**GAIKWAD-PATIL**
GROUP OF INSTITUTIONS

# Department of Electronics & Communication Engineering

# SPECTRUM
## Strive For Excellence

### Technical Magazine
### Session 2024-25
Even Sem
Volume V, Issue 2

B.Tech | B.Arch | M.Tech | MBA | MCA | BBA | BCA | Polytechnic | D.Arch | B.Pharm | D.Pharm | BAMS | B.Sc Nursing | Physiotherapy | Ph.D

## Vision of Institute

"To emerge as a learning Center of Excellence in the National Ethos in domains of Science, Technology and Management"

## Mission of the Institute

**M1** To strive for rearing standard and stature of the students by practicing high standards of professional ethics, transparency and accountability.

**M2** To provide facilities and services to meet the challenges of Industry and Society.

**M3** To facilitate socially responsive research, innovation and entrepreneurship.

**M4** To ascertain holistic development of the students and staff members by inculcating knowledge and profession as work practices.

## Vision of Department

"To emerge as a learning Hub and center of excellence in the domain of Electronics and Communication Engineering."

## Mission of the Department

**M1** To impart quality technical education through effective teaching learning process.

**M2** To provide a platform for addressing societal issues and challenges encountered by industries.

**M3** To foster a culture of research and instill innovative and entrepreneurial skills.

**M4** To promote lifelong learning in order to foster the holistic development of students and staff through the knowledge and professional ethics.

## Program Educational Objectives

**PEO 1**
Demonstrate essential technical skills to identify analyze, solve problems and design issues in Electronics and Communication Engineering.

**PEO 2**
Apply field knowledge, research and professional practices to meet the requirements of industries.

**PEO 3**
Imbibe lifelong learning practices and entrepreneurship skills in tune with Emerging Technologies.

**PEO 4**
Inculcate professional ethics and managerial skills to satisfy real life problems for serving the needs of society and environment.

## Program Specific Outcomes

**PSO 1**
Formulate solutions to intricate engineering problems by applying fundamental principles from the Electronics and Communication Engineering technology.

**PSO 2**
Develop methodologies to analyze and design circuits in electronics for communication applications to meet the societal needs.

**PSO 3**
Implement project-based learning techniques to conduct experiments in Embedded Systems, communication system, signal and Image processing, Circuit analysis and design.

# Programme Outcomes (POs)

**Knowledge** | **Skills** | **Attitude**

## PO 1 — Engineering Knowledge
- Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems

## PO 2 — Problem Analysis
- Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences

## PO 3 — Design/ Development of Solutions
- Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health safety, cultural, societal and environmental considerations

## PO 4 — Investigation
- Conduct investigations of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions

## PO 5 — Modern Tool Usage
- Create, select and apply appropriate techniques, resources and modern engineering and IT Tools, including prediction and modelling, to complex engineering activities, with an understanding of the limitations

## PO 6 — The Engineer and Society
- Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice

## PO 7 — Environment and Sustainability
- Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development

## PO 8 — Ethics
- Apply ethical principals and commit it to professional ethics and responsibilities and norms of engineering practice

## PO 9 — Individual and Team work
- Function effectively as an individual, and as a member or leader in diverse teams and in multi disciplinary settings

## PO 10 — Communication
- Communicate efficiently on complex engineering activities with the engineering community with society at large, such as being able to comprehend and write effective presentations, and give and receive clear instructions

## PO 11 — Project Management and Finance
- Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team to manage projects in multidisciplinary environments

## PO 12 — Lifelong Learning
- Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadcast context of technological change

# About  TGPCET

Tulsiramji Gaikwad-Patil College of Engineering and Technology (TGPCET) was established in theyear 2007 by Vidarbha Bahu-uddeshiya Shikshan Sanstha (VBSS), a registered society. It is a self -financed Private Engineering College, which is affiliated to Rashtrasant Tukadoji Maharaj Nagpur University (RTMNU) Nagpur a disapproved by All India Council for Technical Education, New Delhi. And also college is approved by Directorate of Technical Education (DTE), Mumbai, Maharashtra State. The Institute is Accredited with  A+ (3.32 CGPA) by NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL  (NAAC). An Autonomous Institute affiliated to  RTM Nagpur University, Nagpur.

**TGPCET offers Eight PG programs** Computer Science and Engineering (CSE), Integrated Power System (IPS)

- ❖ Aeronautical Engineering,
- ❖ Biotechnology Engineering
- ❖ Computer Science Engineering
- ❖ Data Science Engineering
- ❖ Mechanical Engineering
- ❖ Electrical Engineering
- ❖ Information Technology Engineering
- ❖ Electronics and Communication Engineering
- ❖ Bachelor of Computer Application
- ❖ Bachelor of Business Administration
- ❖ Master of Business Administration
- ❖ Master of Computer Application

# About Us

Established with B. Tech ECE in the year 2007-08 with an intake of 60. It has been one of the key departments, active in teaching and research since its inception in 2007. It has well qualified and experienced faculty with novel teaching methods.

Research and training activities are based on VSAT, Atmel, µP & µC and SATCOM laboratories. A separate computing facility has been established to carry out project work and design jobs taken up by the department.

The Department has a state-of-the-art Microwave & Radar Engineering Laboratory in addition to well- equipped laboratories in the areas of Electronic Devices, Communication Engineering, Digital Signal Processing, Microprocessor and Microcontroller and Digital Electronics.

The department has Industry Institute Partnership Cell (IIPC) which aims to establish and explore proper links with various departments, agencies and industries all over the country. It also aims to work in close coordination with the industries and organizations for placement and training of the students, to support R & D and sponsored projects from industries, to exchange personnel between the Industries and the Institute by organizing guest lectures by Industrial experts, evaluation of project work, development of curriculum as per industry needs and other academic work in the Institute.

The sponsored project of our students "GSM Based Automatic Response System for Locomotive Trouble Shooting" designed for the three phase locomotives WAG 9 / WAP 5 / WAP 7 in Indian Railways, started under the guidance of TRO dept. of Central Railway Commission in Nagpur Division is appreciated by General Manager, Central Railways Mr. Subodh Jain in Ballarshah during his annual inspection of Ballarshah- Sevagram section and is practically implemented in Nagpur division.

The project was published in BPQ – SEGM section Booklet-B: Performance Parameter of Central Railway, Nagpur on 17th January 2012.

Student of ECE Department won 2nd Prize in XVIIth ISTE Student National Annual Convention

# Message from the Desk of Management

> *"Education is the passport to the future, for tomorrow belongs to those who prepare for it today."*

*Dr. Mohan Gaikwad-Patil, with more than 35 years of experience in the education system to his credit, established the Gaikwad-Patil Group of Institutions in Nagpur to cater to the quality education needs of the youth in Vidarbha. His early experience teaching in an engineering college made him acutely aware of the dissonance between engineering education in the country and the requirements of the industry. He therefore began with the dream of starting an engineering college that equips students with knowledge, skills, and attitudes relevant to the industry. That dream has manifested today in the form of an educational group well known in the region for its constant striving to impart quality and industry-relevant education to the students by teaching courses like B.Tech, M.Tech, Architecture, Polytechnic, MBA, MCA, Pharmacy, BAMS, Physiotherapy and Nursing. Hardly in his early forties, Dr. Mohan Gaikwad-Patil is the young and dynamic face of the group. His contagious enthusiasm and unflagging drive are truly inspiring.*

**Dr. Mohan Gaikwad-Patil**
*Chairman, Gaikwad-Patil Group*

**Mr. Akash Gaikwad-Patil**
*Vice Chairman, Gaikwad-Patil*

> *"Education is not preparation for life, education is life itself."*

*In a world brimming with challenges, the need for brilliant engineers who can think critically, solve problems creatively, and adapt to a rapidly evolving technological landscape has never been greater. At TGPCET, we are committed to providing an education that goes beyond textbooks. Our curriculum is meticulously crafted to equip students with the technical expertise, soft skills, and design thinking abilities necessary to thrive in the ever-changing engineering landscape. We believe in nurturing well-rounded individuals with a strong foundation in ethics, social responsibility, and a passion for making a positive impact on the world. Our state-of-the-art facilities, coupled with a dedicated and experienced faculty, provide a stimulating learning environment that ignites curiosity and encourages exploration. We don't just produce engineers; we empower future leaders, innovators, and entrepreneurs who will shape the world of tomorrow. We are confident that our graduates will be at the forefront of technological advancements, tackling global challenges, and building a future brimming with possibilities.*

B.Tech | B.Arch | M.Tech | MBA | MCA | BBA | BCA | Polytechnic | D.Arch | B.Pharm | D.Pharm | BAMS | B.Sc Nursing | Physiotherapy | Ph.D

