SCHOOL OF ELECTRONICS ENGINEERING

TECH-TRONICS
TRIBUNE

E-NEWSLETTER

Volume 5 Issue 3   JUL – SEP 2024

CONTENTS
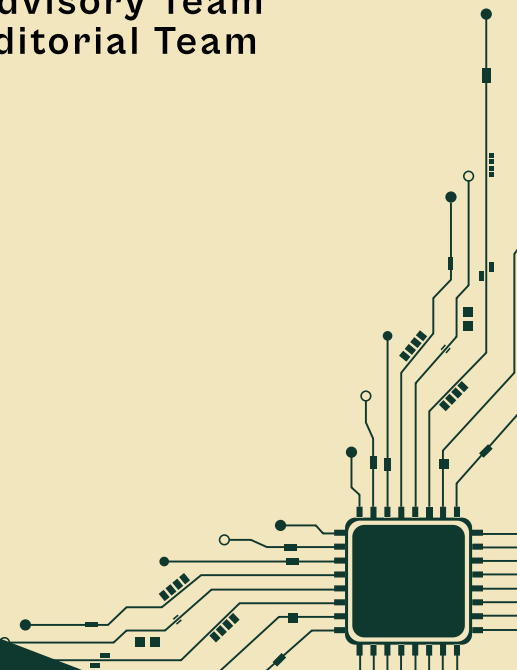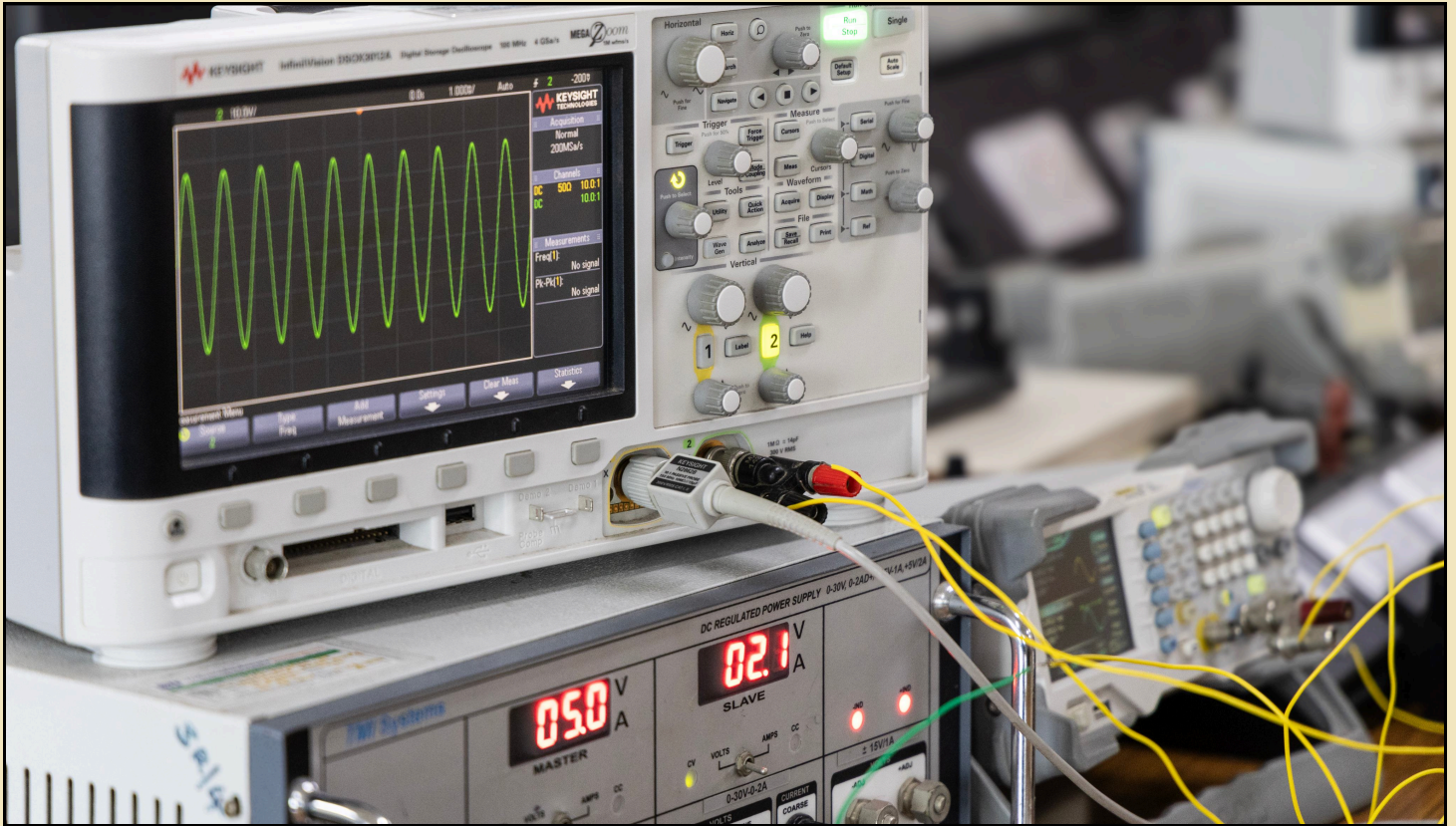
Vision

To be a leader in imparting in-depth and futuristic knowledge of electronics engineering and allied domains that cater to the needs of industry, research, and society.

