



K.RAMAKRISHNAN COLLEGE OF ENGINEERING

An Autonomous Institution

Permanently Affiliated to Anna University Chennai, Approved by AICTE New Delhi,
ISO 9001:2015, 14001:2015 certified institution, Accredited by NBA and with A grade by NAAC

Samayapuram, Tiruchirappalli – 621 112, Tamilnadu, India.



**"Education is what remains
after one has forgotten what
one has learned in school."**

2025 - 2026

**JULY -DEC
ISSUE -1**



Krce.ac.in



Dr. K. Ramakrishnan

CHAIRMAN

Dr. K. Ramakrishnan, the esteemed Chairman of our institution, is a visionary leader whose dedication, discipline, and dynamic outlook serve as a constant source of inspiration for the students of the Electronics and Communication Engineering (ECE) Department. A proud alumnus of Annamalai University with a B.E. in Production Engineering, he has devoted his efforts to transforming this rural region into a center of technological and educational excellence. His commitment to hard work, innovation, and leadership motivates ECE students to strive for excellence in their academic and professional pursuits, inspiring them to become creative thinkers, responsible engineers, and future leaders who contribute meaningfully to society.

Dr.S.Kuppusamy



EXECUTIVE DIRECTOR

Dr. S. Kuppusamy, the Executive Director of our institution, is a passionate academician whose dedication and commitment to excellence have shaped his career in education. He holds a B.Sc. in Electronics from Erode Arts College, an MBA from Kongu Engineering College, and a Ph.D. in Management from Bharathiar University, Coimbatore. His blend of technical knowledge and leadership inspires the Electronics and Communication Engineering (ECE) students to pursue innovation, discipline, and success in their academic and professional paths.



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Dr.D.SRINIVASAN

PRINCIPAL

Dr.D.Srinivasan, The Principal of K.Ramakrishnan College of Engineering, Tiruchirappalli, is a vibrant leader with his ground-breaking approach and proven administrative process produces many young engineering professionals to this society. He received his Ph.D. and Post-Graduation in Manufacturing Technology from the nation's top grade institution NIT, Trichy. Education is not just a process of giving knowledge for a future job but a lifelong process which builds an understanding of moral and ethical values to guide one's life in a right path. KRCE not only focuses on the academic front, but also helps in the development of a student's personality, extra-curricular activities and over all perspective. Everything that makes a good institution - well equipped R&D Cells, Lab facilities for all the departments, Wi-Fi enabled campus, well stacked library with digital facility, career guidance, unique teaching methods, training for competitive examinations, liberty to think and express themselves all are available to mould them to face the challenges confidently

Dr.M.MAHESWARI



HEAD OF THE DEPARTMENT

I am deeply thankful to the Board of management, Director Principal, and the Heads of various departments. Faculty members for their consistent support and active involvement in motivational activities of our department. I extend my heart full thanks to the editorial committee members and students for their tireless effort towards releasing this magazine. Choosing electronics field as profession needs challenging creative and extraordinary mind it gives me pleasure to lead such innovative students, who are the future experts of India



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DEPARTMENT OF ECE VISION

VISION

To be distinguished as a prominent program for Electronics and Communication Engineering Studies by preparing students for Industrial Competitiveness and Societal Challenges.

MISSION

M1: To equip the students with latest technical, analytical and practical knowledge.

M2: To provide vibrant academic environment and Innovative Research culture.

M3: To provide opportunities for students to get Industrial Skills and internships to meet out the challenges of the society.

The PEOs of the programme are,

PEO1: Graduates will be competent enough to design, develop and integrate complex industrial products for modern electronics and communication systems.

PEO2: Graduates will be able to propose research oriented, industry relevant design solutions in state-of-the-art electronics and communication domains.

PEO3: Graduates will be able to engage in start-up and entrepreneurial activities developing innovative prototypes for the challenging needs of the society.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Students will qualify in National level Competitive Examinations for Employment and Higher studies.

PSO2: Students will have expertise in the design and development of Hardware and Software tools to solve complex Electronics and Communication Engineering problems in the domains like analog and digital electronics, embedded and communication systems.



