalvari-class submarines rely on automated control systems for deep-sea navigation, torpedo launch coordination, and stealth operations.
- The INS Vikrant aircraft carrier integrates automated propulsion and combat management systems to coordinate complex air operations during naval missions.
- The Defence Research and Development Organisation (DRDO) designs and develops critical control technologies, including autonomous control loops, real-time embedded software, and secure electronic systems, thereby contributing to India's strategic defence self-reliance.

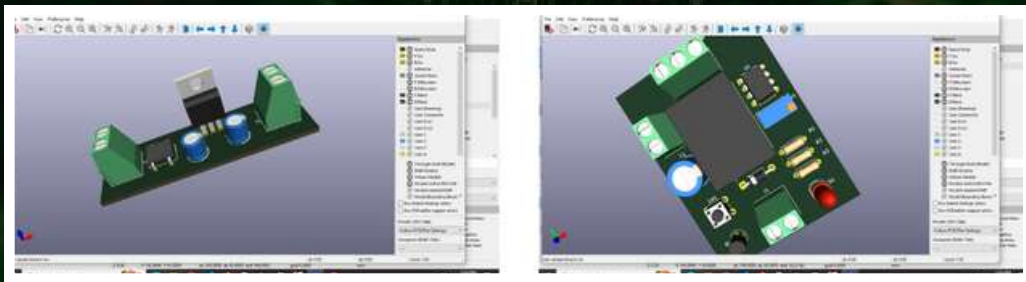
These technologies demonstrate that core concepts of EEE –such as control theory, embedded systems, signal processing, and sensor integration –are not only applicable to space exploration but are also indispensable in strengthening India's defence capabilities across air, land, sea and space domains.

STUDENT SPOTLIGHT

Showcasing Talents, Ideas and Achievements

Exploring KiCad: My Journey into PCB Design

-K. Nithesh Kumar, 2nd YEAR



This article is about my exploration of a software named KiCad, which is widely known for designing Printed Circuit Boards (PCBs). One of the standout features of this software is its built-in 3D Viewer, which allows you to visualize how your PCB would look after assembling all the components.

I'm K. Nithesh Kumar from EEE B (second year), and I'm excited to share my experience with KiCad. I first came across this software during my internship in June. Initially, we were introduced to Eagle CAD, a similar tool. However, the issue with Eagle CAD is that it doesn't support 3D viewing by itself—Fusion 360 is required for that. I got to know about KiCad from my classmate Shreemathi, who also attended the same internship.

Motivated by this, my friend from MIT and I decided to challenge ourselves to dive deep into learning KiCad. We had an unspoken agreement—if one of us felt like giving up, the other's progress would push us forward. That's when I truly understood what Mani Prabhu sir once told us:

"Peer pressure can push you beyond your limits, breaking through boredom and laziness."

STUDENT SPOTLIGHT

Showcasing Talents, Ideas and Achievements

Initially, it felt a bit difficult. But the more projects we did, the more interesting it became. Before we knew it, we had completed four projects in just two days—two from YouTube tutorials and two academic projects of my MIT friend, Pranesh Mohan. It turned out to be a joyful and enriching experience.

Before we even realized, college had resumed for both of us, since we had started our internship a bit late. But I want to emphasize this: don't think learning PCB design is a big or tedious task. It's a lot like video editing. You may struggle initially to remember what's what, but as you go along, things become clearer and more intuitive.

So, what I want to say is this:

If you ever find yourself free during vacation or holidays, try exploring something like KiCad. It's not only fun to work with, but it also proves extremely helpful when you're working on academic or personal projects. Especially if you're looking to make your design compact and professional, all on a single PCB.

STUDENT SPOTLIGHT

Showcasing Talents, Ideas and Achievements

LINE FOLLOWER ROBOT LESSONS

-Santhosh.P (EEE) , Vanavan.U (EEE) ,
Shanjay Savithendhiraa (MECH)

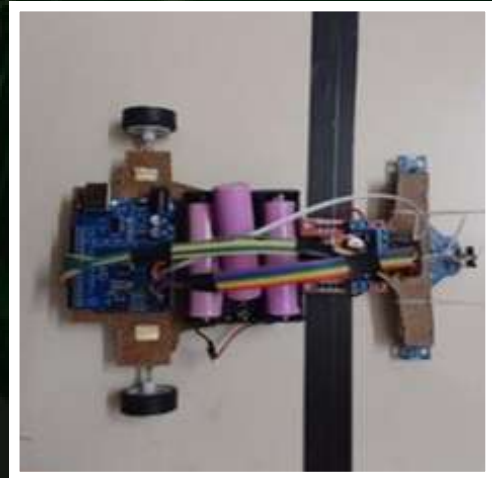


The journey of making a Line Follower taught us valuable skills, such as decision-making, Arduino Basics, and Hardware and Software Fundamentals, which are needed for upgrading ourselves in the Field of Robotics. We as a Team of three members faced problems from Component Buying to running the Robot. First of all, we are Beginners to this, have not done any projects with Arduino and the only guide to us is Project Mentor [Gautham, Final Year(EEE)] and ChatGPT. The First Problem was to choose the Components for the Robot, The Build Club of SSN which conducted the Competition held an Online Session regarding this for Beginners, and in that beginners were informed to go for simple components like Arduino UNO, Basic motor driver, and simple gear motor. But instead of being simple, we took complex components [ESP32, DRV8833 Motor driver, Buck Converter] and in choosing this we had controversy within the team.

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Finally, we fixed the Components after all the chaos, Next thing is Buying this where we needed to buy this at a Low cost, and went to Ritchie Street. Components which brought in online did not work well and as usual, every time we miss buying some important component it will delay the Work and increase the pressure. Coming To Technical Difficulties which are never short, we had difficulties in testing a sensor, interfacing the Motor Driver to Arduino, Motor Torque, and RPM issues.



Here ChatGPT helped us a lot in Debugging and also taught the fundamentals of every component. In This Journey, we have brought 4-5 sensors and tested them more than 20 times because sometimes a sensor may be faulty. We had issues with Battery voltage which was not enough to run the motor, also a problem in the Motor Driver [L2983D] signals to the motor and these were noticed with the help of a Multimeter Reading.

Finally, We Found that our Motors which are N20 (3V-6V) 600 rpm have a problem but it was too late because it was three days before the Final Showdown where we weren't able to Buy Motors also due to Logistics issues.

We tried with what we had in hand, by this time we only implemented the Hardware [Body] and realized that we need to work on the Brain of the Robot [Software] which we thought was simple work because we tested each component with part of the full code.