**"Shaping Minds, Building Futures: Welcome to the Engineering Innovation Hub."**

*"Welcome to TGPCET, a premier institution dedicated to nurturing exceptional engineers who can shape the world of tomorrow. Here, we believe in cultivating a stimulating learning environment that fosters creativity, critical thinking, and a passion for innovation. Our vision is to provide a holistic learning experience that equips you with the technical expertise, leadership skills, and innovative thinking needed to thrive in a dynamic industry. With a rich legacy of academic excellence, we offer a diverse range of engineering and management programs designed to equip you with the knowledge, skills, and experiences needed to thrive in the ever-evolving engineering landscape. Our dedicated faculty, state-of-the-art facilities, and strong industry partnerships ensure you receive a well-rounded education that prepares you for success in your chosen field. We invite you to join our vibrant community and embark on a journey of excellence."*

**Dr. Anjali Patil-Gaikwad**
*President, Gaikwad-Patil Group*

**"Creating a Brighter Tomorrow, One Investment at a Time: Your Pathway to Engineering Excellence."**

*The essence of life is to live a life for others and die for a noble cause. We express our gratitude for receiving an opportunity to serve the nation. We have a crystal-clear vision of enlightening the student brain with a sound and technology-rich academic curriculum. We pledge to ensure that the students will not only progress in their respective fields but will also become responsible citizens by abiding by the rules and will live disciplined life. Our college has state-of-the-art facilities for teaching, research and development. The students who have passed out of our college have already proved their mettle in various fields. I personally appeal to all the students to make use of the facilities here and improve their skills to have a glorious career ahead*



**Dr. Sandeep Gaikwad**
*Treasurer, Gaikwad-Patil Group*

# Message from the Desk of Principal & Vice Principal

*"Nurturing Innovation, Empowering Leaders - Engineering Education Redefined ."*

It is my privilege to warmly welcome you to the college, which is an autonomous institution, committing to quality education. We work on the principle of "Learn to Grow" With this very inspiring thought, Vidarbha Bahu Uddeshiya Shikshan Sanstha Nagpur has laid a foundation to provide education in the field of engineering to the students to enable them to become good practicing engineers, capable managers and above all a good human being to build a stronger, vibrant and skilled India. We dream that TGPCET should play a definite role in shaping the careers of tomorrow's leaders and developing individuals to have an impact on global development.

Looking at our track records, TGPCET has achieved many feathers in terms of consistently good results, placements, and extracurricular activities too. We are continuously in the process of imparting quality education to our budding engineers. This journey is succeeding more gloriously year after year making our Engineers rule the world. Success depends on opportunity. Try to get the maximum from the available resources. I wish best of luck in all your endeavors.

**Dr. P. L. Naktode**
*Principal*

**Dr. Pragati Patil**
*Vice Principal*

Welcome to Tulsiramji Gaikwad Patil College of Engineering and Technology (TGPCET) in Nagpur, Maharashtra, a leading educational institution. Inspired by the words of Shri. APJ Abdul Kalam, "Dreams are not those which we see while sleeping, but dreams are those which do not let us sleep,". TGPCET strives for ambitious goals through knowledge acquisition, hard work, and perseverance. Our institution has quickly emerged as one of Maharashtra's premier technical education institutions. We emphasize academic excellence and technical skill development to meet industry demands while instilling values of integrity, morality, and sustainability.

At TGPCET, we leverage cutting-edge technology to foster an innovative learning environment, encouraging students to think critically and explore new ideas. Our students engage in national and international competitions to tackle real-world challenges, supported by faculty who stay updated with the latest technologies. Professional organizations like IEEE, CSI, ISTE, SAE-India, and SESI enhance skills through robust platforms. Beyond academics, we promote holistic development through sports, cultural activities, and social initiatives, nurturing responsible citizens. Join TGPCET to excel, innovate, and lead in a supportive environment where growth and transformation are limitless.

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# Message from the Desk of HoD

Dear Esteemed Readers,

It is with great pleasure and pride that I extend my warmest greetings to you through the pages of this esteemed technical magazine. As the Head of the Electronics & Communication Engineering Department, I am thrilled to share some of the extraordinary accomplishments that our department as achieved over the past year.

Our commitment to excellence in education and research is reflected in the numerous awards earned by both our students and faculty members. This accomplishment not only showcases the dedication of our students but also speaks volumes about the quality of education and resources provided by our department.

I am delighted to announce that our department has consistently produced university toppers, exemplifying the academic prowess of our students. This is a testament to the high standards we maintain in our teaching methodologies, as well as the continuous support provided to our students to help them excel in their academic pursuits.

Thankyou everyone who has been a part of this incredible journey, and I invite you to delve in to the pages of this magazine to explore the depth of our achievements and the promising future that lies ahead.

Warm Regards,

**Prof. Rohini Pochhi**
Head of Department Electronics and Communication Engineering Department Tulsiramji Gaikwad Patil College of Engineering and Technology, Nagpur.

**Prof. Sandeep Thakre**
(Chief Editor)

**Prof. Pallavi Rokade**
(Magazine Coordinator)

# EDITORIAL COMMITTEE

Mr. Rohit Barbate
(Student Editor)

Mr. Abhay Deshmukh
(Student Editor)

Ms. Gayatri Ghode
(Student Editor)

Ms. Kashish Neware
(Student editor)

Ms. Nandani Hedaoo
(Student edito

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# *Message from the Desk of Editor*

*It gives me immense pleasure to present to you the latest edition i.e Volume V, Issue 2 of the **Technical Magazine** of the Department of Electronics and Communication Engineering. This magazine is a platform for showcasing the innovative spirit, technical acumen, and creative flair of our students and faculty members. Through this publication, we aim to highlight the remarkable journey of learning, discovery, and invention that defines our department.*

*In today's rapidly evolving technological landscape, Electronics and Communication Engineering continues to be at the heart of innovation. From the core fundamentals of analog and digital electronics to the cutting-edge realms of embedded systems, VLSI design, wireless communication, and the Internet of Things (IoT), our discipline is ever-expanding.*

*A special mention must be made of the brilliant contributions by our students, whose passion for technology and innovation shines through every article and project featured in this issue. Their curiosity, perseverance, and ability to bridge theory with practice are commendable. Equally deserving of praise are our dedicated faculty members, who guide and mentor students through every challenge, and who themselves remain committed to lifelong learning and academic excellence.*

*This magazine also celebrates the spirit of collaboration that thrives in our department—between students and teachers, academia and industry, and theory and practice. It is this synergy that equips our graduates to step confidently into the professional world, ready to tackle real-world challenges and contribute to society through engineering solutions.*

*Let us continue to learn, innovate, and excel—together.*

*Warm regards,*
**Mr. Sandeep Thakre**
Editor-in-Chief

*I would like to extend my sincere gratitude to the editorial team, faculty coordinators, student contributors, and everyone who supported the creation of this magazine. Your hard work, creativity, and commitment have made this publication a true success.*

# Table of Contents

# Faculty Technical Article

## *AI and Edge Computing in Electronics and Communication*

*Artificial Intelligence (AI) and Edge Computing are transforming the landscape of Electronics and Communication Engineering (ECE) by enabling devices to process data locally rather than relying on remote cloud servers. This approach significantly reduces latency, enhances data privacy, and improves overall system efficiency — all critical in real-time communication systems.*

*Edge AI involves deploying lightweight, power-efficient AI models on embedded systems and edge devices. Semiconductor companies like NVIDIA, Intel, and Qualcomm have developed specialized chips that integrate AI capabilities directly into communication hardware. This advancement is particularly beneficial for applications such as autonomous vehicles, smart surveillance, remote healthcare, and industrial automation, where rapid data processing and minimal delay are crucial.*

*In communication networks, Edge AI is used to optimize bandwidth usage, manage network traffic, and detect anomalies in real-time. For instance, 5G and upcoming 6G technologies incorporate edge computing to ensure faster, more reliable data transmission with localized decision-making.*

*By bringing intelligence closer to the data source, AI and Edge Computing enable smarter electronic systems and more adaptive communication infrastructures. As this integration deepens, it is set to redefine how devices interact, process, and communicate, driving innovation across consumer, industrial, and defence applications in ECE.*

