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ECHOES

**DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING**

FACULTY TEAM



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From HoD desk

I am proud to present the third edition of ECHOES, the official newsletter of the ECE Department. This edition reflects the vibrant achievements of our students and faculty from research publications, patents, and conference innovations to creative expressions like a heartfelt Mother's Day thread art.

A standout milestone is the exhibition of KLSAT-1 and KLSAT-2 satellite modules by our students at the Rajamahendravaram Science Centre, in the presence of esteemed dignitaries. This national recognition showcases our students' ability to translate vision into engineering reality, proving that even from classrooms, we can launch into space.

Our faculty continue to excel in research, certifications, and industry collaboration, while our Fab Lab and practical learning initiatives ensure our graduates are future-ready.

I applaud all contributors and hope this edition continues to echo excellence and inspire many more to dream, design, and achieve.

**-Dr. SUMAN MALOJI,
HOD-ECE**

ABOUT THE DEPARTMENT OF ELECTRONICS & COMMUNICATION



Engineering (ECE), established in 1983, boasts 120 distinguished faculty members, including 101 with PhD degrees, while others are pursuing PhDs. Faculty with rich industry experience cater to both academic and industry needs. State-of-the-art laboratories, Centers of Excellence, and Research Centers support UG, PG, and PhD students, emphasizing R&D activities and innovative exploration beyond the curriculum.

With Rs. 259 million in sponsored projects from DST, ISRO, and others, the department showcases a strong research culture, publishing over 3300 peer-reviewed articles. The vibrant academic calendar includes advanced certificate courses, seminars, visiting foreign faculty, and student paper contests. Student development programs, industry alliances, and active associations further enhance the department's offerings.

VISION

To become a world-class department in the frontier regions of Electronics & Communication Engineering.

MISSION

- To bring forth graduates possessing professional excellence.
- To conduct quality research with social & industrial application.
- To render technical assistance in converting the learners into entrepreneurs.

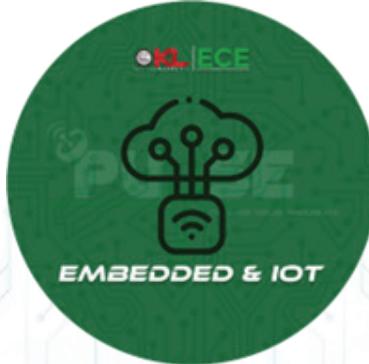
ABOUT PULSE

PULSE, the official student body of the Department of Electronics and Communication Engineering (ECE), stands as a catalyst for holistic student development. Built on a foundation of collaboration, creativity, and leadership, PULSE creates a space where students transform potential into purpose. It bridges the gap between academics and real-world application, helping students cultivate vital skills such as decision-making, problem-solving, event management, and teamwork.

At the heart of PULSE lies a commitment to nurturing well-rounded individuals. By engaging in vibrant cultural, technical, and recreational activities, students not only showcase their talents but also discover new passions and perspectives. It is a journey of self-discovery, where energy meets vision and every effort leads to growth.

Driven by enthusiasm and innovation, PULSE hosts a wide array of signature events—ranging from brain-teasing competitions and interactive expos to leadership showcases and creative fests. Events like Idol of ECE, Project Expo, Treasure Hunt, Iconic Engineer, Tejomayam, and Renovate are not just milestones—they are launchpads for ideas and inspiration.

PULSE is more than a student body—it's a movement of ambition, resilience, and achievement. Join the pulse of ECE and step into a community where your aspirations are fuelled, your efforts are valued, and your success is celebrated.



DREAM. DESIGN. DEPLOY ECE'S KLSAT MODULES TAKE CENTER STAGE

The Department of Electronics and Communication Engineering (ECE) at KL University is proud to celebrate a landmark achievement in student-led space innovation. Our KLSAT team had the prestigious opportunity to present the KLSAT-1 and KLSAT-2 satellite modules during the inauguration of the Rajamahendravaram Science Centre at Bomuru on 26th June 2025.