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Ph.D degree Completed in ECE Department



Mr. Vigneshwaran K

**TITLE: POLARIZATION-DEPENDENT
METAMATERIAL ABSORBER FOR
TERAHERTZ APPLICATIONS**

SUPERVISOR: DR. S. SAMSON DANIEL

DEPT: ECE

**SUBJECT: Information and Communication
Engineering**

Awarded Year/ Viva date: 12.06.2026



**K
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C
E**



Ph.D degree Completed in ECE Department



**K
R
C
E**



Mrs. Janupriya S

**TITLE: INVESTIGATIONS ON
PERFORMANCE ENHANCEMENT OF
PLANAR ANTENNAS USING ARTIFICIAL
NEURAL NETWORK OPTIMIZATION
TECHNIQUES**

SUPERVISOR: DR. S. SAMSON DANIEL

DEPT: ECE

**SUBJECT: Information and Communication
Engineering**

Awarded Year/ Viva date: 12.06.2026

Ph.D degree Completed in ECE Department



K
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C
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Mrs.Rajapriya S

**TITLE:PERFORMANCE ENHANCEMENT
OF PLANAR ANTENNAS FOR WLAN
APPLICATIONS**

SUPERVISOR:DR.S.SAMSON DANIEL

DEPT: ECE

**SUBJECT:Information and Communication
Engineering**

Awarded Year/ Viva date: 01.09.2025



EVENTS

The Institution of Engineers India (IEI) Students Chapter-ECE Branch at K. Ramakrishnan College of Engineering, Trichy, Tamil Nadu is recognized as an authorized Students' Chapter. The Institution of Engineers (India), Kolkata, approves it. A two-day workshop on Robotics and IoT was successfully conducted from 7/2/25 to 8/2/25 at K. Ramakrishnan College of Engineering, Trichy in association with IEI Students' Chapter-ECE Branch.



K. RAMAKRISHNAN COLLEGE OF ENGINEERING
(Autonomous)
ISO 9001:2015 Certified Institution
Samayapuram, Trichy-621112

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
(NBA ACCREDITED)
IN ASSOCIATION WITH IEI STUDENTS' BRANCH AND ELECTRO ETHNARCH

PRESENTS
NATIONAL LEVEL WORKSHOP & TECHNICAL SYMPOSIUM
INTERPRONIX-2K25

WORKSHOP (DAY 1)
• ANTENNA DESIGN
• EMBEDDED SYSTEMS & IOT
• VLSI DESIGN

TECHNICAL EVENTS (DAY 2)
1. Paper Presentation (4 per team)
2. Technical Quiz (2 per team)
3. Code Hunt (2 per team)
4. Logo Design (Solo)

REGISTRATION FEES
2 days - ₹400/head
1 day - ₹250/head
Only Events - ₹250/head

APPLICABLE COLLEGES
Engineering Colleges
&
Arts Colleges (Electronics Background)
Day 1, Day 2

E-CERTIFICATE FOR PARTICIPATION IN ALL EVENTS

STAFF CO-ORDINATORS
Mrs. J. Resalin Suganthi M.(E.Pn.D)
(978723228)
Mr. A. Balakumar M. Tech(Pn.D)
(9944039829)

STUDENT CO-ORDINATORS
• N. Dharmesh (9843828560)
• S. Kasali (9072899595)
• N. Arun (9350657998)

NON-TECHNICAL EVENTS (DAY 2)
1. Key Crack (2 per team)
2. Non-Technical Connection

MOBILE EVENTS (DAY 2)
1. Battleground
2. Free Fire
Mobile Event - ₹800/Team

FOOD IS PROVIDED FOR ALL PARTICIPANTS.
ACCOMMODATION IS AVAILABLE UPON REQUEST WITH AN ADDITIONAL FEE.

Dr. M. MAHESWARI
HOD-ECE

Dr. D. SRINIVASAN
PRINCIPAL

Dr. S. KUPPUSAMY
EXECUTIVE DIRECTOR

Dr. K. RAMAKRISHNAN
CHAIRMAN

REGISTER NOW

CASH PRIZE

Registration Link: <https://forms.gle/9vYmQ3eAUGA>
Email for Paper Submission: interpronix.ece@krce.ac.in

Registration G-Pay: 9003969865



The Department of Electronics & Communication Engineering at K. Ramakrishnan College of Engineering successfully organized the National Level Workshop & Technical Symposium INTERPRONIX-2K25 on March 6 and 7, 2025. The event, conducted in association with the IEI Students Branch and Electro Ethnarch, brought together students from various institutions to showcase their technical expertise, innovation, and problem-solving skills.