**Prof. Mayuri Harde**
Assistant Professor
Electronics & Communication
Engineering

# Quantum Communication: The Future of Secure Data Transmission

*In an era dominated by digital data, the importance of secure communication is greater than ever. As traditional encryption methods face growing threats from advancing technologies, especially quantum computers, researchers and engineers are turning to quantum communication — a field that leverages the principles of quantum mechanics to enable ultra-secure data transmission.*
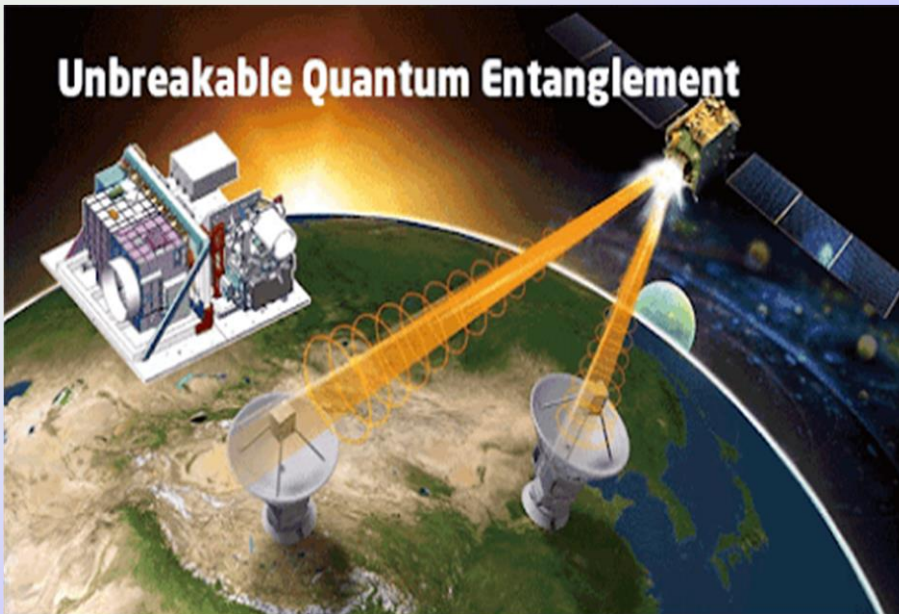


*Quantum communication is the use of quantum mechanics to transmit information in a way that is fundamentally secure. At its core, this technology utilizes quantum bits (qubits) instead of classical bits. Unlike classical bits that are either 0 or 1, qubits can exist in a superposition of both states simultaneously.*

*The most remarkable aspect of quantum communication is its ability to detect any attempt at eavesdropping. This is made possible by the no-cloning theorem and the Heisenberg Uncertainty Principle, which state that any measurement of a quantum system inevitably disturbs it. Therefore, if a third party tries to intercept a quantum message, it changes the message itself — revealing the intrusion. Entanglement is a phenomenon where two or more qubits become linked, such that the state of one instantly influences the state of the other, regardless of the distance between them. This "spooky action at a distance," as Einstein called it, is crucial for quantum communication protocols like Quantum Teleportation and Quantum Key Distribution (QKD).QKD is the most well-developed application of quantum communication. It allows two parties to generate a shared, secret cryptographic key that can be used to encrypt and decrypt messages. The most famous QKD protocol is BB84, proposed by Charles Bennett and Gilles Brassard in 1984.With QKD, any attempt to eavesdrop on the key exchange is detectable, ensuring that the communication remains secure.*

**Prof. Suraj Mahajan**
Assistant Professor
Electronics & Communication

# Students Corner- Technical Article

## *IoT and Digitization: Transforming the World Through Connectivity*

The world is becoming increasingly connected as digital technologies evolve. One of the key enablers of this digital revolution is the Internet of Things (IoT). IoT refers to physical objects—devices, sensors, machine connected to the internet that can send, receive, and process data. Digitization involves converting manual or analog processes into digital systems. Together, IoT and digitization are creating smarter environments and transforming industries. This article illustrates how these technologies work hand in hand using real-life examples.

The integration of the Internet of Things (IoT) with digitization is



reshaping modern life by automating processes, enhancing data-driven decisions, and improving system efficiency. This article explains the concept of IoT-powered digitization through real-world applications. Each section introduces the use case before presenting examples, offering a clear picture of how connected devices are fueling the digital transformation across industries.

IoT is also helping farmers monitor conditions and make better decisions for crop health and water use. Soil moisture sensors activate irrigation systems only when needed, saving water.

IoT plays a foundational role in modern digitization efforts. It connects the physical and digital worlds, bringing intelligence and efficiency to every domain it touches. As adoption grows, IoT will continue to drive digital transformation across industries, creating smarter systems and better experiences for users worldwide.

# Insights of EDU- Skills

| Sr. No. | Name | Domain | Cohort | Status |
|---|---|---|---|---|
| 1 | Vaibhav Borkar | Ansys Electromagnetic Analysis Virtual Internship | Cohort 10 | Completed |
| 2 | Shravya Fulbandhe | Google AI-ML Virtual Internship | Cohort 10 | Completed |
| 3 | Swapnil Selokar | Google AI-ML Virtual Internship | Cohort 10 | Completed |
| 4 | Shubham Nikhade | Microchip Embedded System Developer Virtual Internship | Cohort 10 | Completed |
| 5 | Tishank Pawar | Google Android Developer Virtual Internship | Cohort 10 | Completed |
| 6 | Arpit Wagare | Google Android Developer Virtual Internship | Cohort 10 | Completed |
| 7 | Sagar Manik | Google Android Developer Virtual Internship | Cohort 10 | Completed |
| 8 | Nikhil Tembhurne | Google AI-ML Virtual Internship | Cohort 10 | Completed |
| 9 | Nikhil Landge | Web Full Stack Developer Virtual Internship | Cohort 10 | Completed |
| 10 | Shravya Fulbandhe | Alteryx Data Analytics Process Automation Virtual Internship | Cohort 11 | In Progress |
| 11 | Mahesh Bawane | Google AI-ML Virtual Internship | Cohort 11 | In Progress |
| 12 | Nikhil Landge | Microchip Embedded System Developer Virtual Internship | Cohort 11 | In Progress |
| 13 | Vaibhav Borkar | Altair Conceptual Cae Design And Simulation Virtual Internship | Cohort 11 | In Progress |

Certificate of Virtual Internship

This is to certify that

Tishank Pawar

Tulsiramji Gaikwad-Patil College of Engineering and Technology

has successfully completed 10 weeks

Android Developer Virtual Internship

During Oct - Dec 2024

Supported By : India Edu Program

Google for Developers

Karthik Padmanabhan
Developer Ecosystem Lead
MENA & India, Google

Shri Buddha Chandrasekhar
Chief Coordinating Officer (CCO)
NEAT Cell, AICTE

Dr. Satya Ranjan Biswal
Chief Technology Officer (CTO)
EduSkills

Certificate ID:79ece68c96fc2e3c6f9f1363d366c274
Student ID :STU854a2febdb3b11699360747



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Chief Technology Officer (CTO)
EduSkills

Certificate ID:79ece68c96fc2e3c6f9f1363d366c274
Student ID :STU854a2febdb3b11699360747

# Insights of Internship

| Sr.No | Name of Students | Company Name | Domain |
|-------|------------------|--------------|--------|
| 1 | Apeksha Kishor Fuse | KEC International Pvt.Ltd. | Automation |
| 2 | Arati Tikaram Tarare | PG Electroplast Pvt. Ltd. Ahmadnagar | Robotics & Automation |
| 3 | Diksha Mahadeo Mule | PG Electroplast Pvt. Ltd. Ahmadnagar | Robotics & Automation |
| 4 | Kajal Maheshkumar Shendre | Mahindra & Mahindra Pvt.Ltd.Pimpri Chicwad | EV Technology |
| 5 | Kajal Umesh Bonsule | PG Electroplast Pvt. Ltd. Ahmadnagar | PCB Designing |
| 6 | Lakshmi Sandip Devgade | CDMAC Mechatronic Pvt.Ltd Pune. | Cyber Security |
| 7 | Payal Sadashiv Barekar | Mahindra & Mahindra Pvt.Ltd.Pimpri Chicwad | EV Technology |
| 8 | Pragati Mohan Padole | CDMAC Mechatronic Pvt.Ltd Pune. | Cyber Security |
| 9 | Riya Gyaniwant Kakde | Mahindra & Mahindra Pvt.Ltd.Pimpri Chicwad | EV Technology |
| 10 | Riya Rajkumar Chavhan | SS Infotech Pvt.Ltd Nagpur | Full Stack Development |
| 11 | Roshani Ramratan Katekhaye | Mahindra & Mahindra Pvt.Ltd.Pimpri Chicwad | EV Technology |
| 12 | Samrudhi Rajeshwar Wakade | SS Infotech Pvt.Ltd Nagpur | Full Stack Development |
| 13 | Shruti Shrikrishana Uparwat | Live Wire Live Tech Pvt.Ltd Nagpur | Web Development |
| 14 | Simran Anand Kumbhare | SS Infotech Pvt.Ltd Nagpur | Full Stack Development |
| 15 | Sunidhi Gupta | PG Electroplast Pvt. Ltd. Ahmadnagar | Robotics & Automation |
| 16 | Tamanna Shekhar Wasnik | Mahindra & Mahindra Pvt.Ltd.Pimpri Chicwad | EV Technology |
| 17 | Tanvi Dilip Waghmare | Mahindra & Mahindra Pvt.Ltd.Pimpri Chicwad | EV Technology |
| 18 | Vaishnavi Jeewanlal Pardhi | Mahindra & Mahindra Pvt.Ltd.Pimpri Chicwad | EV Technology |
| 19 | Arpit Ashok Wagare | SS Infotech Pvt.Ltd Nagpur | Full Stack Development |
| 20 | Ayush Ruprao Makade | SS Infotech Pvt.Ltd Nagpur | Full Stack Development |