Mission

- To create and maintain an environment of excellence in teaching, learning, and applied research in electronics engineering and associated disciplines to pioneer sustainable growth.

- To equip students with the necessary knowledge and skills enabling them to be lifelong learners in solving real-life problems, thereby improving the quality of human life and values.
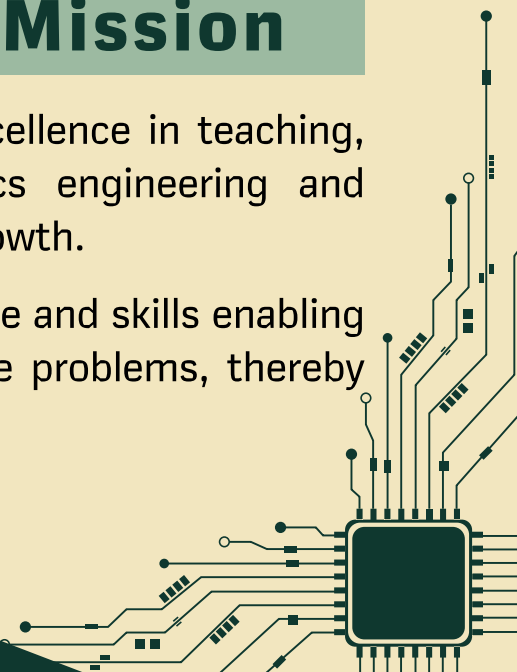
Dear VITians,

I trust this message finds you in good health and high spirits. Today, I am delighted to bring you important updates and announcements concerning our esteemed institution's School of Electronics Engineering.

In light of the ever-evolving landscape of electronics engineering, we have embarked on a thorough review of our curriculum. Our goal is to ensure that our programs remain at the forefront of technological advancements, equipping our students with the skills and knowledge essential for success in the industry. Anticipate exciting changes in our course offerings, upgraded laboratory facilities, and enriched project-based learning opportunities.

In our commitment to fostering innovation and facilitating groundbreaking research, we have actively pursued collaborations with industry partners and secured additional funding for research projects. These efforts will provide our faculty and students with expanded opportunities to delve into cutting-edge technologies, engage in multidisciplinary research endeavors, and contribute to addressing real-world challenges.

To bridge the gap between academia and industry, we are proactively establishing partnerships and collaborations with leading technology companies. These collaborations will enable our students to gain practical insights through internships, industrial training programs, and guest lectures from industry experts. We firmly believe that these interactions will enhance your professional growth and help you establish valuable industry connections.

I am thrilled to present the 5th Volume, 3rd Issue of our ENewsletter, "Tech-Tronics Tribune," by the School of Electronics Engineering (SENSE) for the third quarter of 2024. This edition showcases the well-deserved honors and recognitions bestowed upon both faculty and students within the SENSE family for the period of July to September 2024. I extend my heartfelt gratitude to all members of the SENSE family for their unwavering support and contributions that have made this newsletter possible. Your continued support is deeply appreciated, and we eagerly anticipate realizing the institute's mission and vision.

Thank you, and we look forward to an exciting journey ahead.

Dr. Sivanantham S
Professor & Dean
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Vellore Institute of Technology, Vellore
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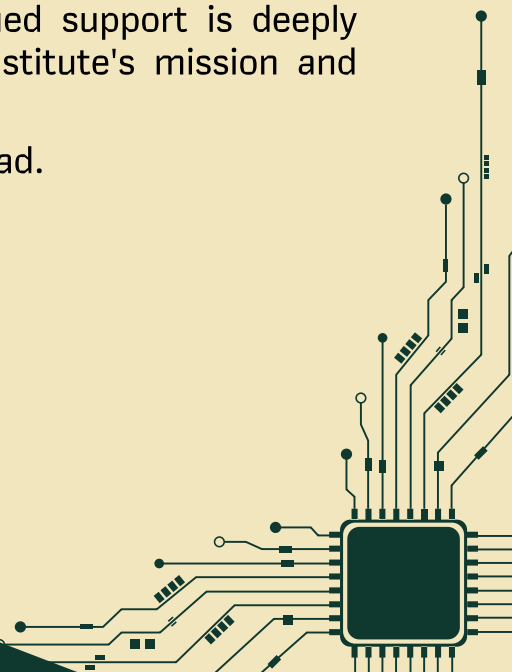
05
Patents Published