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It backfired, when we uploaded the code it behaved in the wrong way. We sat a Whole day on that software but it did not work due to the wrong sensor selection, motor. We somehow managed to run it at last but in the Competition, it did not work.

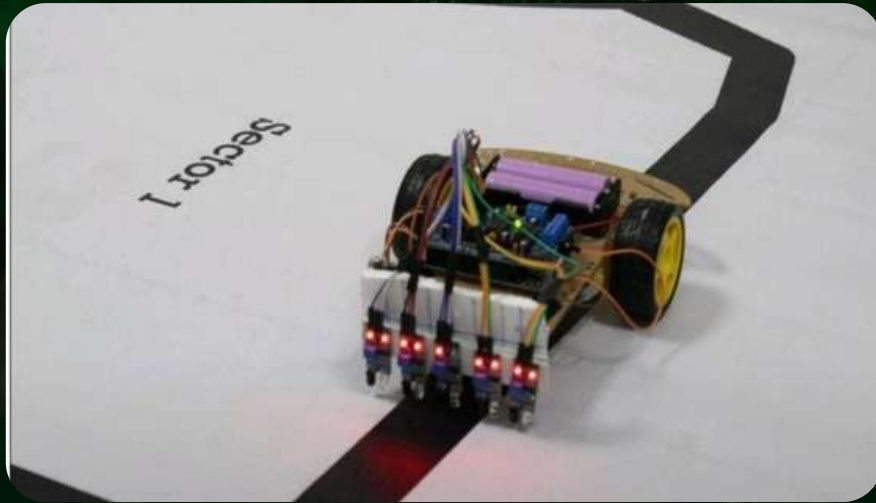
**Here Robot Failed but the Interest,
Knowledge, and Curiosity of
us rose to the next Level. This Journey
taught us things much more than
Robotics.**

STUDENT SPOTLIGHT

Showcasing Talents, Ideas and Achievements

My line follower experience

M.Shreemathi ,2nd Year



In our college, we have a club called the Build Club, where students take part in hands-on tech activities. One of the exciting events was the Line Follower Robot challenge, which took place on 21st April 2025 at the Innovation Center. I participated in it, and honestly, it turned out to be one of the most intense and unforgettable experiences I've had. Each of us was assigned a mentor, and we were given time to build, test, and run our robots. Most participants chose to go with QTR-8RC sensors, which are specifically designed for such applications. But I wanted to try something different so I used normal IR sensors instead.

That one decision changed everything. From the start, I faced a lot of trouble. Debugging became my daily routine. Sometimes the sensors wouldn't detect the black lines properly. Other times, the bot just wouldn't respond. It was frustrating. But thanks to my mentor, who was so kind and supportive, I kept pushing through. After several rounds of fixing, checking, rechecking, and staying up late, I finally had my bot working—at least for the most part. But there was still one big issue—lighting. The bright surroundings affected the sensor's accuracy.

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It would detect the line in some places and miss it in others. That really broke me

at one point. I felt down, lost, and almost gave up. But here comes the best part—my mom saw me struggling and actually helped me! She came up with the idea of covering the pink light coming out from the IR sensors to reduce the effect of external lighting. That one simple step made a huge difference. On the day of the competition, I was honestly feeling low. When I saw other bots with neat sensors and smooth finishes, I felt like mine was nothing in comparison. But the truth is, many of them were also facing the same lighting issues. The organizers gave us time to make trial runs and do small adjustments.

And guess what? I was the first person to let my bot run on the track. I was holding my breath. But once it started, the bot ran smoothly, made perfect turns, and followed the path like a pro. All the effort, debugging, support, and late-night hustle paid off.

And here's the big moment—I won first place.

Yes, with just basic IR sensors, a bit of struggle, a mentor who stood by me, and a mom who came to the rescue, I made it. That moment reminded me that it's not about having the best tools—it's about having the will to make it work.

To anyone out there facing bugs, errors, or doubts—hang in there. Your bot will run, your light will shine. Just keep building.

STUDENT SPOTLIGHT

Showcasing Talents, Ideas and Achievements Mithreshwar C.M.(2nd YEAR) - My Journey in Table Tennis and Beyond



I am Mithreshwar C.M., currently studying in my second year of Electrical and Electronics Engineering (EEE), Section A. Apart from academics, sports have always been an inseparable part of my life, especially table tennis. It has shaped me into the person I am today, both on and off the court. I began playing table tennis when I was in UKG – at an age when most children are just learning how to hold a pencil properly. Even then, I was drawn to the speed, focus, and excitement of the game. Over the years, my love for table tennis only deepened, and I dedicated countless hours to refining my skills, participating in tournaments, and representing my school and college at various levels. My journey so far has been decorated with several milestones. I had the honor of representing the Anna University team last year and won a national medal. Additionally, I secured a bronze medal in the CM Trophy, where I was awarded a cash prize of ₹50,000. I have also represented my state at the national level, and I am a proud state-level medalist. Moreover, I participated in prestigious tournaments such as Khelo India and Junior Nationals, which helped me gain valuable exposure and experience. When I joined college, I was elected as the first-year boys' sports captain.

STUDENT SPOTLIGHT

Showcasing Talents, Ideas and Achievements

Under my captaincy, our team performed admirably and finished second overall in sports events. This leadership experience helped me learn the importance of teamwork, responsibility, and guiding others towards a common goal. Table tennis has not only given me awards and medals but has also transformed me mentally and emotionally. The sport taught me the value of discipline and consistency.

Practicing every day, facing both victories and defeats, and constantly striving to improve helped me develop a strong and focused mind. My ability to concentrate on studies has greatly improved because of the mental conditioning that table tennis demands. I learned to manage my time effectively, balancing my training sessions with academic responsibilities. Moreover, the sport has played a significant role in shaping my emotional resilience. There are times in life when situations do not go as planned, and setbacks can feel overwhelming.

Playing competitive table tennis helped me understand how to handle failures gracefully and bounce back with even more determination. It taught me that no loss is permanent and that every setback is a stepping stone to greater achievements. Table tennis has also helped me stay physically fit and maintain a healthy lifestyle. Regular practice sessions, fitness workouts, and matches have kept me energetic and active. This fitness not only supports my sporting career but also boosts my overall confidence and self-esteem.

Another invaluable lesson I learned through table tennis is the importance of maintaining good relationships. Whether it is with teammates, coaches, family, or friends, I realized that mutual respect, understanding, and support are crucial for growth. The friendships I have built through this sport are some of the most meaningful and lasting connections in my life.