| 21 | Harshal Sunil Devikar | IT Networkz Laxmi Nagar Nagpur | CCNA Networking |
|----|----|----|----|
| 22 | Jayant Shriram Fulumbrikar | PG Electroplast Pvt. Ltd. Ahmadnagar | Robotics & Automation |
| 23 | Lokesh Chandrakant Charde | PG Electroplast Pvt. Ltd. Ahmadnagar | Robotics & Automation |
| 24 | Mrunal Anil Padole | Sopology Pvt.Ltd. Lokmat Bhawan Nagpur | Web Development |
| 25 | Nikhil Vijay Urkude | IT Networkz Laxmi Nagar Nagpur | CCNA Networking |
| 26 | Prajwal Raybhan Borkar | PG Electroplast Pvt. Ltd. Ahmadnagar | PCB Designing |
| 27 | Sagar Devid Manik | SS Infotech Pvt.Ltd Nagpur | Full Stack Development |
| 28 | Saket Gaure | IT Networkz Laxmi Nagar Nagpur | CCNA Networking |
| 29 | Shubham Sopan Nikhade | SS Infotech Pvt.Ltd Nagpur | Full Stack Development |
| 30 | Tejas Yogesh Rokade | Sciemens Vnit Nagpur | PLC SCADA |
| 31 | Tishank Ramesh Pawar | SS Infotech Pvt.Ltd Nagpur | Web Development |
| 32 | Vaibhav Purushottam Bramhankar | IT Networkz Laxmi Nagar Nagpur | CCNA Networking |
| 33 | Tembhurne Nikhil Mansaram | SS Infotech Pvt.Ltd Nagpur | Full Stack Development |
| 34 | Shahare Vivek Gyanivant | AD Infocomm Pvt.Ltd. | Web Development |
| 35 | Ashish Hajare | Siemens Vnit Nagpur | PLC SCADA |



**SS Infotech**

**IT Networkz**



**PG Electroplast Pvt Ltd**



**VR Jamdar Siemens Center VNIT**



**MSEB , Nagpur**



**Mahindra & Mahindra**

# Faculty Conference

| Sr. No. | Name of Faculty | Name of Conference | Title of Paper | Conference Date |
|---|---|---|---|---|
| 1 | Prof. Pallavi Rokade | 5th International conference on recent trends in Science Engineering and Technology | Solar Panel Cleaing Robot | 29-03-2025 |
| 2 | Prof. Pallavi Rokade | 5th International conference on Innovations ,Technology , Science and Management (ICIETSM) | Solar Panel Cleaing Robot | 12-04-2025 |
| 3 | Prof.Kalyani Sawarkar | 5th International conference on Innovations ,Technology , Science and Management (ICIETSM) | Smart Goggles for the Visually Impaired Person | 12-04-2025 |
| 4 | Prof.Kalyani sawarkar | 5th International conference on recent trends in Science Engineering and Technology | Smart Goggles for the Visually Impaired Person | 29-03-2025 |
| 5 | Prof.Mayuri Harde | 5th International conference on Innovations ,Technology , Science and Management (ICIETSM) | Voice Operated Wheelchair for Semi Disabled People | 12-04-2025 |
| 6 | Prof.Mayuri Harde | International conference on Research & Innovative Perspectives in Engg.(ICRIPE 2025) | Voice Operated Wheelchair for Semi Disabled People | 24-01-2025 |
| 7 | Prof. Sandeep Thakre | 5th International conference on recent trends in Science Engineering and Technology | Vision Aid:Smart Glasses for Differently abled Individuals | 29-03-2025 |
| 8 | Prof. Sandeep Thakre | 5th International conference on Innovations ,Technology , Science and Management (ICIETSM) | Vision Aid:Smart Glasses for Differently abled Individuals | 12-04-2025 |
| 9 | Prof. Suraj Mahajan | International conference on Research & Innovative Perspectives in Engg.(ICRIPE 2025) | Revolutionizing Air Pollution Control | 24-01-2025 |
| 10 | Prof. Suraj Mahajan | International conference on Research & Innovative Perspectives in Engg.(ICRIPE 2025) | Revolutionizing Air Pollution Control | |

| 17 | Prof. Suraj Mahajan | 5th International conference on recent trends in Science Engineering and Technology | Revolutionizing Air Pollution Control | 29-03-2025 |
|---|---|---|---|---|
| 11 | Dr.Bharati Sayankar | 5th International conference on Innovations ,Technology , Science and Management (ICIETSM) | Rice Quality Analysis Using Image Procesing | 12-04-2025 |
| 12 | Dr.Bharati Sayankar | International conference on Research & Innovative Perspectives in Engg.(ICRIPE 2025) | Rice Quality Analysis Using Image Procesing | 24-01-2025 |
| 13 | Prof. Shrutika Wankhade | 5th International conference on Innovations ,Technology , Science and Management (ICIETSM) | QR Based Sorting Machine System | 12-04-2025 |
| 14 | Prof. Shrutika Wankhade | 5th International conference on recent trends in Science Engineering and Technology | QR Based Sorting Machine System | 29-03-2025 |
| 15 | Prof. Shrutika Wankhade | International Journal Of Advance Research And Innovative Ideas In Education | Volume-10 Issue-6 2024 | |
| 16 | Dr.Bharati Sayankar | 5th International conference on recent trends in Science Engineering and Technology | Rice Quality Analysis Using Image Procesing | 29-03-2025 |
| 18 | Prof. Amol Dhenge | 5th International conference on Innovations ,Technology , Science and Management (ICIETSM) | AI Based Traffic Control & Optimization | 12-04-2025 |
| 19 | Dr.Pravin Tajane | 5th International conference on recent trends in Science Engineering and Technology | IOT Based Water & Air Quality Monitoring System using Arduino | 29-03-2025 |

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on
Research & Innovative Perspectives in Engineering
(ICRIPE-2025)
23rd - 24th January 2025

**CERTIFICATE**

This is to certify that Prof./Dr./Mr./Mrs./Ms. Suraj Mahajan

from TGPCET has attended/participated/presented a paper entitled

Review on revolutionizing air Pollution control: Automated in Technology

International Conference on Research & Innovative Persectives in Engineering (ICRIPE-2025) organised by Government College of Engineering Nagpur in collaboration with Bureau of Indian Standards (BIS) on 23rd-24th January 2025.

(Dr. Latesh Malik)
Technical Chair, ICRIPE-2025

(Dr. Suraj Khante)
Convenor, ICRIPE-2025

(Prof. Rewatkumar Borkar)
General Chair, ICRIPE-2025



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5th International Conference on
Recent Trends in Science, Engineering & Technology

**Certificate**

This is to certify that Dr./Prof./Mr./Mrs./Mt. Pravin Tajane has presented a paper entitled " IOT Based Remote Air Pollution & Water Quality Monitoring System Using Arduino "

in 5th International Conference On "Recent Trends in Science, Engineering & Technology" (ICRTSET-2025) held on 28th- 29th March 2025 at Govindrao Wanjari College of Engineering & Technology, Nagpur.

Dr. Rakesh G. Shriwastava
Co-convener(ICRTSET-2025)

Dr. Salim A. Chavan
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In association with

Indian Society for Technical Education (ISTE) JIT Student Chapter | The Institute of Electrical and Electronics Engineers (IEEE) JIT Student Chapter | Institute of Engineers, Nagpur (IEI) JIT Student Chapter | Association for Computing Machinery (ACM) JIT Student Chapter | ISHRAE

**Certificate**

This is to certify that **Prof. Pallavi Rokade** From *Tulsiramji Gaikwad Patil College of Engineering* Presented paper entitled as *Smart Cleaning Technology for Solar Panels* in 5th International Conference on Innovations in Engineering, Technology, Science & Management (ICIETSM-2025), held on 11th and 12th April , 2025 organized by Jhulelal Institute of Technology, Nagpur.

