Excel ENGINEERING COLLEGE (AUTONOMOUS)

Department of Electronics and Communication Engineering

MAGAZINE

TECHMAG 2023

TECHMAG 2023

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IV Year B.E.ECE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VISION OF THE DEPARTMENT

To impart quality technical education in the field of Electronics and Communication Engineering in the young minds for serving the Society and Industry in a globally challenging environment.

MISSION OF THE DEPARTMENT

To provide sound technical knowledge on Electronics and Communication Engineering to the students

- **To prepare the students for working in global challenges existing in the industries**
- **To instill competencies in the students for working in interdisciplinary work culture**
- **To create desire for undertaking lifelong learning and entrepreneurship initiatives**

Programme Educational Objectives (PEOs)

PEO 1. To educate the students for acquiring sound knowledge in the field of Electronics and Communication Engineering and interdisciplinary field, so as to meet the needs in the field of Electronics and Communication industries.

PEO 2. To provide knowledge and skills for developing new products in the field of Electronics and communication.

PEO 3. To offer excellent academic learning environment in department of Electronics and Communication for facilitating students to become eminent team players.

PEO 4. To facilitate the students with necessary knowledge in the field of Electronics and Communication Engineering so as to succeed in competitive examination for pursuing higher studies.

PEO 5. To expose the students on professional, ethical and social skills to shape them with leadership quality for analyzing and solving engineering and social issues.

Programme Specific Outcomes (PSOs)

1. ECE fundamental concepts: To analyze, design and develop solutions by applying foundational concept of electronics and communication engineering.

2. Design Principles and Best practices: To apply design principles and best practices for developing quality products for science and business applications.

3. Innovations through ICT: To adapt to emerging information and communication technologies (ICT) to innovate ideas and solutions to existing/novel problems

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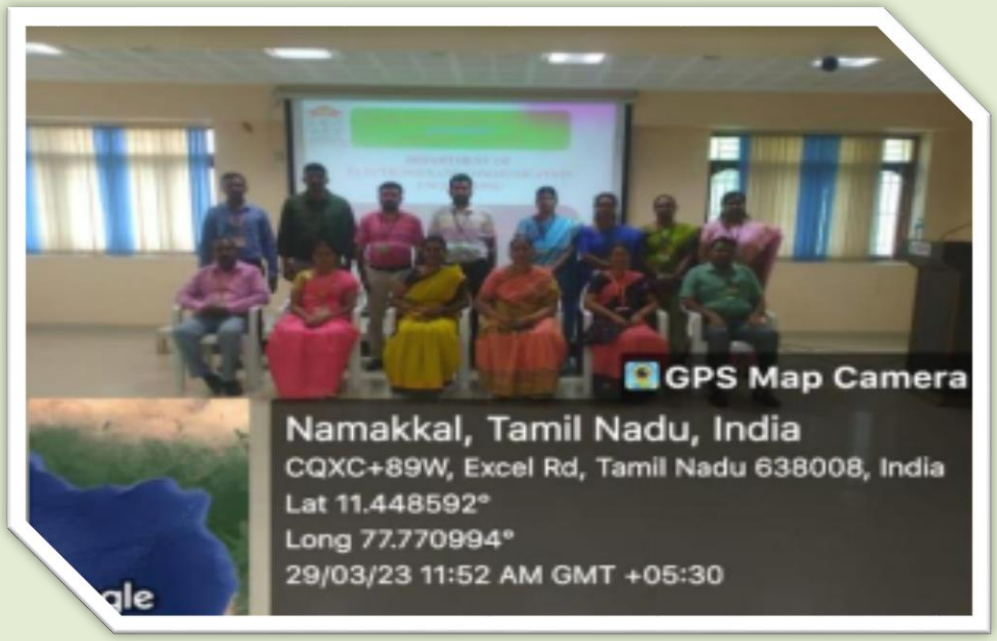
Table of Content