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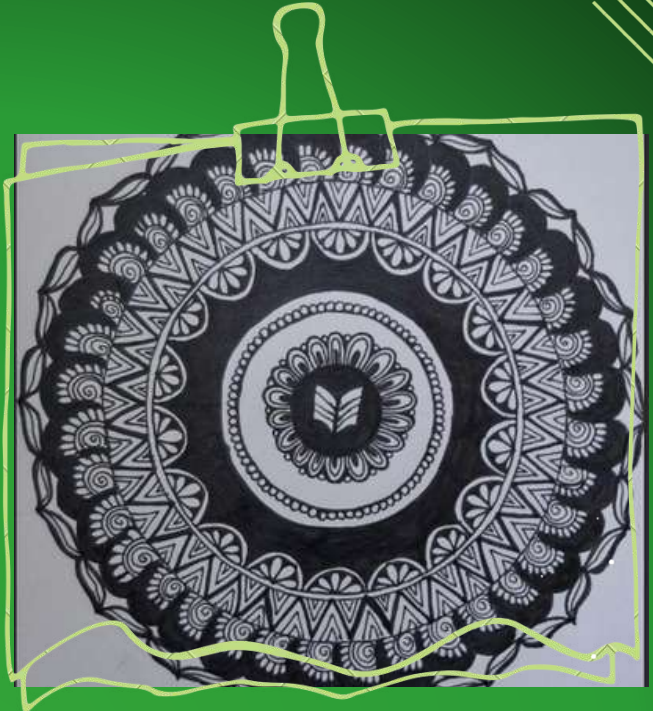
It has also taught me to manage emotions better and communicate effectively, both on and off the court.

In summary, table tennis has been more than just a game for me – it has been a way of life. It has helped me build my identity, shape my character, and become a better student, athlete, and person. The journey from playing in UKG to representing Anna University and winning medals at the national level has been truly transformative. With every serve and every rally, I continue to learn new lessons, push my limits, and strive for excellence. I am deeply grateful to my parents, coaches, teachers, friends, and everyone who has supported me throughout this journey. Along with this write-up, I have included my certificates to showcase the milestones I have achieved over the years. Each certificate is not just a piece of paper but a testimony to the hard work, sacrifices, and passion that I have put into this beautiful sport.

Thank you for taking the time to learn about my journey.

STUDENT SPOTLIGHT

Showcasing Talents, Ideas and Achievements



CHARUMITHRA . AC
2nd year



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MANASA
3rd year



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SHREEMATHI
2nd year



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DHANUSRAM
4th year

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India Semiconductor Workforce Development Program (ISWDP) by IISc& Samsung



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Jayasurya S, 2nd Year

Coptercode, IITM Research Park

During the semester break, I had the privilege to intern at Coptercode, IITM Research Park, where I worked on an exciting and socially relevant project titled **“Toxic Gas Leakage Detection Using Sensors.”** This hands-on internship exposed me to the real-world challenges of building an embedded system for industrial safety and provided me with practical skills in wireless communication, sensor interfacing, and microcontroller-based design.

The objective of my project was to create a portable toxic gas detection system capable of monitoring gas concentration, temperature, humidity, and motion in real time. The goal was to alert users immediately when dangerous gas levels are detected—especially in enclosed spaces such as underground mines, chemical plants, and industrial basements. Unlike traditional systems, which often rely on bulky, fixed installations, our prototype focused on being compact, cost-effective, and wireless.

Core Technology and Implementation

I built the system using an Arduino Uno microcontroller and integrated three main sensors:

- MQ135 for air quality and gas detection
- DHT11 for humidity and temperature
- MPU6050 for motion tracking

For wireless communication, we used the RA-01 LoRa module, which enabled long-range, low-power data transmission to a remote receiver. Data collected from the sensors was transmitted wirelessly and displayed on both a serial monitor and an OLED screen. To ensure quick response in hazardous conditions, I added a buzzer that gets activated when gas levels exceed a predefined threshold.

One of the most interesting challenges was integrating all these components onto a breadboard-based prototype, where I managed the wiring, voltage levels (5V and 3.3V), and ensured that devices communicating over I2C and SPI protocols functioned without interference.

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Testing and Results

After assembling the complete hardware setup, I conducted field testing inside a lab space by simulating hazardous environments using smoke and alcohol vapors. The sensors responded quickly, and the LoRa module successfully transmitted the data over distances up to 100 meters indoors with minimal packet loss.

The serial monitor helped debug and verify real-time readings, while the OLED display offered portable, screen-based visualization without a computer. The system performed reliably during extended test sessions, and I was able to log data for future analysis.

Key Takeaways

This internship project helped me bridge the gap between theoretical coursework and practical embedded system design. I gained:

- Experience in sensor interfacing, LoRa communication, and embedded coding
- Skills in data transmission, display integration, and buzzer alerts
- An understanding of real-world constraints like power management, wiring noise, and device coordination
- Hands-on exposure to modular design, testing, and debugging in a rapid prototyping environment

Future Scope

This prototype can be extended into a robust, deployable product with features like:

- PCB-based compact design in rugged enclosures
- GPS integration for location-tagged alerts
- Cloud data logging and real-time dashboards
- Multi-sensor mesh networks for industrial deployment
- Machine learning algorithms for predictive gas leak alerts

Conclusion

My internship at Coptercode was a deeply enriching experience. I am grateful for the mentorship, technical exposure, and independence I was given. Building this project improved my problem-solving abilities, taught me how to manage a multidisciplinary embedded system, and reinforced my interest in IoT-based safety applications.

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Shreemathi, 2nd year

CopterCode, IITM Research Park

During the summer holidays this May, I got a wonderful opportunity to step out of my usual college routine and explore something new. Our college had shared an email about a summer internship offered by CopterCode, located at the IIT Madras Research Park. The moment I saw it, I felt like I should give it a try—and luckily, I got selected!

The internship was for a month, split into 15 days offline and 15 days online. I was supposed to attend the offline part from June 9 to June 23, and from there, the journey began—literally.

Every day I had to travel by bus, sometimes by one, sometimes two. Morning rides were peaceful and calm, and I honestly enjoyed them a lot. But the evenings were another story—full of crowd, traffic, and tiredness. Still, looking back, that whole travel part added a different layer to my internship experience.

On the very first day, we got a proper introduction from the team at CopterCode. They then split all of us into five different teams, mixing students from various colleges, departments, and backgrounds. This was actually one of the best parts—I got to meet and interact with people from different places, and we quickly started sharing ideas, opinions, and laughs. Even got an opportunity to share my lines and stories in the canteen with friends from other colleges, and I made so many new friends during this time!

Each team was assigned to pick a problem statement, brainstorm solutions, and work toward building a real prototype. Initially, our team chose the idea of a piezoelectric road that stores energy when vehicles pass over it. While the concept was cool, we later realized that implementing it at this stage wouldn't be practical. So, we made a shift to something that felt more doable and meaningful—a Smart Helmet.