Dr. Sohel Bhura
Co-Convener

Dr. Narendra Bawane
Convener

Dr. Hemant Asrani
Dean Admin & Director

Mr. Pramod Pampatwar
Director Technical

# Faculty Patent

| Sr. No. | Patent Application No. | Title of Patent | Applicant(s) Name | Patent Filed Date | Patent Published/ Grant Date | Status (Published /Granted) |
|---|---|---|---|---|---|---|
| 1 | 202521035803 | Artificial Intelligence Based System Method for Financial Forecasting and Optimized Budget Allocation | Prof. Rohini Pochhi | 12/04/25 | 07/05/2025 | Published |
| 2 | 202511040970 | Titanium Dioxide(TiO2) Nano Particle Enhanced Formalin In Fixative to reduce Formaldehyde Evaporation and Mitigate Its Harmful Effect | Dr.Pravin Tajane | 28/04/2025 | 16/5/2025 | Published |

Office of the Controller General of Patents, Designs & Trade Marks
Department for Promotion of Industry and Internal Trade
Ministry of Commerce & Industry.
Government of India

## (http://ipindia.nic.in/index.htm)

INTELLECTUAL PROPERTY INDIA
(http://ipindia.nic.in/index.htm)

**Application Details**

| | |
|---|---|
| APPLICATION NUMBER | 202521035803 |
| APPLICATION TYPE | ORDINARY APPLICATION |
| DATE OF FILING | 12/04/2025 |
| APPLICANT NAME | 1 . Prof. Rohini Pochhi<br>2 . Dr. Pravin Tajne<br>3 . Dr. Bharati Sayankar<br>4 . Ms. Ashwini Ashok Nagrikar<br>5 . Ms. Nivedita Anil Raut<br>6 . Ms. Tanaya Mendhe<br>7 . Ms. Sakshi Shrikant Bhagwat<br>8 . Ms. Sakshi Mendhule<br>9 . Ms. Prajakta Dilip Ambadare<br>10 . Ms. Vaishnavi Awadhut Udan<br>11 . Ms. Manisha Sevakram Wanjari<br>12 . Ms. Nikita Diwakar Fukat<br>13 . Ms. Shubhangi Naresh Khonde |
| TITLE OF INVENTION | ARTIFICIAL INTELLIGENCE-BASED SYSTEM AND METHOD FOR FINANCIAL FORECASTING AND OPTIMIZED BUDGET ALLOCATION |
| FIELD OF INVENTION | COMPUTER SCIENCE |
| E-MAIL (As Per Record) | as.mahesh.ec@gmail.com |
| ADDITIONAL-EMAIL (As Per Record) | |
| E-MAIL (UPDATED Online) | |
| PRIORITY DATE | |
| REQUEST FOR EXAMINATION DATE | -- |
| PUBLICATION DATE (U/S 11A) | 02/05/2025 |

B.Tech | B.Arch | M.Tech | MBA | MCA | BBA | BCA | Polytechnic | D.Arch | B.Pharm | D.Pharm | BAMS | B.Sc Nursing | Physiotherapy | Ph.D

# Faculty FDP

| Sr. No. | Name Of Faculty | Title Of Workshop/FDP/STTP | Date of Conduction | Attended/Organized |
|---|---|---|---|---|
| 1 | Pallavi Rokade | NEP 2020 Orientation & Sensitization Programme | 25 Nov-2024 to 4 Dec 2025 | UGC-Malaviya Mission Teacher Training Centre, Sant Gadge Baba Amravati University, Amravati, |
| 2 | Mayuri Harde | NEP 2020 Orientation & Sensitization Programme | 25 Nov-2024 to 4 Dec 2025 | UGC-Malaviya Mission Teacher Training Centre, Sant Gadge Baba Amravati University, Amravati, |
| 3 | Kalyani Sawarkar | NEP 2020 Orientation & Sensitization Programme | 25 Nov-2024 to 4 Dec 2025 | UGC-Malaviya Mission Teacher Training Centre, Sant Gadge Baba Amravati University, Amravati, |
| 4 | Amol Dhenge | NEP 2020 Orientation & Sensitization Programme | 25 Nov-2024 to 4 Dec 2025 | UGC-Malaviya Mission Teacher Training Centre, Sant Gadge Baba Amravati University, Amravati, |
| 5 | Prof. Shrutiika Wankhade | Management Development Program | 28 Jan 2025- 1 Feb 2025 | MSME |
| 6 | Prof. Shrutiika Wankhade | NEP 2020 Orientation & Sensitization Programme | 25 Nov-2024 to 4 Dec 2025 | UGC-Malaviya Mission Teacher Training Centre, Sant Gadge Baba Amravati University, Amravati, |
| 7 | Dr.Bharati B. Sayankar | Nep 2020 Orientation And Sensitization Programme | 25 Nov-2024 to 4 Dec 2025 | UGC-Malaviya Mission Teacher Training Centre, Sant Gadge Baba Amravati University, Amravati, |
| 8 | Dr.Pravin Tajane | NEP 2020 ORIENTATION AND SENSITIZATION PROGRAMME | 25 Nov-2024 to 4 Dec 2025 | UGC-Malaviya Mission Teacher Training Centre, Sant Gadge Baba Amravati University, Amravati, |
| 9 | Suraj Mahajan | NEP 2020 Orientation & Sensitization Programme | 25 Nov-2024 to 4 Dec 2025 | UGC-Malaviya Mission Teacher Training Centre, Sant Gadge Baba Amravati University, Amravati, |

| 10 | Suraj Mahajan | Data Analytics For Smart Mobility | 3 Feb 2025 to 8 Feb 2025 | AICTE Training And Learning (ATAL) Academy |
|----|---------------|----------------------------------|--------------------------|---------------------------------------------|
| 11 | Sandeep Thakre | Digital Wellness | TGPCET | Bramhakumaries Vishwashanti Sarovar Center ,Jamtha Nagpur |
| 12 | Sandeep Thakre | NEP 2020 Orientation & Sensitization Programme | 25 Nov-2024 to 4 Dec 2025 | UGC-Malaviya Mission Teacher Training Centre, Sant Gadge Baba Amravati University, Amravati, |

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B.Tech | B.Arch | M.Tech | MBA | MCA | BBA | BCA | Polytechnic | D.Arch | B.Pharm | D.Pharm | BAMS | B.Sc Nursing | Physiotherapy | Ph.D

# Faculty Book Chapter

| Sr. No. | Title of Chapter | Title of Book | Publisher Name | Author(s) Name | Date of Publication | ISBN No. |
|---|---|---|---|---|---|---|
| 1 | Intelligent object detection using bio inspired convolutional Kalman Neural Network | Book Chapter 1st Edition | CRC Press | Prof. Suraj Mahajan | 2025 | eBook ISBN9781003567653 |



Book

## Technological Innovations & Applications in Industry 4.0

*Edited By Dinesh Seth, Sushant S. Satputaley, Minhaj Ahemad A. Rehman, Amit R. Bhende*

| | |
|---|---|
| Edition | 1st Edition |
| First Published | 2025 |
| eBook Published | 27 January 2025 |
| Pub. Location | London |
| Imprint | CRC Press |
| DOI | https://doi.org/10.1201/9781003567653 |
| Pages | 328 |
| eBook ISBN | 9781003567653 |
| Subjects | Computer Science, Engineering & Technology |

Accessibility Information

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66 Citation

**ABSTRACT**

The conference offered an international forum for discussion and exchange of knowledge on opportunities and challenges related with all facets and aspects of technological innovations & applications in Industry 4.0, its challenges and way ahead. The objective of this international conference was to provide a platform for policy makers, academicians and researchers to share their experiences and knowledge by presentation of scientific advances made in the field of Industry 4.0.