EVENTS

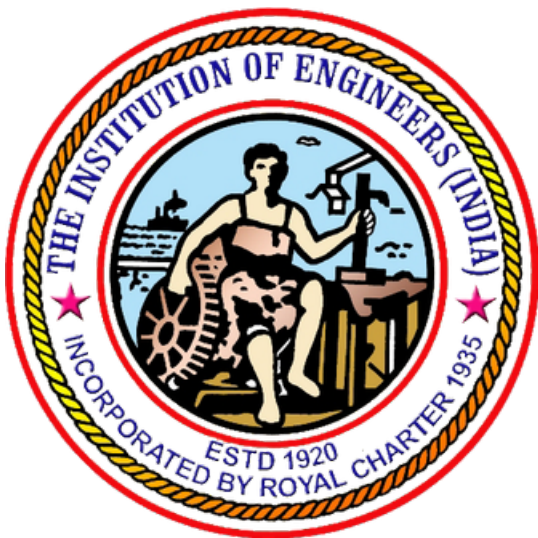


The Institution of Engineers India (IEI) Students Chapter-ECE Branch at K. Ramakrishnan College of Engineering, Trichy, Tamil Nadu is recognized as an authorized Students' Chapter. The Institution of Engineers (India), Kolkata, approves it. IEI Students' Chapter-ECE, K. Ramakrishnan College of Engineering, Trichy has planned to visit All India Radio-Prasar Bharathi- Trichy on 8/4/2025.



The Institution of Engineers India (IEI) Students Chapter-ECE Branch at K. Ramakrishnan College of Engineering, Trichy, Tamil Nadu is recognized as an authorized Students' Chapter. The Institution of Engineers (India), Kolkata, approves it. A One Day Seminar on Industry Initiatives on Green Electronics: Challenges, Opportunities, and Future Directions was successfully conducted on 08/05/25 at K. Ramakrishnan College of Engineering, Trichy in association with IEI Students' Chapter-ECE Branch. The workshop was organized by IEI Students' Chapter-ECE, K. Ramakrishnan College of Engineering, Trichy

EVENTS



The Institution of Engineers India (IEI) Students Chapter-ECE Branch at K. Ramakrishnan College of Engineering, Trichy, Tamil Nadu is recognized as an authorized Students' Chapter. The Institution of Engineers (India), Kolkata, approves it. A One Day Seminar on Industry Initiatives on Green Electronics: Challenges, Opportunities, and Future Directions was successfully conducted on 08/05/25 at K. Ramakrishnan College of Engineering, Trichy in association with IEI Students' Chapter-ECE Branch. The workshop was organized by IEI Students' Chapter-ECE, K. Ramakrishnan College of Engineering, Trichy

EVENTS



The Institution of Engineers (India) IE(I) head quartered in Kolkata aims to promote the needs of the student community, acts as a platform to connect with global engineers and actively encourages R&D programs through various promotional aids. In addition, supporting many types of activities such as Lectures, Seminars, Symposia, Workshops and other educational programs. The Institution of Engineers India (IEI) Students Chapter-ECE Branch at K. Ramakrishnan College of Engineering, Trichy, Tamil Nadu is recognized as an authorized Students' Chapter. The Institution of Engineers (India), Kolkata, approves it. The inauguration of IE (I) Student's Chapter was held on 12th August 2025. Totally 78 students enrolled for this academic year. Student Chapter of IEI was inaugurated at Department of Electronics and Communication Engineering, K. Ramakrishnan College of Engineering, Trichy, Tamil Nadu on 12 th August 2025. Dr.S.Ravimaran, Chairman, IEI, Tiruchirappalli Local Centre, Trichy was Chief Guest and Dr.D.Srinivasan, Principal, K. Ramakrishnan College of Engineering felicitated the function

EVENTS



A one-day lecture on “Multilingual Prompting for Business Efficiency” was successfully conducted on 12th August 2025. The session aimed to enhance participants’ understanding of how multilingual prompting techniques can be leveraged to improve communication, productivity, and decision-making in business environments.



The Department of ECE, K.Ramakrishnan college of Engineering, Trichy has organized an ECE Department Association (Electro Ethnarch ‘23) Inauguration on 18.08.2025. The chief guest called for this function Mrs. J. M. Valarmathi, Lead Consultant, UI/UX Expert, HCL Technologies, Chennai called for this inaugural function who is an Alumni (2008 – 2012) of ECE department

EVENTS



The Institution of Engineers India (IEI) Students Chapter-ECE Branch at K. Ramakrishnan College of Engineering, Trichy, Tamil Nadu is recognized as an authorized Students' Chapter. The Institution of Engineers (India), Kolkata, approves it. The IEI students' chapter of ECE, organized an Intra department Audio-Visual (AV) presentation competition for the IEI student members of ECE under the theme "World Beyond Earth" for celebrating World Space Day on 25 th August 2025. The competition aims to explore students' creative instincts and encourage them to express their ideas on emerging areas. Totally 68 IEI students' members were participated and exposed their creativity. All the posters are very creative and excellent.