For the next two weeks, we dived deep into building our smart helmet model. And that's where the real learning happened.

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I got to work with and understand so many new components—like the MPU 6050 sensor, Flying Fish sensor (yes, it sounds funny but it's real!), ultrasonic sensors, IR sensors, and even the NRF transmitter and receiver module. We also used an audio board, ESP board, and learnt how IoT plays a major role in making smart projects function. We even had some intro sessions about drones and how various embedded systems and communication modules are involved in them.

Personally, I took the responsibility of testing all the sensors and tried to compile them to work together. At first, it might sound like a simple thing—just connect and test. But actually, it's way more complicated than it looks. Getting multiple sensors to work in sync, checking their outputs, troubleshooting errors—it was challenging, but also where I learnt the most. That hands-on struggle taught me things no YouTube tutorial or classroom ever could.

More than just technical knowledge, this internship gave me confidence—confidence that even as a student, I can build, try, fail, and still figure out solutions. And honestly, that feeling? It hits different. If you ask me, more than just an internship, it felt like a journey of discovery—about myself, about how tech can solve problems, and how real-world learning feels way different (and exciting!) than classroom theories.

I'm really grateful I took up this opportunity. And to anyone who's wondering whether such internships are worth it—I'd say just go for it. You'll come back with a bag full of memories, new skills, and stories to tell.

Internships

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Hemavathy TE, 3rd year
Titan Company Ltd., Hosur

Have you ever wondered how much effort goes into making the watch you casually put on every day? I hadn't, until I witnessed the process myself. This report shares my experience, and trust me, I was truly shocked by the level of detail, precision, and hard work that goes into creating something we often take for granted.

I had an opportunity to undertake an internship at the Titan Company Limited, Hosur, under the watches section for two weeks. During my time at the company, I got a chance to witness the process of manufacturing the Titan watches which is known for their quality and trust. Their watch making process is so intense and much dedication is put to make them as perfect as possible.

Quality is never compromised. So, first class brass is brought and the base case is made roughly. Then it undergoes a process called annealing where the material acquires malleability. Then again the base case is brought to perfection. This is all about the 'Case shop' which is the first and the foremost process in the watch making process. Then the holes for the strap and the pin is made in the 'Machine Shop' where almost every machine is automated. Then the back case is also made similar to the base case and an extra process that it undergoes is oiling and drying. The machines required for all these processes and the parts of the machines, including the tool used for each process, which is made in the 'Tool Shop' is made within the Case Plant and that is what makes Titan Watches stand for their quality. Now, the base case is assembled with the back case and the pins. The module of the watch is made in the 'Module Plant' which is transported to the 'Case plant' and everything is assembled together in the 'Main assembly hall'. And also water tests are also done to test their water proof quality. Titan watches are known for their sleek, style, quality and cost too. There is a special section called 'Nebula' where the most expensive watches are made with materials like gold, platinum and diamond. There is also a special department called 'Case maintenance' and the repair works are managed by them. Safety training will be given to all the new joiners and interns to be aware of the safe assembly point in case of any emergency. I truly had a great time during my internship, and it made me realize that an incredible amount of effort goes into the small things we use every single day without even thinking about it.

Internships

Where Students Become Young Professionals



E. Nithya Sree ,2nd year

Coptercode, IITM Research Park

This semester leave, I had the opportunity to intern at Coptercode, a technology company based in the IITM Research Park. This internship, arranged through my college, offered me a hands-on learning experience in the fields of embedded systems and drone design and fabrication—areas that are shaping the future of technology and innovation.

During the first week of the internship, the interns were split into groups and had to come up with their own problem statements and develop it into a live project. My team focused on “**Monitoring of Gas Leakage using Embedded Systems**”. We worked with Arduino boards and gas sensors to design a system capable of detecting gas leaks and triggering alerts. This project helped me understand not only the theoretical aspects of sensor integration and embedded programming but also the practical challenges of building a reliable safety system.

In the second week, the interns who applied for drone and embedded systems were divided my focus shifted to learning about drone and its basics. We were introduced to the various components that make up a drone, including ESCs (Electronic Speed Controllers), motors, propellers, flight controllers, and Li-Po batteries. We were also shown different drone models with various purposes that the company produce. Finally, we carefully assembled a quadcopter from scratch and learned to configure it for stable flight.

The internship not only enhanced my technical knowledge but also taught me the value of teamwork, problem-solving, and real-world application of classroom concepts. It was an incredible learning journey, and I feel truly grateful to my college for providing me with this opportunity. Being able to intern at a firm located in such a vibrant innovation hub as IITM Research Park was both inspiring and motivating.

Internships

Where Students Become Young Professionals



Aswin Kumar A , 3rd Year In-Plant Training at CPCL, Manali

I'm Aswin Kumar A, a third-year Electrical and Electronics Engineering student at SSN College of Engineering, and I recently had the opportunity to complete an in-plant training at Chennai Petroleum Corporation Limited (CPCL), Manali, from 19th May to 2nd June. This experience gave me a real-world understanding of how electrical systems keep massive industrial operations running smoothly. One of the highlights was visiting the 110kV switchyard, which distributes power across all three refineries. I got to see how equipment like power transformers, SF₆ circuit breakers, isolators, and SCADA systems are used to manage high-voltage electricity safely and efficiently.

I also explored Refinery-1, where I learned how Motor Control Centers (MCCs), diesel generators, and electrical safety systems play a crucial role in daily operations. In contrast, Refinery-2 showcased a more modern, automated environment with VFDs, PLCs, digital panels, and smart energy management systems. I was especially impressed by the coordination between electrical and instrumentation teams to ensure safety in hazardous areas. At the electrical workshop, I watched how motors are tested, rewound, and maintained using tools like meggers and multimeters – and I realized just how important regular preventive maintenance is in avoiding major breakdowns. Overall, this internship not only deepened my technical skills but also gave me a broader appreciation for teamwork, safety, and the complexity of power systems in industrial environments. It was an eye-opening and inspiring experience that reinforced my passion for electrical engineering.

Internships

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A.Ajith and M.Manish , 2nd Year NLC India Limited, Neyveli

When I started my internship at NLC India Limited, I quickly realized how different real-world machines are from what we see in labs. Our college lab equipment felt so small next to the huge machines at the power station.

My goal was to see how thermal power stations actually work. It wasn't just about reading books; it was about being there, feeling the noise, and seeing the massive machines that make our electricity



For fifteen days, I worked from 9 to 5. We saw everything: the control room, which is like the brain of the plant; different kinds of generators; the hot boilers; the big switchyard and the transformers. Every area taught me something new about engineering.