**TABLE OF CONTENTS**

Chapter 1 | 5 pages

Intelligent object detection using bio inspired convolutional Kalman neural network

*By Pragati Patil, Ritesh Banpurkar, Suraj Mahajan*

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Abstract ∨

# Our Star Students

| Sr. No. | Name of Student | Competition | Award | Organized by |
|---|---|---|---|---|
| 1 | Shivani Pendam | 5th International conference on recent trends in Science Engineering and Technology | 1st Prize | Govindrao Wanjari College of Engineering |
| 2 | Ruppal Bawne | | | |
| 3 | Shivani Jagtap | | | |
| 5 | Lalita Ghonade | | | |
| 6 | Moiz Sheikh | | | |
| 7 | Ashish Dinkar Hajare | 5th International conference on Innovations ,Technology , Science and Management (ICIETSM) | 1st Prize | Jhulelal Institute of Technology |
| 8 | Tejas Yogesh Rokade | | | |
| 9 | Prajwal Raybhan Borkar | | | |
| 10 | Vivek Gaynivant Shahare | | | |
| 11 | Roshani Ramratan Katekhaye | | | |
| 12 | Tanvi Dilip Waghmare | | | |
| 13 | Bhairav Shinde | Project Competition | 2nd Prize | Siddhantha Institute of Technology |
| 14 | Roshan Rathod | | | |
| 15 | Prashant Jaybhaye | | | |

Winner 5th International conference ICSET Organised by Govindrao Wanjari College of Engineering



Winner 5th International conference ICIETSM Organised by Jhulelal Institute of Technology



Khapari, Maharashtra, भारत
Mh Sh 248, Khapari, Maharashtra 441501, भारत
Lat 21.242485° Long 78.849261°
28/03/2025 04:50 PM GMT +05:30

2nd Winner of Project Competition Organised by Siddhantha Institute of Technology

17

B.Tech | B.Arch | M.Tech | MBA | MCA | BBA | BCA | Polytechnic | D.Arch | B.Pharm | D.Pharm | BAMS | B.Sc Nursing | Physiotherapy | Ph.D

# Student Paper

| Sr. No. | Name of Student | Title of Paper | Name of Journal | Publication Date |
|---|---|---|---|---|
| 1 | Karan Gadpayle | Fire Fighter Robot Using Arduino | IJRPR | 17/05/2025 |
| 2 | Aryan Talhar | Fire Fighter Robot Using Arduino | IJRPR | 17/05/2025 |
| 3 | Ankit Deshmukh | Fire Fighter Robot Using Arduino | IJRPR | 17/05/2025 |

# Students Conferences

| Group. No. | Name of Students | Title of Project | Conference Name 1 | Conference Name 2 |
|---|---|---|---|---|
| Group 1 | Prasanna Pojgey<br>Syed Maajid Ali<br>Krupali Sanjay Pawnikar | Smart Garbage bin Monitoring &Tracking System Using IOT & Mobile Application | 5th International conference on recent trends in Science Engineering and Technology (ICRTSET) 28-29th March, 2025 | 5th International conference on Innovations, Technology, Science and Management (ICIETSM) 11-12th April, 2025 |
| Group 2 | Sunidhi Sanjaykumar Gupta<br>Kajal Mahesh Shendre<br>Tamanna Shekhar Wasnik<br>Kajal Umesh Bonsule | Rice Quality Analysis Using Image Procesing | 5th International conference on Innovations, Technology, Science and Management (ICIETSM) 11-12th April, 2025 | - |
| Group 3 | Lakshmi Sandip Devgade<br>Diksha Mahadeo Mule<br>Arati Tikaram Tarare<br>Pragati Padole<br>Mrunal Padole | IOT Based Water & Air Quality Monitoring System using Arduino | 5th International conference on recent trends in Science Engineering and Technology (ICRTSET) 28-29th March, 2025 | 5th International conference on Innovations, Technology, Science and Management (ICIETSM) 11-12th April, 2025 |
| Group 4 | Ashish Dinkar Hajare<br>Tejas Yogesh Rokade<br>Prajwal Raybhan Borkar<br>Vivek Gaynivant Shahare | Fault Detection in Production Packaging Line using PLC & Rasberry Pi Integreation | 5th International conference on Innovations ,Technology, Science and Management (ICIETSM) 11-12th April, 2025 | - |

| | | | | |
|---|---|---|---|---|
| | Roshani Ramratan Katekhaye | | | |
| | Tanvi Dilip Waghmare | | | |
| Group 5 | Vaibhav Bramhankar | Vision Aid:Smart Glasses for Differently abled Individuals | 5th International conference on recent trends in Science Engineering and Technology (ICRTSET) 28-29$^{th}$ March, 2025 | 5th International conference on Innovations ,Technology, Science and Management (ICIETSM) 11-12$^{th}$ April, 2025 |
| | Nikhil Tembhurne | | | |
| | Nikhil Urkude | | | |
| | Saket Gaure | | | |
| | Harshal Devikar | | | |
| Group 6 | Ekramul Haque | Smart Goggles for the Visually Impaired Person | 5th International conference on recent trends in Science Engineering and Technology (ICRTSET) 28-29$^{th}$ March, 2025 | 5th International conference on Innovations ,Technology, Science and Management (ICIETSM) 11-12$^{th}$ April, 2025 |
| | Ankit Kakde | | | |
| | Mayur Hanwate | | | |
| | Shrutika Shambharkar | | | |
| | Snehal Sitawar | | | |
| Group 7 | Simran Anand Kumbhare | Portable ECG Device | 5th International conference on recent trends in Science Engineering and Technology (ICRTSET) 28-29$^{th}$ March, 2025 | 5th International conference on Innovations, Technology, Science and Management (ICIETSM) 11-12$^{th}$ April, 2025 |
| | Shruti Shrikrishna Uparwat | | | |
| | Payal sadashiv Barekar | | | |
| | Jayant Shriram Fulumbrikar | | | |
| | Riya Chavhan | | | |
| Group 8 | Shubham Nikhade | Revolutionizing Air Pollution Control | International conference on Research & Innovative Perspectives in Engg.(ICRIPE 2025) | 5th International conference on recent trends in Science Engineering and Technology (ICRTSET) 28-29$^{th}$ March, 2025 |
| | Apeksha Kishor Fuse | | | |
| | Riya Gyaniwant Kakde | | | |
| | Vaishnavi Jeewanlal Pardhi | | | |
| | Samrudhi Wakade | | | |
| Group 9 | Nandini Hedau | Solar Panel Cleaing Robot | 5th International conference on recent trends in Science Engineering and Technology (ICRTSET) 28-29$^{th}$ March, 2025 | 5th International conference on Innovations, Technology, Science and Management (ICIETSM) 11-12$^{th}$ April, 2025 |
| | Mansi Thakre | | | |
| | Tushar Chapre | | | |
| | Aditya Joshi | | | |
| | Pratik Nikhare | | | |
| Group 10 | Sagar Manik | Voice Operated Wheelchair for Semi Disabled People | International conference on Research & Innovative | 5th International conference on recent trends in Science |
| | Tishank Pawar | | | |
| | Ayush Makade | | | |
| | Arpit Wagare | | | |

| | | | Perspectives in Engg.(ICRIPE 2025) | Engineering and Technology (ICRTSET) 28-29th March, 2025 |
|---|---|---|---|---|
| | Lokesh Charde | | | |
| Group 11 | Karan Gedam | AI Based Traffic Control & Optimization | 5th International conference on recent trends in Science Engineering and Technology (ICRTSET) 28-29th March, 2025 | |
| | Tanvir sheikh | | | |
| | Kunal Gautam | | | |
| | Shreyash kamble | | | |
| | Ashish Virmuttu | | | |
| Group 12 | Shivani Pendam | QR Based Sorting Machine System | 5th International conference on recent trends in Science Engineering and Technology (ICRTSET) 28-29th March, 2025 | 5th International conference on Innovations, Technology, Science and Management (ICIETSM) 11-12th April, 2025 |
| | Ruppal Bawne | | | |
| | Shivani Jagtap | | | |
| | Lalita Ghonade | | | |
| | Moiz Sheikh | | | |
| Group 13 | Gaurav Sitale | PLC Based Industry Temprature Control Sysetm | 5th International conference on recent trends in Science Engineering and Technology (ICRTSET) 28-29th March, 2025 | 5th International conference on Innovations, Technology, Science and Management (ICIETSM) 11-12th April, 2025 |
| | Sarvesh Ukey | | | |
| | Dishant Bhaware | | | |
| | Darpan Rahangdale | | | |

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presented a paper entitled "IoT Based Remote Air pollution &
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in 5th International Conference On "Recent Trends in Science, Engineering
& Technology" (ICRTSET-2025) held on 28th- 29th March 2025 at
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Dr. Rakesh G. Shriwastava
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5th International Conference on
Recent Trends in Science, Engineering & Technology

Certificate

This is to certify that Dr./Prof./Mr./Mrs./Ms. Arati Thakure has
presented a paper entitled "IoT Based Remote Air pollution
& Water Quality Monitoring System Using Ardunio"
in 5th International Conference On "Recent Trends in Science, Engineering
& Technology" (ICRTSET-2025) held on 28th- 29th March 2025 at
Govindrao Wanjari College of Engineering & Technology, Nagpur.

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This is to certify that Nandini Hedau From Tulsiramji Gaikwad Patil College of
Engineering Presented paper entitled as Smart Cleaning Technology for Solar Panels in
5th International Conference on Innovations in Engineering, Technology, Science &
Management (ICIETSM-2025), held on 11th and 12th April , 2025 organized by
Jhulelal Institute of Technology, Nagpur.