09
Patents Granted

09
Events Organized

14
organized
Guest Lectures

18
delivered
Guest Lectures

197
Publications

04 | PATENTS

| Patent Title	Inventors	Status
REPOATLAS: Seamless Integration of OpenAI's GPT and Weaviate Vector Database for Intelligent Code Navigation with Natural Language Queries	Sumit Kumar Jindal, Hemprasad Yashwant Patil, Gaurav Kumar, Raaj Kumar S	Granted
High Gain Antenna for LoRaWAN	Rohit Mathur, Sagar	Granted
Metamaterial Based MIMO Antenna	Dilip Kumar Choudhary, Naveen Mishra	Granted
Electronic Spherical Steam Trap	Sumit Kumar Jindal, Souvik Mukherjee, Vivek Muthke, Aditya Abhijit Kunte, Rutvij Pandya, Kothari Aditya Abhijeet	Granted
Autonomous Water Monitor and Disinfectant System	Sumit Kumar Jindal, Dhoriyani Urva Rajnikant, Souvik Mukherjee	Granted
Metamaterial Based Antenna	Idrasen Singh, Dilip Kumar Choudhary, Ganesh Khekare	Granted
Bow-Arrow Slot Metamaterial Antenna for 5G Applications	Kalyanbrata Ghosh, Shah Arpan Hasmukh Mayuri, Dilip Kumar Choudhary	Granted
Three-Axis Stabilized Drag Device for CubeSat	Dr. Kavitha K.V.N., Dr. C. Sathiyavel	Granted
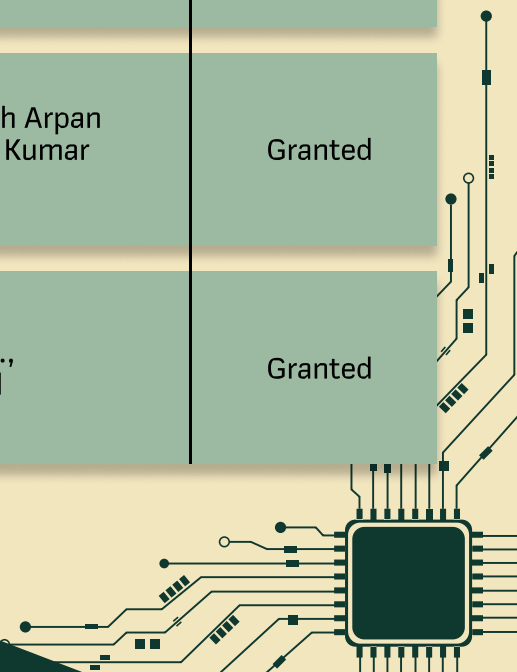
| Patent Title	Inventors	Status
Cold Gas Propellant System for Satellites	Dr. Kavitha K.V.N., Dr. C. Sathiyavel	Granted
Method for Obtaining Copper-Based Flexible Electrodes Using PVC Ink	Dr. Debashis Maji, Dr. Harish Gnanasambanthan G	Published
Leaf-Shaped Triboelectric Nanogenerator Device for Collecting Water from Fog and Harvesting Energy from Rain	Dr. Arunkumar Chandrasekhar, Dr. Shaik Ruksana Begum	Published
All Vanadium-Based Junction-Less Field Effect Transistor, Basic Logic Gates, and Flash Memory	Rajan Kumar Pandey, Kannam Sai Lakshmi Prasanth, Shubham	Published
Method for Minimizing the Threshold Voltage Variability in Sub-5 nm MOS Transistors	Rajan Kumar Pandey, Shubham, Kannam Sai Lakshmi Prasanth	Published
System and Method for Generating a Fluent Speech from a Dysfluent Speech	Dr. Sudhakar M S, Dr. Cherukula Madhu, Dr. Kanimozhi M	Published
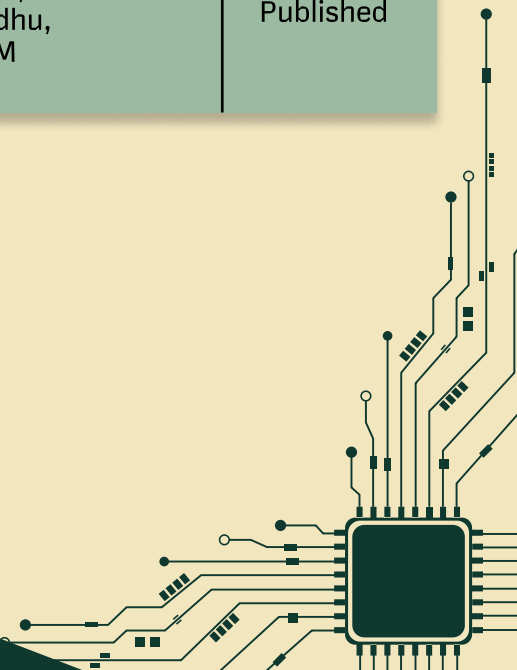
High Impact Factor Publications