One thing that really stood out was the cooling tower. It was incredibly huge. Even though it didn't seem to have many people working on it, it was mostly automated and its size was just amazing. It's interesting how something so big can do so much with seemingly "less job" involved.

It's also a job with risks. This isn't a safe office job; it's a dangerous environment. You're always aware of dangers like chlorine gas, the intense heat from the boilers, and the possibility of a fire. It makes you respect the people who work there every day, dealing with these powerful forces.

Internships

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My guide, a Chief Manager, was great. He patiently answered all our questions and explained everything clearly.

What I learned clearly from this experience is how important hands-on industrial training is. You can study all you want, but you won't truly understand until you're standing next to a machine much bigger than you, feeling it work, and seeing everything happen in real life. Internships are the only way to get this full, real-world understanding.

And there's a big change happening. Even though I was learning about thermal power, I also found out that NLC India Limited is working to use less thermal power and more renewable energy sources. This shows that even big companies are changing and moving towards a greener future.

This internship was more than just a requirement; it was a real eye-opener. It showed me how clever people are, how much dedication is needed in this important industry, and the ongoing effort to create a better, more sustainable future.



Internships

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**Sathyasree, Shruthi G, Sherin Joanna, Vishali MS - 3rd Year
Allison Transmission, Chennai**

We had the opportunity to work on an exciting and industrially relevant project titled “DG-EB Interlock Using PLC Programming” during our internship at Allison Transmission. The experience gave us hands-on exposure to automation, safety logic design, and real-world implementation of electrical systems.

Our project focused on developing a Programmable Logic Controller (PLC) based control system that ensures automatic power transfer between the Electricity Board (EB) and a Diesel Generator (DG) during power failures. Uninterrupted power supply is crucial for manufacturing environments like Allison Transmission, and our project tackled the challenge of safe and seamless source switching without manual intervention.

We developed the system using ISPSoft V3.21, Delta Electronics' PLC programming environment. The software allowed us to simulate ladder logic, set up relays, timers, and interlocks, and understand system behavior in a controlled environment.

Project Objective & Functionality:

The goal was to ensure that whenever EB power failed, the PLC would:

- Detect the outage.
- Start the DG after verifying interlocks and phase conditions.
- Transfer the load from EB to DG after a safe delay.
- Once EB power returned, the PLC would:
- Shift the load back to EB.

Internships

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The system could operate in manual, automatic, and remote modes, offering flexibility. Each logic path included fail-safes like breaker feedback, trip detection, and fault monitoring to ensure that both sources were never active simultaneously –preventing short circuits and damage to the system.

We developed the ladder logic using AND, OR, and NOT gates, and programmed timers to introduce startup and switching delays. Monitoring inputs included transformer and generator phase presence, ACB status, and selector switch positions. Outputs were relays controlling DG startup, breaker coil energization, and remote signal handling.

Internships

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Jegan ,3rd year

Sunshiv Electronics and IIT Madras

I recently underwent practical training in PCB design, testing, and surface mount technology (SMT)- based component assembly. This training was divided across two institutions: Sunshiv Electronics, where I focused on PCB design and testing, and IIT Madras, where I gained hands-on experience in SMT assembly and also worked with another PCB design software.

At Sunshiv Electronics, I was introduced to the core concepts of PCB design using Eagle. I learned to convert circuit diagrams into fully functional PCB layouts by working through schematic design, component placement, and routing. Special emphasis was placed on understanding design rules, netlist checks, and generating Gerber files for manufacturing. After the design phase, I participated in the testing and validation of PCBs, where I used tools such as multimeters and oscilloscopes to perform continuity checks, voltage readings, and basic diagnostics. This phase helped me develop a deeper understanding of fault detection, circuit behavior, and troubleshooting techniques in a real industrial environment.

The second part of my training took place at IIT Madras, where I was introduced to Surface Mount Technology (SMT) – a modern and widely-used method of assembling components onto PCBs. I received hands-on training in applying solder paste using stencils, manually placing SMT components, and operating a reflow oven for soldering. We also discussed common assembly defects and rework methods. In addition to SMT, I also worked with KiCad, another popular open-source PCB design tool, which broadened my exposure to different design environments and workflows.

Through this dual-institution experience, I gained well-rounded exposure to the entire PCB development cycle – from software-based design using both Eagle and KiCad, to physical assembly and real-world testing. It significantly improved my technical skills and deepened my understanding of both design accuracy and manufacturing practicality.

Internships

Where Students Become Young Professionals



Kalyani, 3rd year NLC India Limited

I got the opportunity of undergoing a two-week internship at Neyveli Lignite Corporation India Limited (NLCIL), a Navaratna Public Sector Enterprise under the Ministry of Coal, during my semester break. The training focused on Electrical Machines and Transformers, and took place in Mine-I, Neyveli.

This internship provided me with valuable real-world insights into the practical functioning of electrical systems in an industrial setting. I gained firsthand knowledge of key components such as induction motors (LT and HT), transformers, relays, ELDRO systems, substations, and specialized cables. I was able to observe how these elements are interconnected in ensuring uninterrupted power flow, equipment safety, and overall operational efficiency in a power generation and mining environment.

The purpose of this training was not only to strengthen our technical foundation but also to bridge the gap between theoretical concepts and field-level applications. Learning directly from industry professionals and witnessing large-scale systems in action left a significant impact on my understanding of electrical engineering and its role in national infrastructure.

Overall, the internship was an eye-opener and deeply motivating. It provided valuable exposure to real-time industrial operations and enhanced my understanding of how large-scale electrical systems are designed, maintained, and integrated in complex infrastructures.

Internships

Where Students Become Young Professionals



Joy Kevin ,3rd Year

Diesel Loco Shed(Electrical Section), Indian Railways

During my internship at the Diesel Loco Shed (Electrical section), I got hands-on exposure to the real working of Indian Railways, especially focusing on the electrical side of diesel locomotives and support systems.

I started by understanding ALCO locomotives like WDM-2, WDM-3A, and WDG-3A, which are powered by a 16-cylinder diesel engine. I learned why Indian Railways chose ALCO over EMD – mainly because ALCO agreed to Transfer of Technology, which allowed us to manufacture locomotives locally.

Then came the traction system, where I explored how diesel power gets converted into electrical energy through an alternator, and then rectified to DC for traction motors, which finally drive the wheels. It felt like seeing the heartbeat of the train in action.

In the Train Lighting Shop, I saw how train lighting is designed, installed, and maintained. It's not just about lights—it includes emergency lights, signal lamps, and modern LED upgrades. The focus was on energy efficiency, safety, and aesthetics.