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Co-Convener

Dr. Narendra Bawane
Convener

Dr. Hemant Asrani
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Mr. Pramod Pampatwar
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Indian Society for Technical Education (ISTE) JIT Student Chapter | The Institute of Electrical and Electronics Engineers (IEEE) JIT Student Chapter | Institute of Engineers, Nagpur (IEI) JIT Student Chapter | Association for Computing Machinery (ACM) JIT Student Chapter | ISHRAE

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This is to certify that Mansi Thakre From Tulsiramji Gaikwad Patil College of
Engineering Presented paper entitled as Smart Cleaning Technology for Solar Panels in
5th International Conference on Innovations in Engineering, Technology, Science &
Management (ICIETSM-2025), held on 11th and 12th April , 2025 organized by
Jhulelal Institute of Technology, Nagpur.

Dr. Sohel Bhura
Co-Convener

Dr. Narendra Bawane
Convener

Dr. Hemant Asrani
Dean Admin & Director

Mr. Pramod Pampatwar
Director Technical

B.Tech | B.Arch | M.Tech | MBA | MCA | BBA | BCA | Polytechnic | D.Arch | B.Pharm | D.Pharm | BAMS | B.Sc Nursing | Physiotherapy | Ph.D
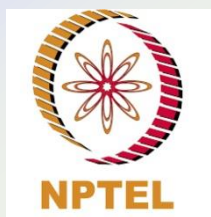
# M.Tech Student Research Corner-Journal

| Sr. No | Name of Student | Paper Publication 1 (UGC Care) Yes/No Journal Name | Paper Publication 2 (Scopus Journal/Conference) Yes/No Journal Name |
|---|---|---|---|
| 1 | Rushabh Gajanan Sathawane | SYMBICON - 2025 4th Annual Conference Embracing the Technological Change for Sustainable Business & Management Practices | Third International Conference on Advanced Communication, Energy and Big Data ( ICACEBD- 25) will be held on during 6th & 7th June 2025 at G.H Raisoni College of Engineering & Management Nagpur, (India) for Scopus Journal. |
| 2 | Prashant Sahesram Baghele | International Conference on Innovations and Challenges in Engineering for a Sustainable Future(ICESF-2025) May 9-11 2025 Poornima University | Third International Conference on Advanced Communication, Energy and Big Data ( ICACEBD- 25) will be held on during 6th & 7th June 2025 at G.H Raisoni College of Engineering & Management Nagpur, (India) for Scopus Journal. |
| 3 | Pragati Narendra Dahat | 5$^{th}$ International Conference on "Recent Trends in Science, Engineering & Technology" (ICRTSE T-25) held on 28th -29th March. Organized by Govindrao Wanjari College Of Engineering & Technology, Nagpur. In UGC CARE. | Third International Conference on Advanced Communication, Energy and Big Data ( ICACEBD- 25) will be held on during 6th & 7th June 2025 at G.H Raisoni College of Engineering & Management Nagpur, (India) for Scopus Journal. |
| 4 | Ravina Pandurang Godwe | International Conference on Innovations and Challenges in Engineering for a Sustainable Future(ICESF-2025) May 9-11 2025 Poornima University | Third International Conference on Advanced Communication, Energy and Big Data ( ICACEBD- 25) will be held on during 6th & 7th June 2025 at G.H Raisoni College of Engineering & Management Nagpur, (India) for Scopus Journal. |
| 5 | Ruchika Kailas Sadapure | 1.Governent collage of Engineering,nagpur organised International Conference on Research & innovative perspectives in Engineering (ICRIPE-2025) (Dt.23th and 24th January 2025) | Third International Conference on Advanced Communication, Energy and Big Data ( ICACEBD- 25) will be held on during 6th & 7th June 2025 at G.H Raisoni College of Engineering & Management Nagpur, (India) for Scopus Journal. |
| 6 | Dineshkumar Shivkumar Yadav | 1.Governent collage of Engineering,nagpur organised International Conference on Research & innovative perspectives in Engineering (ICRIPE-2025) (Dt.23th and 24th January 2025) | Third International Conference on Advanced Communication, Energy and Big Data ( ICACEBD- 25) will be held on during 6th & 7th June 2025 at G.H Raisoni College of Engineering & Management Nagpur, (India) for Scopus Journal. |
| 7 | Kruttika Eknath Modak | 1.Governent collage of Engineering,nagpur organised International Conference on Research & innovative perspectives in Engineering (ICRIPE-2025) (Dt.23th and 24th January 2025) | Third International Conference on Advanced Communication, Energy and Big Data ( ICACEBD- 25) will be held on during 6th & 7th June 2025 at G.H Raisoni College of Engineering & Management Nagpur, (India) for Scopus Journal. |

| 8 | Payal Ashok Gondane | 2nd International Conference on Sustain able Innovation &Technology (ICSIT - 2025) on 22nd - 23rd August 2025, Symbiosis Institute of technology Nagpur. IEEE | Third Inter National Conference on Advanced Communication, Energy and Big Data ( ICACEBD- 25) will be held on during 6th & 7th June 2025 at G.H Raisoni College of Engineering & Management Nagpur, (India) for Scopus Journal. |
| --- | --- | --- | --- |
| 9 | Pratiksha Krishna Girisawre | 1.Governent collage of Engineering, nagpur organised International Conference on Research & innovative perspectives in Engineering (ICRIPE-2025) (Dt.23th and 24th january 2025) | Third Inter National Conference on Advanced Communication, Energy and Big Data ( ICACEBD- 25) will be held on during 6th & 7th June 2025 at G.H Raisoni College of Engineering & Management Nagpur, (India) for Scopus Journal. |

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B.Tech | B.Arch | M.Tech | MBA | MCA | BBA | BCA | Polytechnic | D.Arch | B.Pharm | D.Pharm | BAMS | B.Sc Nursing | Physiotherapy | Ph.D

# Students NPTEL Achievements

| Sr. No. | Name Of Students | Course | Duration Of Conduction | Position/ Remark |
|---------|------------------|--------|------------------------|------------------|
| 1 | Nandini Hedaoo | Cyber Security & Privacy | 12 Weeks | Completed |
| 2 | Nandini Hedaoo | Introduction To Internet Of Things | 12 Weeks | 62%(Elite) |
| 3 | Kashish Ajay Neware | A Joy Of Computing Using Python | 12 Weeks | 65%(Elite) |
| 4 | Kashish Ajay Neware | Introduction To Internet Of Things | 12 Weeks | Completed |
| 5 | Kashish Ajay Neware | Data Analytics With Python | 12 Weeks | 60%(Elite) |
| 6 | Saloni Gautam | Introduction To Internet Of Things | 12 Weeks | 63%(Elite) |
| 7 | Saloni Gautam | Cloud Computing | 12 Weeks | 71 %(Elite) |
| 4 | Achal  Bawane | Introduction To Internet Of Things | 12 Weeks | 60(Elite) |
| 5 | Twinkle Karpe | Introduction To Internet Of Things | 12 Weeks | 72(Elite) |
| 6 | Siddharth Bhimrao Meshram | Introduction To Internet Of Things | 12 Weeks | 60(Elite) |

B.Tech | B.Arch | M.Tech | MBA | MCA | BBA | BCA | Polytechnic | D.Arch | B.Pharm | D.Pharm | BAMS | B.Sc Nursing | Physiotherapy | Ph.D

| 7 | Rohit Yogeshrao Shelake | Introduction To Internet Of Things | 12 Weeks | 60(Elite) |
|---|---|---|---|---|
| 8 | Madhura Ganesh Bobade | Introduction To Internet Of Things | 12 Weeks | Completed |
| 9 | Mahesh Gajanan Bawane | Cloud Computing And Distributed Systems | 8 Weeks | 67(Elite) |
| 10 | Shravya Ganeshrao Fulbandhe | Cloud Computing And Distributed Systems | 8 Weeks | Completed |
| 11 | Rutesh Bondade | Cloud Computing And Distributed Systems | 8 Weeks | Completed |
| 12 | Ekta Sonawane | Cloud Computing | 12 Weeks | 76(Elit + Silver) |
| 13 | Rohit Laxman Barbate | Cloud Computing | 12 Weeks | 60(Elite) |
| 14 | Madhura Ganesh Bobade | Cloud Computing | 12 Weeks | Completed |
| 15 | Mrunali Sanjay Thul | Cloud Computing | 12 Weeks | Completed |
| 16 | Rohit Yogeshrao Shelake | Cloud Computing | 12 Weeks | Completed |

# NPTEL Achievement



### NPTEL ONLINE CERTIFICATION
(Funded by the MoE, Govt. of India)

**Elite**

This certificate is awarded to

**ROHIT YOGESHRAO SHELAKE**

for successfully completing the course

**Introduction To Internet Of Things**

with a consolidated score of **60** %

| Online Assignments | 23.97/25 | Proctored Exam | 36/75 |
| --- | --- | --- | --- |