Board of Studies

The Fourth Board of Studies meeting (EEC/ECE/BoS/04) of the Department of Electronics and Communication Engineering, Excel Engineering College (Autonomous), was held on 29.03.2023 at 10:00 AM in Kandasamy A/C Hall under the chairmanship of **Dr. S. Anbu Karuppusamy, HoD**. The members present included **Dr. D. Selvathi (University Nominee) and Dr. K. C. Sriharipriya (Academic Expert).** The Board discussed and approved the following agenda items: the **VII Semester syllabus** for the B.E. Electronics and Communication Engineering program for students admitted from the academic year 2020-21 onwards under Regulation 2020; the **courses for B.E. (Honours) specialization** for students admitted from the academic year 2021-22 onwards under Regulation 2020 / V2; the **curriculum and syllabi of the Minor Degree programme in Embedded Systems and IoT** for students admitted from the academic year 2021-22 onwards under Regulation 2020 / V2; the **curriculum of B.E. Electronics and Communication Engineering** for students admitted from the academic year 2023-24 onwards under Regulation 2023; the **first-year syllabi of B.E. Electronics and Communication Engineering** for students admitted from the academic year 2023-24 onwards under Regulation 2023; and the **second-year syllabi of M.E. Applied Electronics** for students admitted from the academic year 2022-23 onwards under Regulation 2022. No other matters were raised, and the meeting concluded with the approval of the Chairman.



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Academic Activities

A **Workshop on Project Demonstration** was conducted on **06.08.2022**, coordinated by **Mr. Raja Gopalakrishnan** and **Mr. Satheeskumar**, AP/ECE. The event provided a platform for students to showcase their innovative projects, fostering creativity and encouraging hands-on learning among the participants.

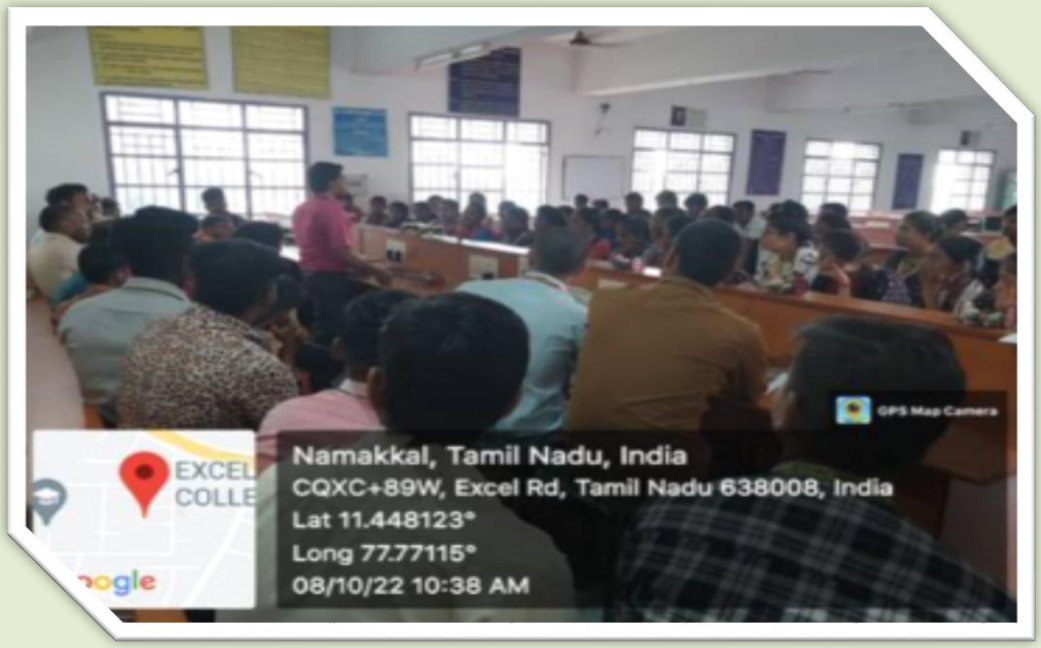
An **Alumni Interaction** session was held on **13.08.2022**, featuring **Mrs. Lavanya**, Assistant Engineer, HCL Technology, and **Mr. Manojkumar**, ML Engineer, Wipro Technologies, Coimbatore. The session provided valuable insights into industry trends and career opportunities, inspiring students to enhance their technical and professional skills.

A **Skill Development** program was organized on **27.08.2022**, coordinated by **Mr. Rajagopalakrishnan** and **Ms. Theivanayaki**, AP/ECE. The program aimed to enhance students' technical competencies and soft skills, fostering their overall professional growth and readiness for industry challenges.