One highlight was learning about the ICF and LHB coaches. ICF builds the general and AC coaches, while LHB ones are more modern, with better safety, anti-climbing design, disc brakes, and bio-toilets. I was amazed at how much detail goes into designing and assembling a railway coach—from CAD design to testing.

Next, I moved on to air conditioning systems, where I saw how trains maintain comfort using filtered air, proper circulation, and cooling systems. I never thought there was so much tech behind just making the air feel pleasant!



Internships

Where Students Become Young Professionals

In the Battery Section, I learned about VRLA batteries—sealed, maintenance-free, and used to power train systems when the engine is off. They're engineered to be safe and reliable with features like oxygen recombination and safety valves.

The Electrical Millwright Workshop was another exciting place. This is where machines are installed, repaired, and maintained. I understood the importance of tools, layout, component storage, and regular testing. It taught me the backbone of technical support in railways.

I also explored the Power House, where 11kV supply is stepped down and distributed to substations (A-F). I saw how electricity flows through transformers and panels to power up the whole workshop and trains.

Finally, the Electrical and Electronics Lab gave me a throwback to theory—resistors, capacitors, diodes, transistors, ICs, and microcontrollers. But this time, I saw their real-world application.



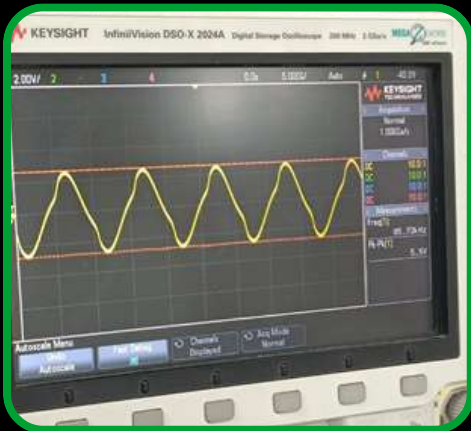
Internships

Where Students Become Young Professionals



V.V.Akshaya ,3rd Year

AI&AI Lab, Dept of Electrical Engineering, IIT Roorkee



During the semester break, I had the privilege of working at the Advanced Instrumentation and Artificial Intelligence (AI & AI) Laboratory, Department of Electrical Engineering, IIT Roorkee as a Summer Research Intern.

Under the guidance of Dr. P. Sumathi, I worked on the topic “Opamp-based Interfacing Circuits for Sensors and Data Acquisition Systems”. As an ice-breaker, I began by exploring the working principles and data acquisition processes of various mechatronics sensors on the Quanser sensor trainer kit, using NI cDAQ-9178. This gave me an initial overview of different data acquisition methods. Having done that, I proceeded to design and implement intermediate analog circuits for acquiring signals from temperature sensors such as RTDs and thermistors. While dealing with tiny measurement errors, I found learning about calibration techniques to be both essential and fascinating.

I also worked on designing a Wien bridge oscillator to facilitate a force-balance accelerometer, where I realized that the mathematical expressions given with the circuit on a book don't always yield pure sine waves. Various factors affected the waveform, resulting in a phenomenon called Total Harmonic Distortion (THD). Attaining a pure sine waveform of the required amplitude and frequency, which sounds very simple, became a herculean challenge. After numerous trials and errors on NI MultiSim and physical prototyping on the NI Elvis II+ board, scanning through multiple research papers and discussion forums, we managed to improve the waveform a bit, which still had a small distortion. It was a real-life lesson on mismatch between ideal theory and practical limitations.

Internships

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Beyond the work that was assigned, I also honed several fundamental skills- what one might call “best practices” like proper soldering techniques, PCB testing, and circuit debugging. Also, I spent my free time engaging in meaningful discussions with the research scholars and M.Tech students in the lab. They were generous in sharing their knowledge, be it explanations of difficult concepts, GATE preparation strategies, or how minor errors in PCB design can impact an entire product.

Overall, it was a fulfilling experience where I got a taste of life at IIT: late-night hustles, deep research work, interactions with professors, and stimulating student conversations. A seemingly hectic lifestyle, yet one that kept me energized and eager to explore more in the field.

Internships

Where Students Become Young Professionals



**M. Anushiya , G. Jeyadharshini , 3rd year
TNEB, Tuticorin**

We had the wonderful opportunity to attend a summer internship at the Tuticorin Thermal Power Plant from June 2nd to June 6th, 2025. This five-day program gave us a deep insight into the real-time operation of a thermal power station, far beyond what we learn in textbooks.

On the very first day, we were introduced to the overall arrangement and working principles of a thermal power plant. It was an exciting start, and we even got to check the health of motors using vibration analysis. We measured horizontal, vertical, and axial vibrations, which helped us understand how predictive maintenance is done in large power systems.

We then visited various sites inside the plant. One of the most fascinating areas was the **control room**, where all the major operations are monitored and controlled. The engineers explained how every system is interconnected and how faults can be detected in real-time using alarms and monitoring screens.



Internships

Where Students Become Young Professionals



We also learned about important systems like **DBTC (Distribution Buffer Terminal Cable)** and **DPIO (Distributed Process Input/Output)** and how they help in controlling plant operations effectively.

Another highlight was seeing the **generator section**. We saw a massive 210 MW generator, which included both stator and rotor components. The rotor is excited using an external DC supply. The output voltage was about 15.75 kV. We were also told how the generator is synchronized with the grid by matching voltage, frequency, and phase.

Then came the **turbine area**, where steam from the boiler passes through three stages—high-pressure, intermediate-pressure, and low-pressure turbines. We got to see the **coal yard** as well, where coal is brought from the harbor and transported to the plant. The process of stacking and reclaiming coal was explained, and we observed how the coal is pulverized into powder before being fed into the boiler.

One unforgettable moment was witnessing the **boiler light-up**. As powdered coal falls tangentially into the boiler, looks like a glowing fireball—it was truly an amazing sight. We learned how the burning coal produces heat, which turns water into high-pressure steam. This steam is sent to the turbines to generate electricity.

We also explored the **water treatment process**. The plant uses **demineralized water** to prevent scaling and damage inside the boiler and turbines. We saw how raw water is treated and converted into pure water for various uses within the plant.

Internships

Where Students Become Young Professionals



in the final part of our visit, we were shown the **switchyard and distribution systems**. We learned about equipment like busbars, circuit breakers, isolators, and transformers. Most importantly, we saw how the power generated is transmitted to the grid after proper synchronization.

This internship was truly a great learning experience. It connected our classroom knowledge with practical applications and gave us a clear picture of how electricity is generated, controlled, and distributed. I'm extremely thankful for this opportunity, and I highly encourage fellow students to take part in such internships to broaden their understanding and industrial exposure.