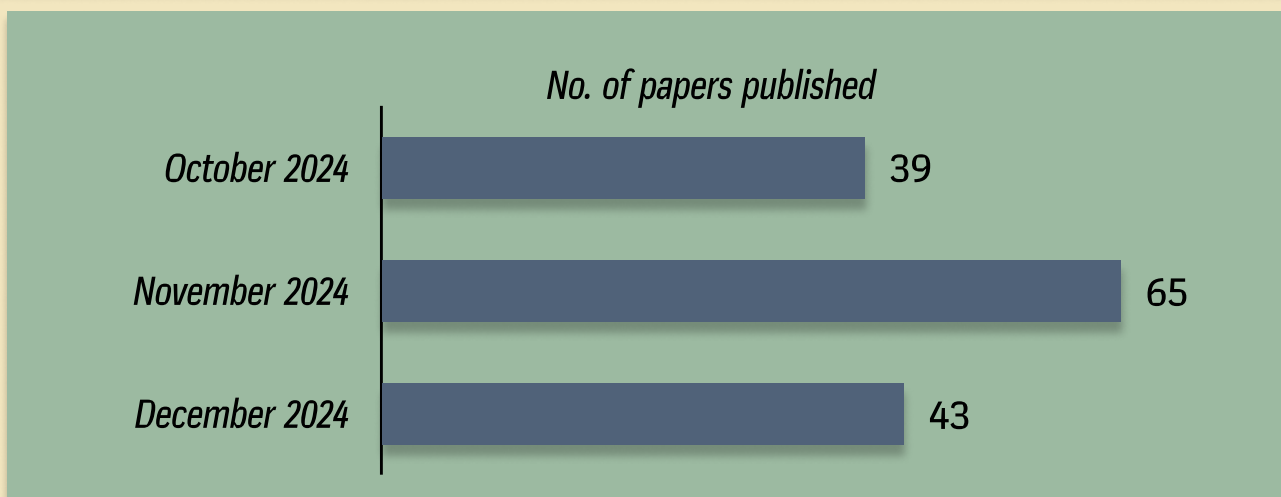| Details	IF
D. Kannadassan, K. Sivasankaran, S. Kumaravel, C.-H. Cheng, M. S. Baghini, and P. S. Mallick, "High-k Metal-Insulator-Metal Capacitors for RF and Mixed-Signal VLSI Circuits: Challenges and Opportunities," Proc. IEEE, 2024, doi: 10.1109/JPROC.2024.3506996.	23.2
C. Madhu and M. S. Sudhakar, "EmoDialect: Leveraging Fuzzy Matching and Dialect-Emotion Mapping for Sentiment Analysis," IEEE Trans. Affect. Comput., 2024, doi: 10.1109/TAFFC.2024.3514862.	9.6
N. Chinnappan and S. Punniyakoti, "Emerging advances of 2D molybdenum disulfide (MoS2) and their composites towards high-performance supercapacitors: A comprehensive review," J. Energy Storage, vol. 102, 2024, doi: 10.1016/j.est.2024.114040.	8.9
M. M. Noel, S. Bharadwaj, V. Muthiah-Nakarajan, P. Dutta, and B. A. Geraldine, "Biologically inspired oscillating activation functions can bridge the performance gap between biological and artificial neurons," Expert Syst. Appl., vol. 266, 2025, doi: 10.1016/j.eswa.2024.126036.	7.5
I. E. Ezhilarasi and J. C. Clement, "Robust cooperative spectrum sensing in cognitive radio blockchain network using SHA-3 algorithm," Blockchain: Res. Appl., vol. 5, no. 4, 2024, doi: 10.1016/j.bcra.2024.100224.	6.9
B. Lesiak-Orłowska et al., "Surface chemical and electronic properties of functionalized Fe3O4 nanoparticles influencing their cytotoxicity," Appl. Surf. Sci., vol. 684, 2025, doi: 10.1016/j.apsusc.2024.161873.	6.3
S. Kumar, R. Chinthaginjala, S. Ahmad, and T. Kim, "Energy-efficient unequal multi-level clustering for underwater wireless sensor networks," Alexandria Eng. J., vol. 111, pp. 33–46, 2025, doi: 10.1016/j.aej.2024.10.026.	6.2