In the esteemed presence of Hon'ble Union Minister for Culture and Tourism, Shri Gajendra Singh Shekhawat, Hon'ble Deputy Chief Minister of Andhra Pradesh and Chairman of APCOST, Shri Konidela Pawan Kalyan, and Hon'ble Member of Parliament, Rajahmundry, Smt. Daggubati Purandeswari, the KLSAT team had the opportunity to demonstrate KL University's advancements in space technology. In their presence, our ECE students proudly demonstrated India's capability in small satellite innovation, making it a proud moment for the entire department.

POWER OF KLSAT IN SPACE

KLSAT-1 and KLSAT-2 are not just student projects – they are fully realized satellite modules that reflect the passion, precision, and innovation of young minds at KL University. KLSAT-1, a launched and successfully recovered module, and KLSAT-2 an enhanced version with cutting-edge sensing capabilities, were both developed in-house by the KLSAT team.



Hon'ble Union Minister for Culture and Tourism, Shri Gajendra Singh Shekhawat, Hon'ble Deputy Chief Minister of Andhra Pradesh and Chairman of APCOST, Shri Konidela Pawan Kalyan, and Hon'ble Member of Parliament, Rajahmundry, Smt. Daggubati Purandeswari, the KLSAT team had the opportunity to demonstrate KL University's advancements in space technology.

These space-ready modules integrate:

- UHF/VHF and LoRa telemetry systems
- Environmental sensors for temperature, pressure, and radiation monitoring
- A spectroscopy sensor for spectral surface analysis (KLSAT-2)
- A quad-camera system delivering high-resolution stratospheric imaging
- Modular architecture, built entirely using Made-in-India components

The initiative has not only demonstrated technical excellence but also set a new benchmark for student-led contributions to aerospace and satellite technology.

Behind Every Launch: Brilliant Minds & Unmatched Mentorship

KLSAT's success stems from the relentless efforts of a dedicated student team guided by visionary mentors.

- **Dr. Kotamraju Sarat Kumar** –KLSAT Mission Director
- **Dr. K.Ch.Sri Kavya** –KLSAT Chief Technology Officer

Main Module Integration:

The project's success was driven by collaborative efforts across teams. Kolachalam Sai Charan led the Main Module Integration with support from Tulasi, Gopal, Akhil, and others. The Telemetry & Communication team included Hemanth, Sushma, Harshitha, Surya Teja, and more. Payload & PCB Design was managed by Sreenija, Sreeja, Siraj, and Vinitha, while Web Systems were handled by Thanmaya and Varun. A special mention to Yalla Sai Teja (Mechanical Engineering) for leading the structural design and fabrication, turning concepts into a flight-ready build.

FROM CAMPUS TO COSMOS

The KLSAT initiative showcases how student-led innovation, backed by KL University's strong support, evolved into a national-level space project. With multiple modules ready for launch and plans to collaborate with ISRO and platforms like In-Space CanSat India, KLSAT proves that learning, when fueled by mentorship and passion, can truly reach for the stars.



EMPOWERING THE FUTURE: INVENTION OF SELF-POWERED PRESSURE SENSING

The emergence of triboelectric nanogenerators (TENGs) is reforming the landscape of energy harvesting and wearable sensing technologies. By converting ambient mechanical movements into electrical energy, TENGs offer a sustainable path toward self-powered electronic systems. Their unique ability to operate without external power sources makes them highly relevant for applications in health monitoring, smart wearables, and next-generation sensor networks. In this edition, we highlight recent advances in TENG-based devices, focusing on their application in biomechanical energy harvesting and pressure sensing. Nanocomposites for Enhanced Triboelectric Performance: Recent developments in material science have led to the fabrication of highly efficient TENGs using amine-functionalized silica nanoparticles embedded within cellulose acetate films, coupled with electrospun PVDF layers. The surface modification enhances the charge generation capability of the triboelectric layer, significantly improving energy conversion efficiency. Optimization of material composition has played a critical role in achieving reliable performance under varying input mechanical forces.