IETE Student's Forum was inaugurated at Department of Electronics and Communication Engineering, K. Ramakrishnan College of Engineering, Trichy, Tamil Nadu on 19 th November 2025. Mr. A.Jothivel B.E.,M.S., /Asst General Manager/ BSNL, Trichy was Chief Guest

K. RAMAKRISHNAN
COLLEGE OF ENGINEERING
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ELECTRO ETHNARCH
Inaugurates
THE INSTITUTION OF ELECTRONICS AND TELECOMMUNICATION ENGINEERS
STUDENTS' FORUM (IETE - ISF)
Organises seminar on
"THE JOURNEY OF MOBILE NETWORKS: TRANSFORMING WIRELESS
CONNECTIVITY FROM 1G TO 6G"

Mr. A. JOTHIVEL B.E.,M.S.,
Assistant General Manager - BSNL, Trichy

November 19, 2025
10.30 a.m

THIRD FLOOR CONFERENCE HALL, KRCE

Mrs. N. SRIVIDHYA
Coordinator - IETE
Assistant Professor - ECE

Dr. G. KALPANADEVI
Co-Coordinator - IETE
Associate Professor - ECE

Dr. M. MAHESWARI
HoD - ECE

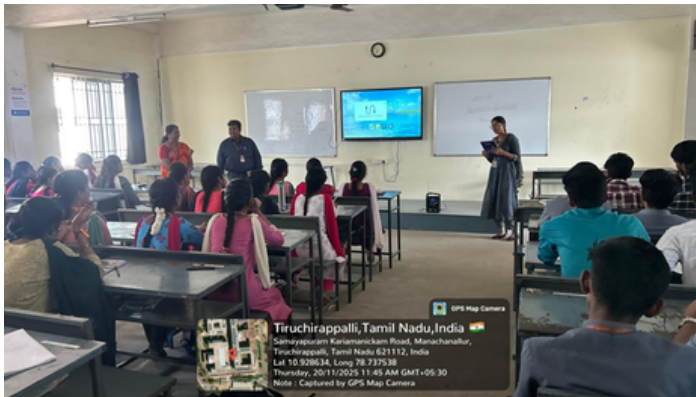
Dr. D. SRINIVASAN
Principal

Dr. S. KUPPUSAMY
Executive Director

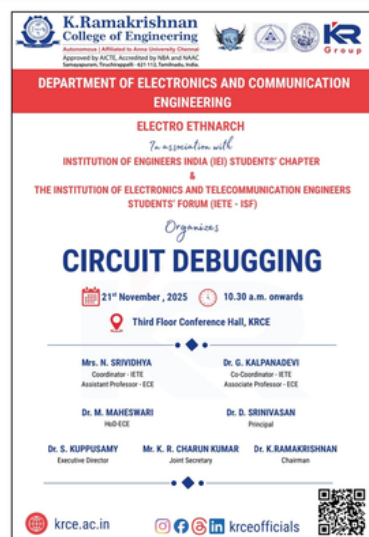
Mr. K. R. CHARUN KUMAR
Joint Secretary

Dr. K. RAMAKRISHNAN
Chairman

EVENTS



A one-day orientation on Building a Career in Networking: CCNA as your Gateway was successfully conducted on 20/11/25 at K. Ramakrishnan College of Engineering, Trichy in association with IEI Students' Chapter-ECE Branch and IETE Students Forum. The workshop was organized by IEI Students' Chapter-ECE and IETE Students Forum



The IEI students' chapter of ECE and IETE Students Forum, organized an Intra Department Circuit Debugging Competition for the IETE student members of ECE on 21 st November 2025. The objective of the circuit debugging competition is to enhance students' practical understanding of electronic circuits by identifying and correcting faults in given circuits

The competition aims to develop analytical thinking, problem-solving skills, and hands-on troubleshooting ability. It encourages participants to apply theoretical knowledge to real-time circuit issues while improving accuracy and speed in debugging. The event also promotes teamwork, technical confidence, and interest in core electronics engineering practices. Totally 128 IETE students participated and exposed their talents.