Internships



Where Students Become Young Professionals

Manasa, 3rd Year

Foxconn

As part of my academic journey, I had the opportunity to undergo an internship at Foxconn Hon Hai Technology India Mega Development Pvt. Ltd., a globally recognized electronics manufacturing company. I was placed in the Manufacturing Division, focusing on the Mother Logic Board (MLB) Quality Department, which plays a crucial role in iPhone production.

This experience offered me a deep understanding of industrial processes and exposed me to real-time operations in a high-precision environment. The MLB acts as the central component of the iPhone, and I was able to closely observe the entire lifecycle of this board—from assembly to final inspection.

Throughout the internship, I worked in weekly rotational shifts—morning, afternoon, and night. This gave me practical exposure to how large-scale manufacturing operates continuously. It helped me improve my time management, adaptability, and stamina for professional work settings.

In the Quality Department, my role was to monitor and assist with the inspection of MLBs. I learned how these boards are manufactured, the types of issues that arise during production, and how those issues are resolved through rework and verification. It was fascinating to explore the technical depth involved in each step of the quality check.

I also had the chance to interact with international professionals, which was a unique and enriching part of the experience. These interactions helped me improve my communication skills and gave me exposure to global work culture and expectations in electronics manufacturing.

A significant part of my learning came from studying the structured process flow followed across the CG Line, BG Line, and BG1 Line. Each line follows a carefully controlled sequence of operations to ensure quality and precision in MLB manufacturing.

Internships



Where Students Become Young Professionals

The complete process includes:

1. Input Stage
2. Buffer Conveyor
3. Auto Place Cover
4. Solder Paste Printing
5. Solder Paste Inspection (SPI)
6. Mounter
7. Pre-AOI (Automatic Optical Inspection)
8. Universal Mounter
9. Reflow
10. Cooling Buffer Conveyor
11. Post-AOI
12. Remove Place Cover
13. VMI (Visual Manual Inspection)

This process is identical across all three lines and forms the foundation of the MLB assembly.

Once the mounting phase is completed, the boards move on to the Underfill Line and Inposer Line, where additional reinforcements and placements are done. From there, they progress to the MTS Line and Testing Line, where boards are validated through multiple testing stages. The final step of the MLB section is the PD Line.

After the completion of these lines, the MLB is fully processed and ready for the next phase, which is the FATP (Final Assembly, Testing, and Packaging) Line, where the rest of the mobile phone assembly takes place.

This internship at Foxconn was a transformative learning experience. It gave me a real-world understanding of high-volume manufacturing, especially in the production of iPhone MLBs. I gained both technical and interpersonal skills that will support my future growth in the electronics and quality engineering field.

Working in such a globally integrated environment strengthened my professional outlook and gave me a solid foundation for my career ahead. I am truly thankful for this opportunity and all the knowledge it brought with it.

Internships



Where Students Become Young Professionals

Siddharth S, 3rd Year
Zocket

This summer, I had the enriching opportunity to intern at Zocket, a fast-growing tech startup in Chennai that specializes in AI-powered marketing automation. From 28th May to 26th June 2025, I immersed myself in a stimulating work environment that combined creativity, backend development, and product thinking. This experience broadened both my technical and professional horizons.

When I first joined Zocket, I was fascinated by their core product—a web platform that allows users to design and launch ad campaigns across platforms like Facebook, Instagram, Google, and Snapchat, with the help of generative AI. What stood out to me was how user-friendly the system was. Even someone with no marketing experience could create polished, data-driven ads. The AI agent integrated into the platform recommended everything from age groups to visuals and captions, making digital marketing more accessible than ever.

To understand the product better, I created a mock campaign for Duolingo, exploring each step—from choosing campaign objectives and setting a budget to using their Creative AI Studio to generate engaging visuals and finally previewing and launching the ad. It was an eye-opening exercise that gave me a complete picture of the product's workflow.

Apart from learning the user side of the platform, I was also fortunate to interact closely with the tech and product teams. These conversations helped me understand the product's backend architecture, including microservices, API integration, and how product roadmaps are designed based on user feedback and feasibility. Observing the collaboration between engineering, product, and business teams helped me appreciate how well-coordinated efforts drive growth in startups.

One of the highlights of my internship was working on backend projects using Go and the Gin web framework. I began by developing RESTful APIs, where I learned how to handle HTTP methods, JSON payloads, and route parameters effectively. These fundamentals laid the groundwork for more complex tasks.

Internships



Where Students Become Young Professionals

A key project I worked on was a wrapper API—a middleware that connected the frontend to Zocket's internal APIs. Using Go's net/http package, I fetched category data securely and returned it in a structured JSON format. It taught me about API proxying, secure key handling, and how to ensure robust request-response cycles.

To practice more advanced concepts, I built a restaurant reservation system using a clean, modular backend structure. This involved route grouping, handler structs, and middleware—solidifying my understanding of scalable backend application design.

Another exciting challenge was developing a payment gateway system that could dynamically route requests to different payment providers (like PayPal or Crypto) using the Factory Method pattern. Implementing interface-based design in Go taught me how to write extensible and maintainable code while separating controller logic from service logic.

I also implemented the Singleton pattern for app configuration management. By building GET and POST endpoints for fetching and updating settings, I learned how to handle global resources efficiently and thread-safely—an essential skill in real-world backend systems.

This internship allowed me to bridge the gap between theory and practice. From learning design patterns to deploying microservices, every task taught me something new. I not only enhanced my backend development skills but also gained confidence in working with real-world production code and collaborating with experienced engineers.

Most importantly, I understood the power of building user-centric solutions with simplicity and scalability at the core. I am immensely thankful to the entire Zocket team for their support, mentorship, and for providing an environment that fosters learning and innovation. This journey will remain a cornerstone in my academic and professional development.

Internships



Where Students Become Young Professionals

Krtin N , 3rd Year

E-Samarp Technologies

In a world where supply chains are getting increasingly restrictive and export-controls dominate the global headlines, the development of essential electrical machines such as motors have become crucial for the development of today's major economies. It may sound extremely grandiose but it's the truth. The automotive industry is currently facing a serious problem which is hindering all of its proponents' ambitions to dominate the now rapidly-evolving electric vehicle (EV) landscape. The supply of processed rare-earth magnets, a vital component of any powerful motor's rotor, has been getting scarce and difficult to acquire. Global automakers, giants from the likes of Ford Motor and Maruti Suzuki, to mass market 2 wheeler makers such as Bajaj Auto, are now facing production slowdowns due to the lack of a secure source of processed rare-earth materials such as Neodymium Iron Boron (NdFeB) magnets.