05 | PUBLICATIONS
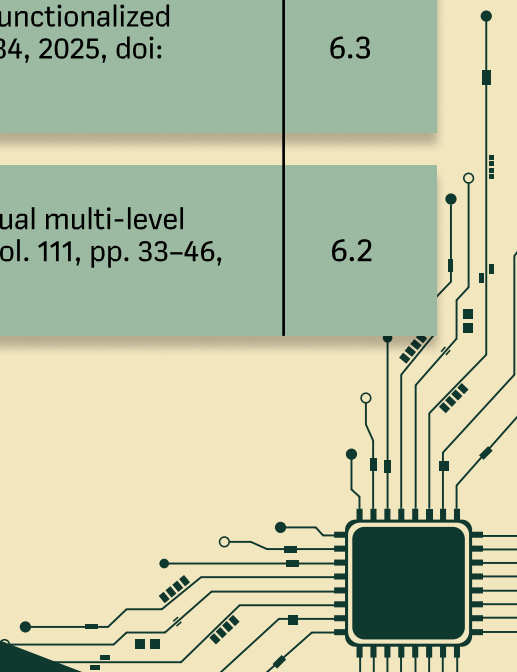
Details	IF
N. R. Sivaraaj and K. K. Abdul Majeed, "Exploring a comprehensive review of non-linear and composite phase frequency detectors within PLL frameworks," Results Eng., vol. 24, 2024, doi: 10.1016/j.rineng.2024.102909.	6
A. H. Rubavathy and S. Sundar, "Optimizing relay node selection in cooperative wireless body area networks with modified POA," Results Eng., vol. 24, 2024, doi: 10.1016/j.rineng.2024.103215.	6
K. Vinothkumar and T. Velmurugan, "Maximizing energy efficiency and system throughput using a self-adaptive penalty function with a whale optimization algorithm in social-aware device-to-device communications," Results Eng., vol. 24, 2024, doi: 10.1016/j.rineng.2024.103272.	6
C. J. M. Andrews, A. S. K. Narayanan, and A. Marazhchal Sunil, "Compact Metamaterial based Antenna for 5G Applications," Results Eng., vol. 24, 2024, doi: 10.1016/j.rineng.2024.103269.	6
U. S. Devi and R. K. Mugelan, "EVM-Aware relay path decision with hierarchical modulation for reliable data transmission in cooperative relay networks," Results Eng., vol. 24, 2024, doi: 10.1016/j.rineng.2024.103468.	6
A. P, V. P., S. S. Kumar, and K. J. Naidu, "Adaptive multilevel attention deeplabv3+ with heuristic based framework for semantic segmentation of aerial images using improved golden jackal optimization algorithm," Results Eng., vol. 24, 2024, doi: 10.1016/j.rineng.2024.103164.	6
T. Kim et al., "Evaluation of a double-lens dielectric radome using a microstrip patch antenna for electromagnetic applications," Ain Shams Eng. J., 2024, doi: 10.1016/j.asej.2024.103151.	6
J. MidhulaSri and C. V. Ravikumar, "Offloading computational tasks for MIMO-NOMA in mobile edge computing utilizing a hybrid Pufferfish and Osprey optimization algorithm," Ain Shams Eng. J., 2024, doi: 10.1016/j.asej.2024.103136.	6
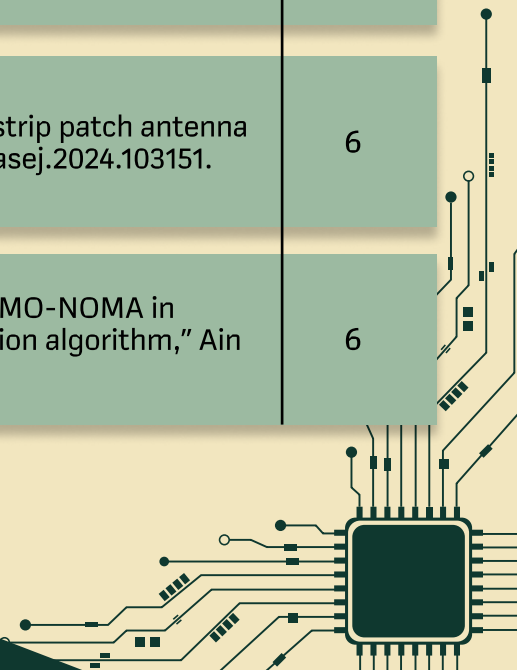
Paper Title	IF
S. Vidhya and M. Karthikeyan, "Ultra-wide band and high efficient Polarization converting metasurface employing Bell-shaped unit cell for RCS reduction," Results Eng., vol. 24, 2024, doi: 10.1016/j.rineng.2024.103342.	6
P. V. and C. V. Ravikumar, "Improved migration algorithms for uplink transmission secrecy sum rate maximization in MIMO-NOMA," Results Eng., vol. 24, 2024, doi: 10.1016/j.rineng.2024.103275.	6
S. Punitha and K. S. P., "A novel integration of Web 3.0 with hybrid chaotic-hippo-optimized Blockchain framework for healthcare 4.0," Results Eng., vol. 24, 2024, doi: 10.1016/j.rineng.2024.103528.	6
K. Vinoth and P. Sasikumar, "VINO_EffiFedAV: VINO with efficient federated learning through selective client updates for real-time autonomous vehicle object detection," Results Eng., vol. 25, 2025, doi: 10.1016/j.rineng.2024.103700.	6
N. R. Sivaraaj and K. K. Abdul Majeed, "Ultra-low power Ka-band phase noise optimized LCVCO with enhanced FOM of –197.300 dBc/Hz," Results Eng., vol. 25, 2025, doi: 10.1016/j.rineng.2024.103718.	6

Overall Summary

No. of papers published

Month	No. of papers published
October 2024	39
November 2024	65
December 2024	43

06 | CONSULTANCY PROJECTS

Development of an Executable file from a Source file

Faculty: Prof. KATHIRVELAN J

Industry: Galore Systems Pvt Ltd, India
Sanctioned Amount: INR 47200
Date: 31-07-2024 to 07-08-2024

Human Vital Signs monitoring using Milli Meter wave rader

Faculty: Prof. VALARMATHI J

Industry: Capgemini Engineering , India
Sanctioned Amount: INR 59000
Date: 01-08-2024 to 31-10-2024

Design simulation and analysis of various AC-DC and DC-DC converter topologies for 30kW EV charging station

Faculty: Prof. AARTHI G (CoPI), Prof. RAVI S (CoPI)

Industry: Caliber Interconnect , India
Sanctioned Amount: INR 175500
Date: 25-07-2024 to 25-01-2025

Design and optimization of planar printed helical antenna for RF wireless remote control vehicular communication