Dr. SR. Srither
Dept., of ECE, KLEF

REAL-TIME BIOMECHANICAL ENERGY SCAVENGING

TENGs can harvest biomechanical energy from everyday human motions such as finger tapping, palm pressing, walking, and running. Advances in material design and device engineering have enabled consistent and reliable energy output under repeated dynamic stresses. These durable and flexible devices are well-suited for continuous monitoring in wearable health and fitness applications. Recent innovations in material selection for contact separation mode fabricated devices have demonstrated consistent performance under several human actions, confirming potential for real-time biomechanical energy harvesting and continuous monitoring in the health and fitness domain.

SELF-POWERED PRESSURE SENSING

The developed TENG also serves as a highly sensitive pressure sensor by directly converting mechanical stimuli into electrical signals without requiring any external power source. Its output shows a clear, linear relationship with applied pressure, enabling accurate and reliable detection of varying force levels. This makes it ideal for real-time monitoring in diverse applications to replace traditional force sensors where external battery sources can be eliminated. The self-powered nature of the sensor not only reduces energy consumption but also enhances device portability and user convenience, marking a significant step forward in autonomous sensing technologies. autonomous, energy-efficient electronic systems. By combining cutting-edge nanomaterial engineering with innovative device design, we are developing a new generation of self-powered sensors. That are both reliable and environmentally sustainable. As triboelectric energy harvesting technology continues to progress, these smart, green devices are set to become key components in the future of wearable electronics and sustainable smart systems.

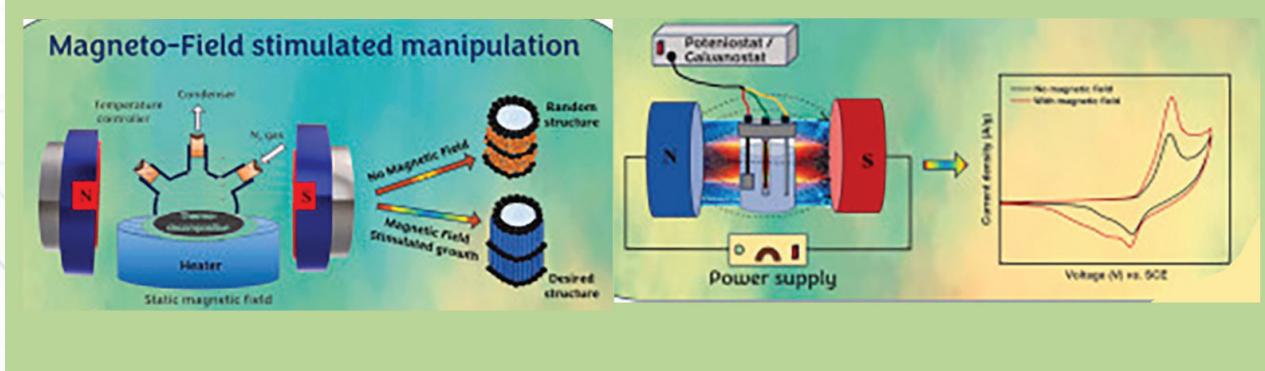
MAGNETIC FIELD-DRIVEN NANOMATERIAL FABRICATION AND REDOX KINETICS MANIPULATION FOR NEXT-GENERATION SUPERCAPACITORS



Magneto-electrochemistry (MEC) is an emerging interdisciplinary approach that integrates magnetic fields into electrochemical systems, offering promising strategies to overcome key limitations in conventional supercapacitors, such as restricted ion mobility, high interfacial resistance, and sluggish charge-transfer kinetics. This review provides a focused and up-to-date perspective on the role of magnetic fields in enhancing charge transport, highlighting mechanisms such as improved ion migration, localized convection, and optimized charge distribution. It further explores how magnetic fields influence the synthesis and morphology of electrode materials, with a detailed discussion of magnetic-field-assisted techniques including hydrothermal, solvothermal, chemical vapor deposition, thermal decomposition, co-precipitation, and electro deposition methods, which enable control over particle orientation, crystallinity, and surface area. The concept of magnetic