TECHNICAL MAGAZINE

WIRELESS POWER TRANSFER - CUTTING THE CORD

AUTHOURS: ECA2202-ABBAS S & ECB2333-SATHYANARAYANAN S

Wireless power transfer (WPT) is transforming the way electrical energy is delivered to electronic devices by eliminating the need for physical cables. From smartphones and wearable electronics to electric vehicles, this technology promises greater convenience, improved durability, and safer power delivery. By using electromagnetic fields instead of conductors, wireless power transfer is steadily moving from a niche innovation to a mainstream solution.

FUNDAMENTALS OF WIRELESS POWER TRANSFER

Wireless power transfer refers to the transmission of electrical energy from a source to a load without direct electrical contact. The system relies on time-varying electromagnetic fields to carry energy through space. The fundamental operating principle is electromagnetic induction, first discovered by Michael Faraday in 1831. In a typical system, alternating current flows through a transmitter coil, generating a changing magnetic field. When a receiver coil is placed within this field, an electrical current is induced, enabling battery charging or direct device operation.

METHODS OF WIRELESS POWER TRANSFER

Several methods of wireless power transfer have been developed to address different distance and power requirements. Inductive coupling is the most widely used approach and operates over very short distances, usually a few centimeters. It is commonly found in smartphone charging pads, electric toothbrushes, and wearable devices. Resonant inductive coupling improves upon this method by tuning both transmitter and receiver coils to the same resonant frequency, allowing energy transfer over greater distances with higher efficiency. Radio frequency power transfer converts electrical energy into radio waves that propagate through space and are then converted back into electricity at the receiver, enabling longer-range power delivery but at lower efficiency.

TECHNICAL MAGAZINE

PRESENT-DAY APPLICATIONS

Wireless power transfer is already part of everyday life. Smartphone wireless charging based on the Qi standard has become widely adopted, allowing users to charge devices simply by placing them on a charging pad. Medical devices such as pacemakers benefit greatly from wireless charging, as it eliminates the need for invasive procedures to replace batteries. Wearable electronics use wireless charging to maintain sealed designs that resist moisture and corrosion. In industrial environments, wireless charging supports automated guided vehicles and robots by reducing downtime and maintenance caused by mechanical connectors.

RECENT TECHNOLOGICAL DEVELOPMENTS

Recent research has demonstrated significant advancements in wireless power capabilities. Experimental systems developed by researchers have successfully powered devices such as light bulbs across room-scale distances, demonstrating the feasibility of mid-range wireless power. In the automotive sector, wireless charging for electric vehicles is rapidly progressing. Ground-mounted charging pads installed in garages can transfer power wirelessly to vehicles parked above them, with power levels reaching 11 kilowatts or more. These systems offer charging performance comparable to wired solutions while improving convenience and safety.

ADVANTAGES OF WIRELESS CHARGING

Wireless power transfer offers several compelling advantages. It enhances convenience by removing the need for cables and connectors, reducing clutter and user effort. The absence of physical contacts improves durability by eliminating wear and corrosion. Safety is also enhanced because there are no exposed electrical connections, reducing the risk of electric shock. Standardized wireless charging systems allow interoperability between devices and chargers, further improving usability.

TECHNICAL MAGAZINE

CHALLENGES AND LIMITATIONS

Despite its benefits, wireless power transfer faces technical challenges. Efficiency remains lower than wired charging, with some energy lost as heat during transmission. Effective operation typically requires precise alignment between transmitter and receiver coils, particularly in inductive systems. Charging distance is limited, as efficiency decreases rapidly with separation. Wireless charging systems also tend to be more expensive due to additional components and control circuitry. Thermal management is critical, as excess heat can degrade battery performance and reduce system lifespan.

FUTURE OUTLOOK

The future of wireless power transfer is promising. Researchers are working to extend transmission range, improve efficiency, and reduce sensitivity to alignment. Concepts such as rooms equipped with embedded wireless power transmitters could allow devices to charge automatically. For electric vehicles, wireless charging may be integrated into parking areas and roadways, enabling stationary or dynamic charging. Pilot projects for wireless bus charging are already underway in several cities.

ENGINEERING CONSIDERATIONS AND CONCLUSION

Designing wireless power systems requires careful attention to operating frequency, electromagnetic compatibility, safety standards, and thermal management. Engineers must ensure that wireless power systems do not interfere with communication networks or exceed exposure limits. Wireless power transfer represents a major step toward seamless energy delivery. As the technology matures, it will play a key role in shaping the future of consumer electronics, transportation, and smart infrastructure, making it an important area of study for electrical engineering students.