Faculty: Prof. SHAH ARPAN HASMUKH MAYURI (PI),
Prof. SAGAR PARESHKUMAR RAMANBHAI (CoPI)
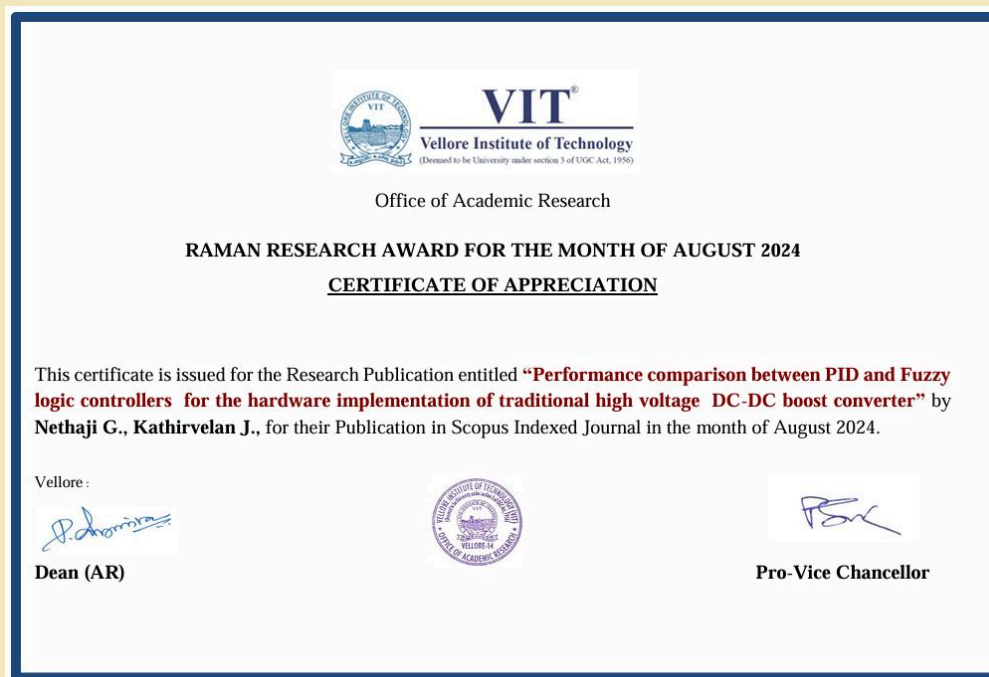
Industry: NPP Solutions, India
Sanctioned Amount: INR 25000
Date: 18-09-2024 to 18-12-2024

Dr. Arunkumar Chandrasekhar received the certification of **Best Individual Project (Faculty)** from Vellore Institute of Technology on 13-09-2024.

Dr. Kathirvelan J received the certification of **Raman Research Award** from Vellore Institute of Technology on 19-08-2024.

Dr. Vijendra Babu D received the certification of **Emerging IETE Student Forum Award** from **Institution of Electronics and Telecommunication Engineers (IETE)** on 27-07-2024.

Dr. Vijendra Babu D received the certification of Mentor Appreciation for **Best Paper Award** from **Institution of Electronics and Telecommunication Engineers (IETE)** on 27-07-2024.

Dr. Vijendra Babu D received the certification of **Exemplary Contribution Award** from **Institution of Electronics and Telecommunication Engineers (IETE)** on 27-07-2024.

28th IEEE International Symposium on VLSI Design and Test (VDAT-2024)
1st - 3rd September 2024

Theme: Emerging Technologies for VLSI Design Ecosystem

The 2024 VLSI Design & Test Symposium (VDAT-2024) held as a three-day in-person event onsite at the Vellore Institute of Technology (VIT) Vellore, Tamil Nadu from 1st September - 3rd September 2024.

VDAT 2024 has provided a unique platform for academicians, researchers, startups, and industrial practitioners to share their views on current technological trends in the world. More than 800 participants from India, the UK, Japan, Canada, and the USA have registered for this event. In addition, 155+ Academic Institutions and 150+ Industry Professionals are attending the VDAT 24 Symposium. Leading industries have set up their stalls for VDAT 2024. The conference has received generous sponsorship from various organizations, including DST-SERB, the Government of India, and the Ministry of Electronics and Information Technology (MeitY), as well as technical sponsorship from the IEEE Madras Section and the IEEE Computer Society, among others.

Keynote Speakers and Industry Leaders

Chief Guest
Hitesh Garg
Vice President & India Managing Director, NXP Semiconductors

Visionary Keynote Speaker
Sridhar Vembu
Co-Founder & CEO, Zoho Corporation

Guest of Honour
Dr. Satya Gupta
President, VLSI Society of India

Moderator - Panel Discussion
Dr. Chitra Hariharan
Secretary, VSI

Keynote Sessions

Stalls Exhibit by Industries

HIGHLIGHTS

- **Paper Presentations** across tracks such as: *Emerging Devices & Materials, Circuit & System Design, CAD Tools for VLSI, Testing and Verification and more*
- **Poster Presentations & Ph.D. Forum**
- **Tutorial Sessions** by industry experts
- **Design Contests** in multiple tracks
- **Panel Discussions on** Semiconductor opportunities in India
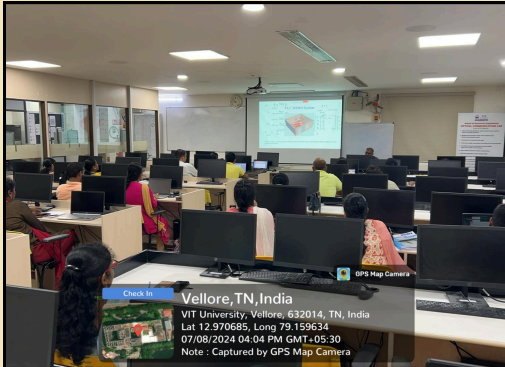- **Stalls Exhibit** by industries

Tutorial Sessions


Participated Industries (40+)

- One Week FDP on **Digital System Design** was organized by Dr. Nithish Kumar V and Dr. Vetriveeran Rajamani from 08-07-2024 to 12-07-2024.