stimulus-responsive materials (MSRMs) is introduced, emphasizing their dynamic response to magnetic stimuli that can modulate redox behavior, ionic transport, and structural stability, ultimately enhancing device performance. Underlying physical mechanisms such as Lorentz and Kelvin forces, magnetic polarization, Maxwell stress, and magnetic-field-induced changes in electrolyte behavior are critically examined for their electrochemical implications. By reviewing recent advancements across these areas, this review highlights the potential of MEC to substantially enhance energy density, capacitance, and cycling stability in supercapacitor systems. In addition to outlining the benefits, it also addresses current technical challenges and proposes future research directions, positioning MEC as a compelling platform for the development of next-generation, high-performance, magnetically responsive energy storage technologies."

MAGNETO-FIELD STIMULATED MANIPULATION



MOTHER'S DAY

*A mother's love, a heart so bright,
Guides us through life, with gentle might.
She teaches and nurtures, with care so true,
A love that's selfless, forever shining through.*

*With patience and kindness, she helps us grow,
And in her guidance, our hearts bestow.*

*In times of need, she's always near,
Wiping away tears and calming every fear.*

*Her legacy lives on, a lasting light, In our
hearts, her love shines with delight.*

*Mothers connect generations, a bond so strong,
Passing down values, where love
and memories belong.*

*A mother's gift, a precious, loving deed,
Giving life and nurturing, with a heart that
proceeds. We celebrate her love, her care,
and her might, A mother's love, a treasure,
forever in sight.*



Dr. Syam Sundar Pillalamarri,
Associate Professor
Department of ECE



అమృ



ఆమె... ఆత్మ సాందర్భానికి నిలువెత్తు నిదర్శనం
 ఆమె.. అంతులేని ఆత్మ స్నేర్యానికి ప్రతి రూపం
 ఆమె... అనంత కరుణా రస సాగరం
 ఆమె... అజరామర ప్రేమకు నిర్వచనం
 ఆమె... అసాధారణ తెగువకు నిలువుటద్దం
 ఆమె... మమతాను రాగాల హృదయ వీణా నాదం
 ఆమె... ఓర్చు కే ఓసమాలు నేర్చిన శాంతి కపోతం
 అన్నింటినీ మించిన ఆమె మాతృత్వం
 ఆ జన్మాంతం తీర్చుకోలేని బుణం
 మాతృ మూర్ఖులుకి ఇదే నా హృదయ నీరాజనం

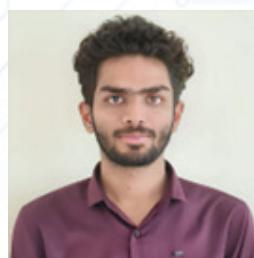


డా. శివ గంగ ప్రసాద్
 ప్రాఫెసర్ ఇ.సి.ఇ డిపార్ట్మెంట్



T. Sriram, a passionate and creative student, recently completed a stunning piece of thread art titled "Mother's Embrace." This emotional masterpiece captures a mother holding her child, expressing the purest form of love through delicate patterns and interwoven strands. What makes this work truly special is how it combines artistic detail with heartfelt storytelling. Each thread forms a part of a larger message—a silent yet powerful tribute to the bond between mother and child. Sriram's work is a beautiful reminder that creativity knows no boundaries. It's inspiring to see such a thoughtful balance between technical skill and artistic emotion, encouraging fellow students to explore and express themselves in their own unique ways. We celebrate Sriram's exceptional talent and look forward to more such creative expressions in the future.

T. Sriram
2300049187



THE ENDURING LEGACY OF A MOTHER'S LOVE

As Mother's Day approaches, we take a moment to reflect on the profound impact that mothers have on our lives. A mother's love is a boundless, selfless, and unwavering force that shapes us into the individuals we become. My own mother, though no longer with me physically, continues to inspire and guide me through the lessons she imparted and the values she instilled.