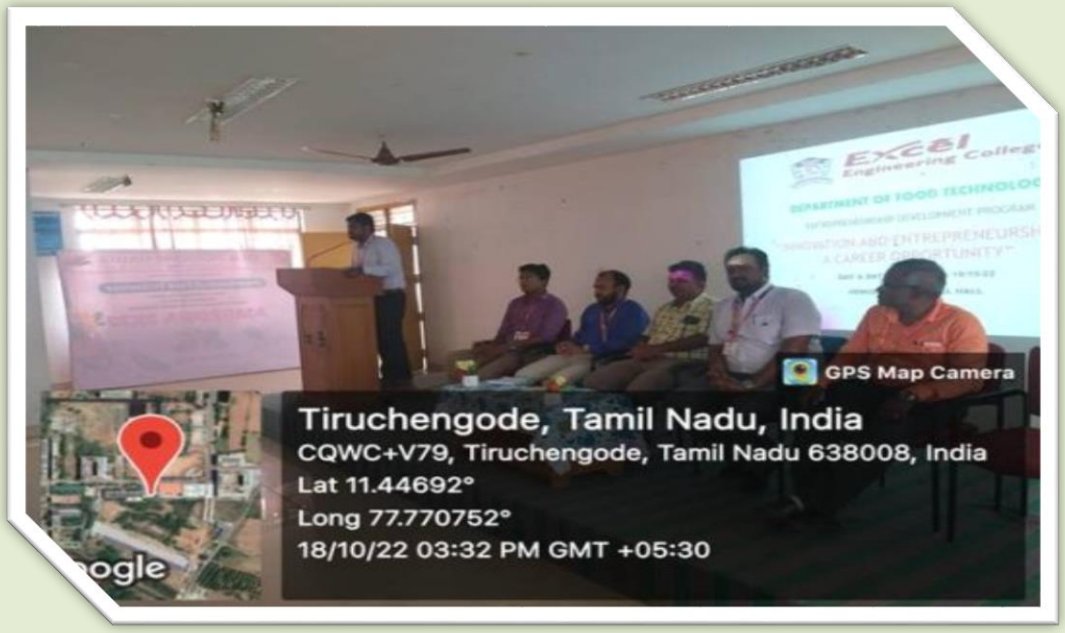
A **Faculty Development Programme** on **Research and Development** was organized on **09.09.2022**, coordinated by **Dr. G. Jagajothi**, Professor/ECE, and **Dr. Tamilarasi**, ASP/ECE. The program aimed to enhance faculty members' research capabilities and foster innovation in emerging technologies.

A **Seminar** on **Next Generation Technology** was conducted on **15.09.2022**, coordinated by **Mr. Loganathan**, ECE, and **Mrs. Ramya**, AP/ECE. The session provided insights into emerging technologies, equipping students with knowledge about future industry trends and innovations.

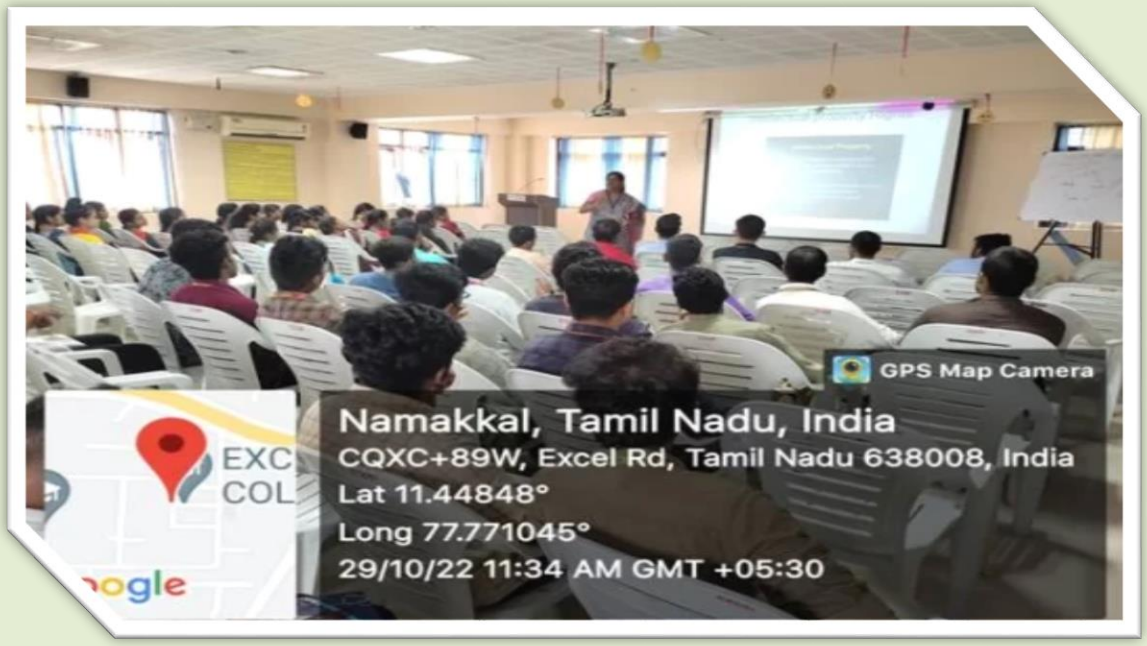
The **Association Inauguration** followed by an **Industry Guest Lecture** on **Opportunities in Core Industry** was held on **17.09.2022**. The session was delivered by **Mr. Napolean Mani**, RTL Design Engineer, Tessolve Semiconductor, Bangalore, providing students with valuable insights into career prospects and growth opportunities in the core industry sector