- FDP on **Optical Communications for Beyond 5G Networks** was organized by Dr. Poongundran Selvaprabhu, Dr. Rajeshkumar V, and Dr. Vinoth Babu K from 08-07-2024 to 12-07-2024.

- FDP on **VLSI System Design and Hands-on using Cadence Virtuoso** was organized by Dr. Jayakrishnan P and Dr. Satheesh Kumar S from 08-07-2024 to 12-07-2024.
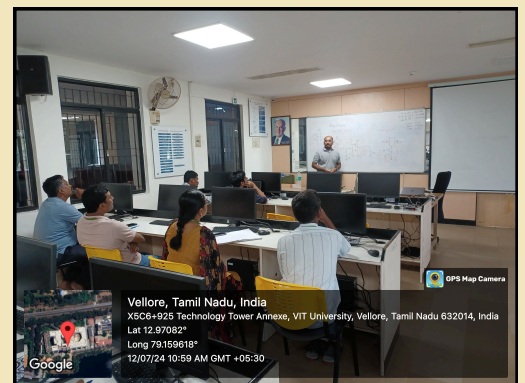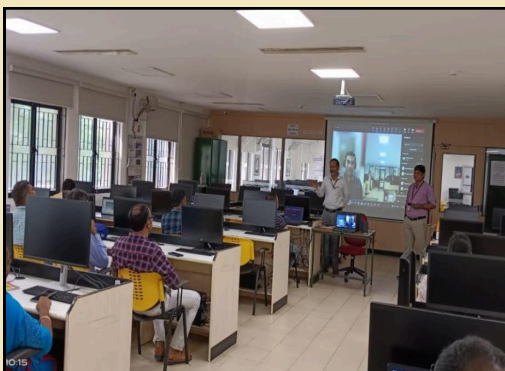
- FDP on **Wireless and Mobile Communications** was organized by Dr. Vinoth Babu K, Dr. Budhaditya Bhattacharyya, and Dr. Abhijit Bhowmick from 08-07-2024 to 12-07-2024.

- FDP on **ATAL Micro and Fiber Optic Sensors** was organized by Dr. Chittaranjan Nayak from 23-09-2024 to 28-09-2024.

09 EVENTS ORGANIZED

- TLCE 5 days FDP on **AWS Cloud Computing** was organized by Dr.S.Rajalakshmi from 08-07-2024 to 12-07-2024

- FDP on **Antenna and Microwave Engineering** was organized by Dr. Poonkuzhali R and Dr. Boopalan G from 10-07-2024 to 12-07-2024.

- Workshop on **Data to Discovery: Enhancing Decision Making with Insightful Data Analysis for real-time use cases** was organized by Dr. Sriharipriya K C on 28-09-2024.

Industry Academia Conclave

The School of Electronics Engineering organized the Industry Academia Conclave – **Next Generation Communication'24** on **13th September 2024**, bringing together academic minds and industry leaders to explore cutting-edge developments in communication technology.

Renowned experts from top organizations such as Samsung Research Institute, Nokia, VVDN Technologies, and Synopsis led insightful sessions on AI-powered networking, 5G/6G systems, machine learning in telecom, memory interfaces, and the practical skills essential for electronics engineers. The discussions provided a deep dive into current industry practices while offering students a real-world perspective on emerging technologies.

The conclave encouraged meaningful interaction between academia and industry, highlighting the vital role of collaboration and innovation in driving advancements in next-generation communication technologies.

The School of Electronics Engineering hosted a series of guest lectures featuring experts from academia and industry worldwide. These sessions explored cutting-edge advancements in communication systems, micro and nanoelectronics, sensors, biomedical technology, and embedded systems. Discussions focused on emerging technologies, industry trends, and research breakthroughs, providing students with valuable insights into real-world applications.

With a strong emphasis on AI, automation, cybersecurity, and hardware advancements, the lectures bridged the gap between theoretical knowledge and practical implementation. Attendees gained a deeper understanding of evolving engineering landscapes, fostering innovation and interdisciplinary learning.

These sessions served as a platform for students to engage with global experts, enhancing their technical expertise and preparing them for future challenges in the field.

In this third quarter of the year 2024, we have **organized 18 guest lectures** over various departments.