Growing up, my mother was my rock, my confidante, and my teacher. She would spend hours with me, patiently explaining complex concepts, encouraging my curiosity, and nurturing my creativity. As the first teacher of my life, she laid the foundation for my future growth and development. One particular incident that stands out in my memory is when I was preparing for my 5th standard social exam. I was feeling anxious and uncertain about the subject, but my mother sensed my distress and took it upon herself to ensure I was well-prepared. She woke up throughout the night with me, despite her long working day at her school, meticulously going over each chapter, clarifying doubts, and making sure I understood every concept. Her dedication and perseverance paid off, as I secured the first position in my class for the first time in social studies. The pride and joy on her face are etched in my memory forever, and it was a testament to her unwavering support and guidance.

Mothers are the bridges that connect generations, passing down values, traditions, and experiences that shape our identities and REFORM our decisions. They play a vital role in preserving family histories and cultural heritage, ensuring that the lessons of the past are not lost on future generations. In my own life, my mother's influence has been a constant source of strength and inspiration, guiding me through life's challenges and celebrating my successes.

Though my mother is no longer with me physically, her presence continues to shape my life. The values she taught me – empathy, resilience, and kindness – are the guiding principles I strive to live by.

Her legacy lives on through me, in the way I approach challenges, interact with others, and make decisions. Whenever I face a difficult situation, I find myself asking, "What would my mother do in this situation?" Her influence has become an integral part of my being, and I continue to draw strength from the lessons she imparted. Mothers are indeed great among all beings, for they are the only ones who can give birth to another life, nurturing it with their love, care, affection and devotion.

A mother's love is a precious gift that transcends time and circumstance. It is a bond that cannot be broken, a connection that remains strong even in the face of adversity. As we celebrate Mother's Day, we honor not only the mothers in our lives but also the enduring impact they have on our lives. We recognize the sacrifices they make, the love they share, and the values they instill. To my mother, and to all mothers, I offer my deepest gratitude and appreciation. Your love, guidance, and support have shaped us into the individuals we are today.

Though you may not be with us physically, your legacy lives on through us, inspiring us to be better versions of ourselves. As we celebrate Mother's Day, we remember the profound impact you've had on our lives and the countless ways you've enriched us. Thank you for being our rock, our guiding light, and our unwavering source of love and support. Love you MOM. Thank you for introducing me to this beautiful world.



Dr. Syam Sundar Pillalamarri,
Associate Professor
Department of ECE

THE DAY THEY FINALLY SAW HER

In the quiet corners of her home, Ramya moved like a shadow—present in every moment, yet unseen. The aroma of her cooking filled the rooms, her hands kept the chaos in order, and her presence stitched the family together. But over time, her worth faded into absence, and her voice reduced to background noise until even her silence went unnoticed. Her daughter, Ananya, spent most of her time on the phone or with friends who mocked Ramya's plain looks and traditional ways. Her son, Arjun, dismissed her as "old-fashioned," and her husband, Rajeev, once charmed by her simplicity, now ridiculed her innocence in front of his friends. Ramya had become the wallpaper of their lives—seen but unnoticed, needed but unappreciated. She never raised her voice, not because she was weak, but because her love was louder than words.

One day, Devi, an old college friend, visited. She was sharp, observant, and outspoken—the opposite of Ramya's quiet endurance. Over tea, Devi noticed the tiredness behind Ramya's smile and the hesitation in her laughter. "Ramya... are you really okay, or just pretending to be?" she asked. Ramya wept quietly, confessing that no one had asked how she was in a long time. "They do not notice me, Devi. I'm invisible in my own home." Shocked by this revelation, Devi devised a plan.

That weekend, Devi invited Ramya's family for dinner at her place. The table was set with elegance, every dish a family favorite—but this time, Ramya hadn't lifted a finger. The family arrived distracted—Rajeev on his phone, Ananya talking loudly into hers, and Arjun with earphones in. Devi welcomed them and announced that she had prepared the entire meal so Ramya could simply sit and be served. Rajeev scoffed, "Isn't that what she does all the time?" Devi, calm yet firm, responded, "She cooks every day without a word. Today, I told her to just be served."