A **Workshop on Robotics** was conducted on **08.10.2022**, coordinated by **Mr. Sakthivel** and **Mr. Loganathan**, ECE. The workshop provided hands-on experience in robotics, enhancing students' technical skills and practical knowledge in automation and control systems.



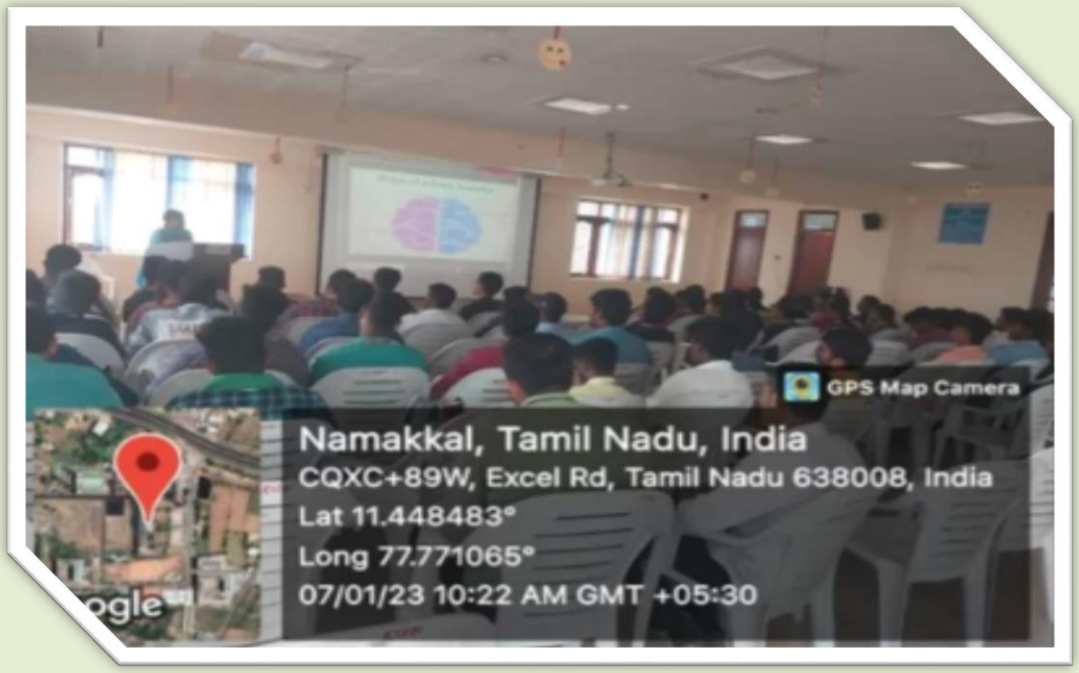
An **Entrepreneurship Development Program** on **Developing Entrepreneurial Mindsets** was conducted, coordinated by **Prof. Mohankumar Iyer**, Program Coordinator, Department of MBA, Excel Engineering College. The program aimed to inspire students to cultivate entrepreneurial thinking and innovate effectively in business ventures.