Guest Lectures Delivered

Signal Processing and Wireless Communications	Dr. Vinod Babu K	IISC Bengaluru
WSN Protocols and Metaheuristics Approaches	Dr. Shankar T	Dept. of ECE, NITTTR, Chennai, India
Spatial Modulation Techniques: Shaping the Future of Wireless Communication	Dr. Vinoth Babu K	IEEE ComSoc, Nigeria, Nigeria
AI and Emerging Topics in Networking	Dr. Vinoth Babu K	Soft Computing Research Society, Gwalior, India

11 MoUs SIGNED
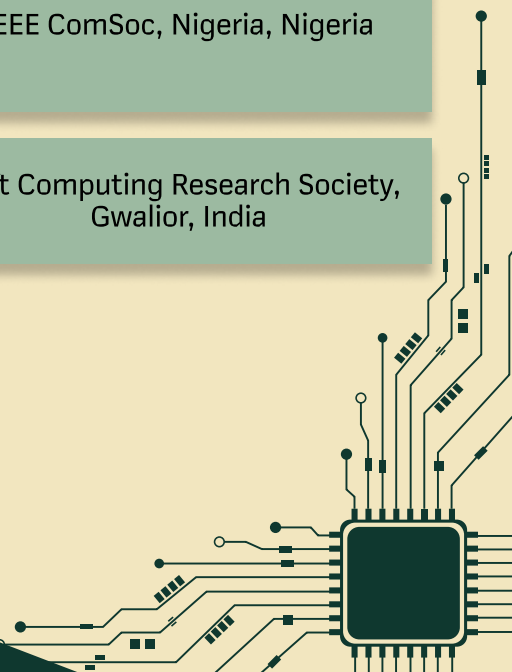
Purpose: Internship
Organization: IEEE CEDA
Date Signed: 23-09-2024
Valid From: 23-09-2024
Valid To: 23-09-2026

Organization: Marvell Technology
Date Signed: 02-09-2024

12 PhD COMPLETED
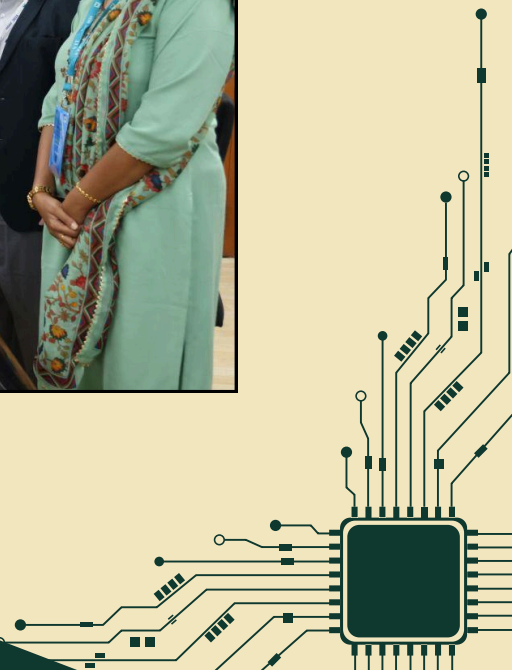
Name	Guide name	Title
KONDEPOGU VIJAYA KUAMR	Dr. Budhaditya Bhattacharyya	Effective Sparse Multipath Channel Estimation in Ofdm Communication System Using Deep Learning Techniques
M KANIMOZHI	Dr. Sudhakar M S	Novel and Computationally Simple Schemes for Feature Extraction and Data Classification
RASHEED GADARAPULLA	Dr. Sradhibhatla Sridevi	Design and Performance Analysis of Novel III-V Heterojunction Double Pocket Dgtfet and Sram Circuit Implementation in Ultra-low Voltage Regime
CHERUKULA MADHU	Dr. Sudhakar M S	Analytically Interpretable Strategies For Multimodal Data Classification
K SATHISH	Dr. Ravi Kumar C V	Clustering Based Energy Optimization and Optimal Path Selection in Underwater Wireless Sensor Networks
HOMAKESAV O	Dr. Rajini G K	Enhanced Deep Learning Methodologies for Precise Detection and Classification of Brain Tumors
ANJANEYA P	Dr. Rajini G K	Enhancing Data Preservation in Light Field Hyperspectral Images Through Combined Sparse Discrete Wavelet and Prn
BINDU P.V.	Dr. Jabeena	Enhancement of Brain Image Compression Based on Region of Interest for Soft Computing Using Metaheuristic Algorithms
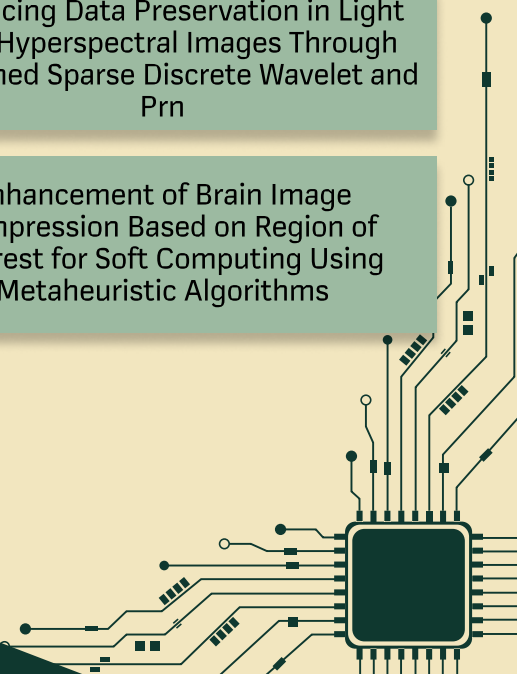
ADVISORY TEAM

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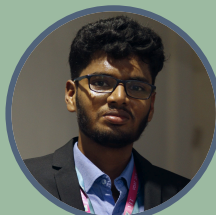*Dept. of Sensors & Biomedical*
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BALAJI S
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Design

PALLAWI KUMARI
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