She then turned to each of them, asking pointed questions. Ananya—did she remember who paid for her phone? Arjun who ensured his coaching fees were always paid? Rajeev who stood beside him during hard times? She reminded them of all the sacrifices Ramya

had made: giving up her career to raise them, wearing old slippers so they could have new shoes, staying awake through their illnesses and failures. And in return, all she received was disrespect, ridicule, and silence. The room fell silent under the weight of her words. Ananya's eyes filled with tears. Arjun removed his earphones. Rajeev looked down, ashamed.

As Ramya tried to speak, Devi gently held her hand and said, "Your silence your endurance is not their permission. You are not just a wife, not just a mother. You are a woman with worth beyond measure. And they must earn back your trust, your presence, your love." That evening, the family sat together not out of habit, but reflection. Ananya admitted her selfishness. Arjun apologized for not noticing. Rajeev, voice heavy with guilt, confessed his failure to see her. Ramya, eyes filled not with sorrow but recognition, said softly, "I never asked for much—just a little time, and a little love."

From that day forward, small but meaningful changes began. Rajeev started coming home earlier. Ananya helped in the kitchen with genuine care. Arjun started listening really listening. Ramya had never asked for this transformation. She had only ever asked to be seen.

*A mother doesn't seek praise. She seeks presence.
NOT GIFTS - but gestures.
And not apologies -but affection.*

If we wait too long to value her, we risk waking up to a home full of memories but empty of meaning.



Pusarla Sai Venkat Ramana
III Yr. 2300040248

SENSED, PATENTED, PUBLISHED – A TECH JOURNEY BY KL'S STUDENTS

A team of students from the Department of ECE at KL University has turned their innovative idea into reality with a government-published patent and a Scopus-indexed international journal publication. Their project centers around a wearable, battery-free impact sensor developed using antimony-doped barium titanate (BaTiO), a lead-free piezoelectric material.

The device captures body impact and converts it into electrical signals without the need for an external power source. These signals are transmitted wirelessly through an ESP32 module to ThingSpeak, enabling real-time monitoring on the cloud. The system is designed to instantly alert users or healthcare providers through a connected mobile application—making it ideal for healthcare, sports, or elderly safety applications.

Their innovation was granted official recognition through a patent titled “Antimony-doped ABO Class Ferroelectric Material for Ultra-Light Weight On-Body Wearable Impact Sensor”, published in the Indian Patent Office Journal on April 25, 2025. In parallel, their research findings were also published in the Q2 Scopus-indexed journal Energy Technology (Wiley), with the DOI: 10.1002/ente.202500047.

Invented by Rayavarapu Vamsi and Durgaraju Kanaka Harshitha, under the guidance of Dr. V. Vivekananthan and Dr. B.T.P. Madhav, this project is a true reflection of how smart materials, IoT, and student ingenuity can come together to create impactful real-world solutions.

STUDENT ACTIVITY

We are delighted to announce that our students **P. Haarika and Aditya Sahu** have successfully presented their research paper titled:

“Agri Rover: A GPS-Guided Smart Rover for Environmental Monitoring” at the **3rd International Conference on Agriculture- Centric Computation (ICA 2025)**, held from 13–16 May 2025.

The prestigious event was organized with participation from reputed institutes including IIT Guwahati and IIT Ropar, in collaboration with Springer and supported by the Ministry of Science and Technology. We congratulate them for bringing recognition to the department on such a global platform!