TECHNICAL MAGAZINE

DIGITAL TWINS IN SMART POWER SYSTEMS: A NEW ERA OF INTELLIGENT GRID MANAGEMENT

AUTHOURS: ECA2440-JONISHA C & ECA2427-HARI PRIYA J

The rapid digitalization of the power sector has introduced innovative technologies that enhance the planning, operation, and maintenance of electrical systems. Among these advancements, Digital Twin technology has emerged as a powerful tool for improving the reliability and efficiency of modern power networks.

A digital twin is a virtual representation of a physical asset, system, or process that continuously receives real-time data from the actual system. By combining simulation, data analytics, and artificial intelligence, digital twins enable utilities to monitor performance, predict failures, and optimize decision-making

UNDERSTANDING DIGITAL TWIN TECHNOLOGY

A digital twin creates a dynamic digital model of physical equipment such as transformers, generators, substations, transmission lines, or even entire power systems. Sensors installed on physical assets collect operational data including voltage, current, temperature, vibration, and loading conditions. This information is transmitted to the digital model, where advanced algorithms continuously analyze system behavior. Unlike conventional simulation models, digital twins update in real time, accurately reflecting the current operating state of the physical system.

APPLICATIONS IN POWER GENERATION

Power generation facilities require continuous monitoring to maintain efficiency and reliability. Digital twins enable operators to assess equipment performance under various operating conditions without disrupting actual operations. For example, a digital twin of a turbine generator can predict performance degradation, identify maintenance requirements, and optimize operating parameters. By analyzing historical and real-time data, operators can improve efficiency while reducing unexpected downtime and maintenance costs.

TECHNICAL MAGAZINE

SMART GRID MONITORING AND CONTROL

Modern smart grids contain numerous interconnected components that require constant supervision. Digital twin technology provides a comprehensive view of grid operation by integrating data from substations, renewable energy sources, energy storage systems, and consumer loads. Operators can simulate different scenarios, evaluate network responses, and implement corrective actions before problems occur. This capability improves grid reliability and enhances the management of increasingly complex power systems.

PREDICTIVE MAINTENANCE AND ASSET MANAGEMENT

One of the most valuable benefits of digital twins is predictive maintenance. Traditional maintenance approaches often rely on fixed schedules that may not accurately reflect equipment condition. Digital twins continuously assess asset health using real-time operational data. Machine learning algorithms identify abnormal behavior and estimate remaining useful life. Maintenance activities can therefore be scheduled based on actual equipment condition, reducing costs and preventing unexpected failures.

RENEWABLE ENERGY INTEGRATION

Renewable energy sources introduce variability and uncertainty into power system operation. Digital twins help utilities manage renewable integration by simulating generation patterns, forecasting system performance, and optimizing resource utilization. For solar and wind farms, digital twins monitor environmental conditions and equipment performance simultaneously. These capabilities improve energy forecasting accuracy and enhance operational efficiency.

FUTURE OUTLOOK AND CONCLUSION

Digital twin technology is transforming the management of modern power systems by enabling real-time monitoring, predictive maintenance, and intelligent decisionmaking. Its applications in generation, transmission, distribution, and renewable energy integration demonstrate its immense potential. As electrical networks become increasingly digital and interconnected, digital twins will play a crucial role in improving efficiency, reliability, and sustainability. For future electrical engineers, understanding digital twin technology will be essential for developing and operating next-generation smart power systems.

Dr.K.RAMAKRISHNAN

CHAIRMAN

Dr.S.KUPPUSAMY

EXECUTIVE DIRECTOR

Dr.D.SRINIVASAN

PRINCIPAL

Dr.M.MAHESWARI

HEAD OF THE DEPARTMENT

ABBAS S (IV YEAR 'A' SECTION

THIRUVENGADAM (IV YEAR 'B' SECTION)

KEERTHANA(IV YEAR 'A' SECTION)

BHAVADHARANI D(III YEAR 'A' SECTION)

SATHYANARAYANAN S (III YEAR 'B' SECTION)

KIRISHA M(III YEAR 'A' SECTION)

HARI PRIYA J – II YEAR ECE 'A' SECTION

JONISHA C – II YEAR ECE 'A' SECTION

LENINE JOSEWA S – II YEAR ECE 'A' SECTION

PRANAV M – II YEAR ECE 'B' SECTION

MUTHULAKSHMI T– II YEAR ECE 'B' SECTION

ZULAIKHA ROSNI R – II YEAR ECE 'B' SECTION

Mr.BALAMURUGAN(AP/ECE)

ABBAS S

EDITOR

STUDENT COORDINATORS