Total number of candidates certified in this course: **38143**

**Jan-Apr 2025**
(12 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

Roll No: NPTEL25CS44S352800226 | To verify the certificate | No. of credits recommended: 3 or 4

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### NPTEL ONLINE CERTIFICATION
(Funded by the MoE, Govt. of India)

**Elite**

This certificate is awarded to

**SIDDHARTH BHIMRAO MESHRAM**

for successfully completing the course

**Introduction To Internet Of Things**

with a consolidated score of **60** %

| Online Assignments | 22.44/25 | Proctored Exam | 37.5/75 |
| --- | --- | --- | --- |

Total number of candidates certified in this course: **38143**

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

**Jan-Apr 2025**
(12 week course)

Indian Institute of Technology Kharagpur

Roll No: NPTEL25CS44S452800731 | To verify the certificate | No. of credits recommended: 3 or 4

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### NPTEL ONLINE CERTIFICATION
(Funded by the MoE, Govt. of India)

**Elite**

This certificate is awarded to

**TWINKLE KARPE**

for successfully completing the course

**Introduction To Internet Of Things**

with a consolidated score of **72** %

| Online Assignments | 22.1/25 | Proctored Exam | 49.5/75 |
| --- | --- | --- | --- |

Total number of candidates certified in this course: **38143**

**Jan-Apr 2025**
(12 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

Roll No: NPTEL25CS44S352800234 | To verify the certificate | No. of credits recommended: 3 or 4

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### NPTEL ONLINE CERTIFICATION
(Funded by the MoE, Govt. of India)

**Elite**

This certificate is awarded to

**MAHESH GAJANAN BAWANE**

for successfully completing the course

**Cloud Computing and Distributed Systems**

with a consolidated score of **67** %

| Online Assignments | 21.67/25 | Proctored Exam | 45/75 |
| --- | --- | --- | --- |

Total number of candidates certified in this course: **4408**

Prof. B. V. Ratish Kumar
Chairman, Centre for Continuing Education
IIT Kanpur

**Jan-Mar 2025**
(8 week course)

Prof. Satyaki Roy
NPTEL Coordinator
IIT Kanpur

Indian Institute of Technology Kanpur

Roll No: NPTEL25CS12S440301055 | To verify the certificate | No. of credits recommended: 2 or 3

B.Tech | B.Arch | M.Tech | MBA | MCA | BBA | BCA | Polytechnic | D.Arch | B.Pharm | D.Pharm | BAMS | B.Sc Nursing | Physiotherapy | Ph.D

# Faculty NPTEL Achievement

| Sr. No. | Name of Faculty | Course | Duration of Conduction | Position/ Remark |
|---------|-----------------|--------|------------------------|------------------|
| 1 | Prof. Shrutika Wankhade | NATE | Jan-Apr 2025 | 73% (Elite) |
| 2 | Prof. Kalyani Sawarkar | NATE | Jan-Apr 2025 | 64% (Elite) |
| 3 | Dr. Pravin Tajane | NATE | Jan-Apr 2025 | 70% (Elite) |

# Industry Sponsored Projects

**1. Title of Project**: Fault Detection in production packaging line using PLC and Raspberry PI Integration

**Students Associated:** 1. Mr. Asish Hajare

                    2. Mr. Tejas Rokade

                    3. Mr. Prajwal Borkar

                    4. Mr. Vivek Sahare

                    5. Ms. Tanvi Waghmare

                    6. Ms. Roshni Katekhaye

**Guided By:** Mr. Yogesh Wasade

**Sponsored by:** VR Jamdar Siemens Centre

**Abstract:** In this project, a hybrid Raspberry Pi, PLC based approach is proposed for detecting faults in a packaging line production. The system provides real-time monitoring of labeling and sealing processes for detecting defects like stamp-off, empty spaces, and seal breakdown. The control unit comprises of PLC and a Raspberry Pi as the microcontroller. Signal deputies (cameras or IR) of the system are calibrated at accurate angles around the line to optimize parameter surveillance efficiency using IR sensors for recognition of any misalignment

**2. Title of Project**: Garbage Monitoring and Tracking System Using IoT

**Students Associated:** 1. Mr. Prasanna  Pojgey

                    2. Ms. Krupali Paunkikar

                    3. Mr. Maajid Ali

**Guided by:**  Dr. Dinesh Lingote  (Principal Scientist, IT Infrastructure, CSIR-NEERI

**Sponsored by:**  CSIR- NEERI

**Abstract:** The increasing rate of urbanization and population has created major waste management challenges, particularly in developing nations like India, which produces around 1.5 lakh metric tons of solid waste generates per day, posing serious environmental and health risks. To tackle these challenges, the system is driven by the Internet of Things (IoT). The system incorporates sensors, camera modules, and a GPS tracker into smart bins. The sensors collect real-time data, while the cameras detect overflowing bins, and the GPS tracker monitors the location of each smart bin. The system allows users to report incidents of overflowing waste or illegal dumping on application. This IOT framework not only reduces pollution but also promotes cleaner and healthier urban environments. By combining technology with sustainability, this method is more habitable and eco-friendlier for urban communities.

B.Tech | B.Arch | M.Tech | MBA | MCA | BBA | BCA | Polytechnic | D.Arch | B.Pharm | D.Pharm | BAMS | B.Sc Nursing | Physiotherapy | Ph.D

सी.एस.आई.आर. – राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान
**CSIR - National Environmental Engineering Research Institute**
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद / Council of Scientific & Industrial Research)
(वैज्ञानिक तथा औद्योगिक अनुसंधान विभाग, विज्ञान एवं प्रौद्योगिकी मंत्रालय, भारत सरकार के अंतर्गत स्वायत्त संगठन)
(Autonomous Organization under the Dept. of Scientific and Industrial Research, Ministry of Science & Technology, Govt of India)

नीरी
NEERI
ISO 9001:2008

प्रेषक: निदेशक, नीरी
From : The Director, NEERI

# CERTIFICATE

This is to certify that **Mr. Prasanna Pojgey**, a student of B.Tech in Electronics and Communication, Tulsiramji Gaikwad Patil college of Engineering and Technology, has carried out the Internship Report titled **"Garbage Monitoring and Tracking System Using IOT"** under the guidance of **Dr. Dinesh Lingote, Principal Scientist, IT Infrastructure, CSIR-NEERI,** Nagpur during   18th July 2024 to 17th January 2025.

The work carried out under this project is to be used only for academic purposes and prior permission of CSIR-NEERI is required before publishing this work.

We wish him all the best for future endeavors.

19/02/2025

**BDPM**
व्यवसाय विकास एवं परियोजना निगरानी
**Business Development and Project Monitoring**
सी. एस. आई. आर. - नीरी, नागपुर - 440020
**CSIR-NEERI Nagpur - 440020**
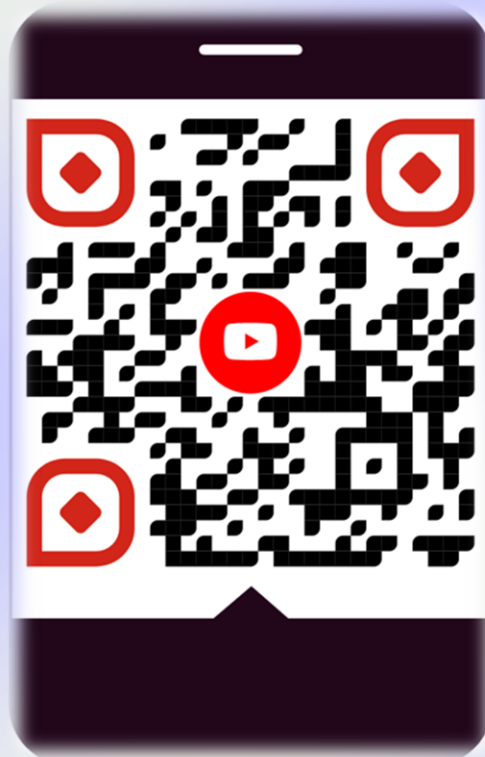
Place: Nagpur
Date :19.02.2025

नेहरू मार्ग, नागपुर- 440 020 महाराष्ट्र राज्य, भारत – Nehru Marg, Nagpur-440 020 Maharashtra State, INDIA
फोन (ईपीबीएक्स)/Phone (EPABX) : 0712-2249885-88, 0712-2249970-72, प्रशासन नियंत्रक/C.O.A. 0712-2249960
फैक्स/Fax :- निदेशक का कार्यालय/Dir. off.,- 0712-2249900 / प्रशासन नियंत्रक/C.O.A. 0712-2249989 वेबसाईट/Website : www.neeri.res.in

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