The situation has called for automakers to look at ways to reduce rare-earth material consumption within their units to ensure that their reliance on other nations is reduced and that the supply chain network of components within the industry remains robust. One of the ways to ensure this is to modify the rotor designs of industry standard PMSM motors, the heart of any EV's powertrain, to ensure that the same level of performance and efficiency is attained but at a fraction of the cost. This not only leads to a significant decrease in production costs over time due to a large portion of EV production costs actually going to the powertrain itself, but also contributes to a more protected supply chain environment that prevents foreign sources from exploiting domestic manufacturing industries of other countries. At my 4-week hybrid summer internship at E-Samarp Technologies, located in our very own EEE department, that's what I set out to do - one step at a time.

To understand how a motor works, we had to go back to the basics of electromagnetism(a tidy combination of Faraday's laws of electromagnetism and Lorentz Laws) - something I was familiar with in our class 12 Physics, 2nd semester of Basic EEE and our recent 4th Semester subject of Electrical Machines 1. Next, we had to understand the area of interest in which we were doing this project.

Internships



Where Students Become Young Professionals

Our objective was to try and create this innovation in electric 2 wheelers, a rapidly burgeoning segment in the Indian automotive industry, where E-Scooters priced above Rs.1 Lakh had significant performance and reliability advantages compared to those priced below that segment. We then focused on understanding the key components of motor design, which included benchmarking and validation tests on 10 and 12 inch Hub Motors as well as Stator Optimisation on PMSM Mid Drive motors using Simcentre Motorsolve software. This was only possible after months of studying various performance characteristics of mid drive motors such as speed and torque variation across various modes before the internship itself. It was critical to understand the design and structure of various components with special emphasis on stator and rotor dimensions of the mid drive motor before its benchmarking and validation. This was initially done with a hub motor before moving onto the mid drive variant while also comprehending the various modes of testing available in the Motorsolve software depending on the use case of the motor. Having conceptual clarity on vehicle dynamics and the advantages of mid-drive and hub motors for the 2 wheeler eased my understanding on the subject, which remained highly fascinating to me.

Having witnessed the birth of the 2 wheeler electric vehicle revolution, as far back as 2020, this internship was extremely insightful and thoroughly intriguing. To see such innovations happen right inside our department and to have the chance of being a part of it, will always have been a privilege for me. I would like to thank Dr. V S Nagarajan sir for guiding me throughout this internship as I sought answers to questions he regularly kept posing to me, Suryanath anna of E-Samarp for teaching me the Motorsolve Software so comprehensively and our HOD Dr. Rajini Ma'am for her guidance and support.

ALUMNI CONNECT

Bringing back the college Memories!



Mervin R (2013 Passed Out)

Product Development Engineer -
Hardware Specialist
Grundfos, Chennai



“It’s not about how to achieve your dreams, it’s about how to lead your life...”

I am happy to have spent 6 years at SSN for my engineering education (including UG & PG) from 2009-2015; for those are the formative years that have made me the person I am today both professionally and personally. I currently work for Grundfos Pumps as a Product Development Engineer designing Variable Frequency Drives and controllers. I must admit that I wasn’t very sure about what I wanted to do in life when I entered college. By virtue of my academic score at School, I landed at SSN surrounded by great people. When I look back, I realize that having surrounded by smart people influences you in many ways.

I am grateful to have found few folks (including faculty!) who enjoy creating things out of junk, just for the sake of fun. I recall staying back after college hours in lab to make a beetle-bot (a toy with motors, battery, SPDT switches that emulates a beetle) from an Instructables article online. We enjoyed the build process thoroughly. It kindled an interest to participate in inter-college robotics contests inspired by our seniors. My first-hand experience of making Printed Circuit Board using toner transfer method and ferric chloride solution started then.

ALUMNI CONNECT

Bringing back the college Memories!



We enrolled in Robotics contests from various universities & IITs; failed in many, won in few. The preparation hours we spent on building electronics, writing codes, troubleshooting problems were laying a strong foundation for my future electronics career. We all enjoyed building things for the fun of it, never for credits or to build a technical profile for ourselves. I learnt perseverance, collaboration and teamwork which are the basic qualities required to work as a professional in any organization. Working at Industry for close to a decade, I realize the importance of problem-based learning. It stays with you forever unlike learning without motivation/problem in hand. It is impractical to learn everything yourself through problems, that is where networking with your peers greatly helps. A casual talk with peers or seniors who are working on a capstone project or a faculty working on a research topic exposes you to multiple problems and their way of solving it. It is very likely to find one's area of interest through such networking interactions. A bit of curiosity is enough to drive us to learn more to understand the problem better. Knowledge usually multiplies by sharing/teaching.

SSN provides a great environment to foster a curious mind. Student Organized workshops were very common at EEE department. Workshops on robotics, embedded programming, PCB designing greatly helped me to share and gain knowledge. They build management skills for a successful professional career and help one realize the happiness of knowledge sharing. Time spent on lab, working on practical stuffs have a great value. It is seldom felt while in college, Only after entering professional workforce, one feels an edge over other colleagues who have little exposure to practical learning.

Looking back at my college days, I had a very enjoyable and purposeful stay; I am very grateful to all my mentors and friends at SSN. I would like to end with one of my favorite quotes by Randy Pausch from The Last Lecture,

"It's not about how to achieve your dreams, it's about how to lead your life, ... If you lead your life the right way, the karma will take care of itself, the dreams will come to you."

VISION & MISSION

Our journey's final destination



Institute Vision:

- To be a world class institution for technical education and scientific research for public good.

Institute Mission:

- Make a positive difference to society through education.
- Empower students from across socio-economic strata.
- Be a centre of excellence in education in emerging technologies in accordance with industry and industrial trends.
- Build world class research capabilities on par with the finest in the world and broaden students' horizons beyond classroom education.
- Nurture talent & entrepreneurship and enable all-round personality development in students.

Department Vision:

- To inculcate the right mix of knowledge, attitudes, and character in students to enable them take up positions of responsibility in the society and make significant contributions.
- To produce talented Electrical and Electronics Engineers through quality education, to be a center of excellence and become a source of cutting edge technologies in the field of Electrical and Electronics Engineering.
- To become a preferred partner in the area of collaborative research among national and international organizations.

Department Mission:

- To achieve global eminence in the field of Electrical and Electronics Engineering.
- To be a highly preferred destination comparable with the best in the world for students aspiring to enter the field of Electrical and Electronics Engineering.
- To nurture the talent and to facilitate the students with all round personality development to make a positive difference to society through education.