3RD INTERNATIONAL CONFERENCE ON AGRICULTURE-CENTRIC COMPUTATION
13-16 MAY 2025

CERTIFICATE OF PRESENTATION

This is to certify that

P. Haarika & Aditya Sahu

has successfully presented the paper titled

AgriRover: A GPS-Guided Smart Rover for Environmental Monitoring

at the ICA - 2025

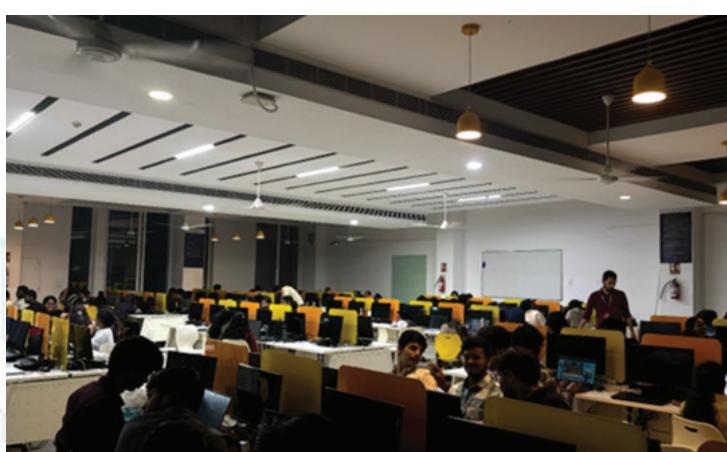
Dr. Aryabartta Sahu

Conference Chair, IIT Guwahati

Dr. Mukesh Kumar Saini

Program Chair, IIT Ropar

As part of the Skill Development Course on Embedded Systems and Automation, a 24-hour hackathon was organized from 12:00 PM on May 10th to 12:00 PM on May 11th. The event engaged second-year students, providing them with an opportunity to apply theoretical knowledge in a practical, time-bound setting. Participants worked in teams to develop solutions across various domains, showcasing their understanding of embedded hardware, automation principles, and system integration. The hackathon promoted critical thinking, collaboration, and innovation—essential skills for engineering practice. Initiatives like this not only enhance technical competence but also foster a project-oriented mindset. All participating teams demonstrated commendable effort, and the outcomes reflected a strong foundation in embedded systems design.



FACULTY ACHIEVEMENTS

Dr. A. V. Prabhu has secured a position in the Top 2% of toppers in the Industrial Internet of Things (IIoT) course. We are proud to highlight the remarkable accomplishment of Dr. A. V. Prabhu, who has been awarded the Elite NPTEL Online Certification for successfully completing the prestigious course "Introduction to Industry 4.0 and Industrial Internet of Things", offered by the Indian Institute of Technology Kharagpur. This achievement reflects Dr. Prabu's commitment to continuous learning and staying at the forefront of emerging technologies. His dedication not only enhances his expertise but also contributes significantly to our institution's efforts in embracing innovation and fostering a culture of excellence.



Elite NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)



This certificate is awarded to

DR A V PRABU

for successfully completing the course

Introduction To Industry 4.0 And Industrial
Internet Of Things

with a consolidated score of 91 %

Online Assignments	25/25	Proctored Exam	66/75
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Total number of candidates certified in this course: 13763



Indian Institute of Technology Kharagpur

Jan-Apr 2025

(12 week course)



Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur



Dr. Ch. Satyanarayana spoke elated to Water pollution on ETV(29-May-2025)

There is a growing risk of water shortage. When water is extracted without regulation, groundwater levels also decline. Of all the water on Earth, 97% is seawater and about 2% is locked in ice. That leaves only around 1% as accessible fresh water the vital source of life for all living beings. However, due to rapid population growth and

increasing environmental pollution, this limited supply is under severe threat. At the same time, the water industry continues to expand, chasing profits often at the cost of sustainability.



Dr. Syed Imthiyaz, representing the Koneru Lakshmaiah Education Foundation (KLEF), who received a formal Certificate of Participation for his active engagement in the program. The training sessions featured a lineup of distinguished speakers from both academia and industry.

Venkat Ratnam Devanaboyina, who represented our institution at the 5th International Conference on Pervasive Computing and Social Networking (ICPCSN-2025) held at R P Sarathy Institute of Technology, Salem, Tamil Nadu, from May 14–16, 2025.



Dr. Guda Rama Krishna Prasad, Associate Professor in the Department of Electronics and Communication Engineering, in a national-level training initiative. Dr. Prasad successfully completed the NEP 2020 Orientation & Sensitization Programme conducted by the Malaviya Mission Teacher Training Centre (MMTTC).