A **Seminar on Intellectual Property Rights (IPR)** was conducted on **29.10.2022**, coordinated by **Dr. S. Jayapoorani**, Professor/ECE. The seminar provided insights into IPR concepts, emphasizing the importance of protecting innovations and creative works

An **Alumni Guest Lecture** was conducted on **19.01.2023**, delivered by **Mr. K. Kirubakaran**, Capgemini, Chennai. The session provided students with insights into industry practices and professional development opportunities.

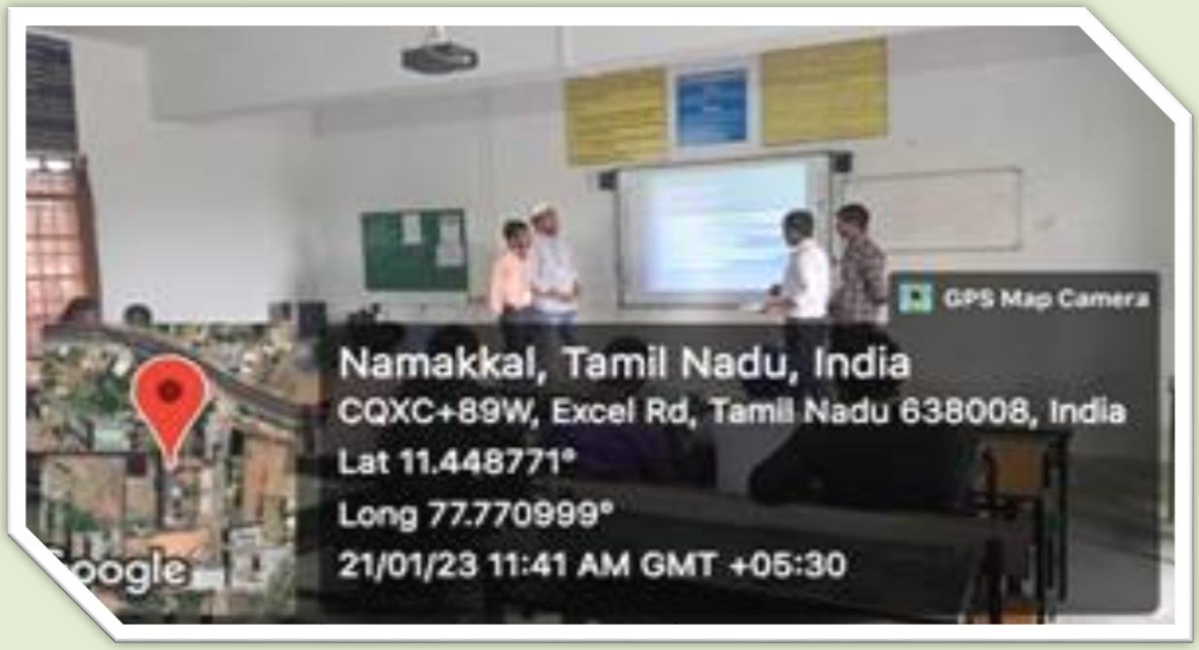
A **Guest Lecture through MoU Company** on **Emerging Tools in Industry** was conducted on **07.01.2023**, delivered by **Mr. M. Parthiban** from **Caliber Embedded Technology, Coimbatore**. The session provided students with knowledge about the latest industrial tools and technologies



An **Industry Guest Lecture** on **Data Science and Applications** was conducted on **07.01.2023**, delivered by **Ms. K. Shalini**, Associate Technical Support Engineer, **Skill Lync, Bangalore**. The session provided insights into data science concepts, tools, and real-world applications

A **Workshop** on **Design and Implementation of Digital Circuits Using Verilog** and **Embedded Programming and IoT Applications with Energia IDE Tool** was conducted from **23.01.2023 to 28.02.2023**, led by **Dr. S. Madhava Pandian**, Design Lead, **Tessolve Semiconductor Pvt. Ltd**. The workshop provided hands-on training in digital design and IoT programming tools

An **Alumni Interaction** session was conducted on **27.01.2023**, featuring **Mr. Sankar**, Infosys Ltd, Mysore. The session provided students with insights into industry experiences and career guidance.