Dr. GRK Prasad actively participated in this program and was recognized with a certificate of participation, promoting knowledge-sharing and growth. The event was supported by reputed professional bodies including IEEE, IETE, and RTU COE, adding substantial credibility to its educational



INSIDE THE FAB LAB

3D PRINTER – BRINGING IDEAS TO LIFE

Explore the Tools That Power Innovation

The Fab Lab at the Department of Electronics and Communication Engineering is more than just a workspace—it's a launchpad for imagination. Each edition, we spotlight the core instruments that make our lab a hub of creativity and precision.

A 3D printer works on the principle of additive manufacturing, where objects are created layer by layer from a digital 3D model. The process typically begins with a CAD (Computer-Aided Design) file, which is sliced into thin horizontal layers. The printer then deposits material—usually thermoplastics like PLA or ABS—through a heated nozzle onto a build platform. Each layer fuses with the previous one, gradually building a complete physical object from the ground up. This precise layering allows for complex geometries, internal structures, and custom designs that are difficult to replicate with traditional manufacturing techniques.



Applications in the ECE

Fab Lab include:

- Enclosures for circuits and sensors
- Mechanical parts for robotics and drones
- Prototypes for student innovation and research projects
- Educational models for visualization of engineering concepts
- Customized tools or fixtures for lab experiments

By enabling rapid prototyping and iterative design, the 3D printer accelerates innovation and fosters a hands-on approach to learning. It empowers students to visualize, build, test, and refine their ideas—transforming imagination into reality.

INSIDE THE 5G WIRELESS TECHLAB

Enabling Smart Connectivity Through IoT Integration

Located in Room R205, the Wireless Technology Lab focuses on smart communication systems, bridging the gap between sensors and cloud-based platforms. Our feature tool this edition is the SNR-540 IoT Bridge, a compact yet powerful communication hub.

IoT Bridge – Bridging Devices to the Cloud

The SNR-540 IoT Bridge connects edge devices to central systems, enabling real-time wireless data transfer via Wi-Fi, LoRa, or cellular networks. Its rugged design supports multiple protocols and Ethernet connectivity.

How it Works:

Sensor data is collected, processed, and transmitted to the cloud for remote monitoring and control.

Applications:

- Smart city systems
- Industrial automation
- Environmental monitoring
- IoT-based research

This device helps students and researchers build reliable, scalable IoT solutions for future-ready innovations.



INSIDE THE NANO TECHLAB

Explore the Tools That Empower Precision in Optics

The Nano Technology Lab is a critical part of our department's research ecosystem, focusing on cutting-edge advancements in fibre optics and nanomaterials. This edition, we spotlight INNOI Fusion Splicer, an instrument that enables seamless connectivity in high-speed communication networks. **INNOI Fusion Splicer – Precision in Every Connection** The INNOI Fusion Splicer joins two optical fibers using an electric arc, aligning their cores for a low-loss, high-strength connection. Its compact design features automated splicing, core alignment, and built-in sleeve heating.

How it Works:

Fibers are stripped, cleaved, and fused under high magnification, ensuring seamless data transmission.

Applications:

- Fiber optic network setup (FTTH, FTTx)
- Optical communication and nanotech research
- High-speed telecom, aerospace, military data links
- Student training in photonics

Reliable and efficient, this tool is essential to our fiber optics experiments and learning.

ADVISORY STUDENT TEAM

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D HARSHA SAI 2300040404	P.VINAY KASYAP 2300040067	P.KARTHIK 2300040094
TEAM ACADEMICS		
JYOTHSNA 2300040351	VYSHNAVI 2300040211	JEEVAN 2300049219
TEAM FAB LAB		
SWAROOP 2300040038	NIKHIL 2300040107	ARUN 2300040401
TEAM FACULTY ACHIEVEMENTS		
SRAVANI 2300040373	RAMANA 2300040268	SUDHA 2300040362
TEAM STUDENT ACTIVITIES		
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