A **Seminar and Group Discussion** on **Latest Technology in Digital Transformation** was conducted on **21.01.2023**, coordinated by **S. Theivanayaki**, Assistant Professor, Excel Engineering College. The session aimed to enhance students' understanding of emerging digital technologies and encourage collaborative discussions

An **Industry Guest Lecture** on **Carving Niche Career in Electronic System Design** was conducted on **04.02.2023**, delivered by **Dr. Vijaya Kumar**, Manager, Research and Development, **Indi Guard System Pvt. Ltd, Thanjavur**. The session provided students with guidance on career opportunities and specialization in electronic system design.

An **Industry Guest Lecture** on **Career Opportunities in Core Industry** was conducted on **04.02.2023**, delivered by **Dr. S. Madhava Pandian**, Design Lead, **Tessolve Semiconductor Pvt. Ltd**. The session provided insights into career paths and growth prospects in the core engineering sector.

A **Workshop** on **Project to Journal Paper Conversion** was conducted on **04.03.2023**, coordinated by **Dr. R. Vinoth**, ASP/Mechanical, Excel Engineering College. The workshop guided students on converting academic projects into publishable journal papers

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Non-Academic Activities

A **Teachers' Day Celebration** was organized on **05.09.2022**, coordinated by **Mr. Rajagopalakrishnan** and **Mr. Satheeskumar**, AP/ECE. The event honored the invaluable contributions of teachers and expressed gratitude for their dedication and guidance in shaping students' futures.

An **International Peace Day Celebration** was organized on **21.09.2022**, coordinated by **Mrs. Ramya**, AP/ECE. The event emphasized the importance of peace and harmony, encouraging students to promote unity and mutual respect in society.

A **Coding Contest** was organized on **23.09.2022** as a **Non-Academic Event**, coordinated by **Mr. N. Sakthivel**, ECE. The event aimed to enhance students' problem-solving and programming skills while fostering innovation and healthy competition.

An **Environmental Protection Awareness Rally** was organized on **24.09.2022**, coordinated by **Mr. Loganathan**, ECE. The rally aimed to create awareness among students and the public about the importance of protecting the

environment and promoting sustainable practices

An **Awareness Rally on Gender Equality** was organized on **15.10.2022**, coordinated by **Ms. K. Kodeeswari**, AP/ECE. The event aimed to promote equality, inclusivity, and respect for all genders among students and the community.

A **World Television Day Celebration** was organized on **12.11.2022**, coordinated by **Dr. G. Jagajothi**, Professor/ECE. The event highlighted the role of television in communication, education, and raising awareness on global issues.

A **Constitution Day** celebration was organized on **28.11.2022**, coordinated by **Ms. Theivanayaki**, AP/ECE. The event emphasized the significance of the Indian Constitution and the importance of upholding its values and principles.

An **International Day against Corruption and Human Rights Day** event was organized on **12.12.2022**, coordinated by **Ms. K. Kodeeswari**, AP/ECE. The event aimed to raise awareness about combating corruption and promoting human rights among students and the community.

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Faculty Achievements

Dr. S. Anbukarupusamy published a research paper titled "Enhanced Interpolation with Semi Supervised Algorithm and Greedy Forwarding Technique for Forest Fire Prediction over Wireless Sensor and Actuator Networks" in the journal **Advances in Material Science and Engineering**, indexed in **SCI**.

Dr. S. Anbukaruppusamy published a research paper titled "An In-Tire Pressure Monitoring SoC Using FBAR Resonator-Based ZigBee Transceiver and Deep Learning Models" in the journal **Microprocessors and Microsystems**, **SCI** indexed.

Dr. S. Anbukarupusamy published a research paper titled "Efficient Feature-Based Video Retrieval and Indexing Using Pattern Change with Invariance Algorithm" in the **Journal of Intelligent and Fuzzy Systems**, **Scopus** indexed, Vol. 44, Issue 2, 2023. DOI: 10.3233/JIFS-221905

Dr. S. Anbukarupusamy authored the research paper "Efficient Feature-Based Video Retrieval and Indexing Using Pattern Change with Invariance Algorithm" published in the Journal of Intelligent and Fuzzy Systems, Scopus indexed, Vol. 44, Issue 2, 2023.DOI: 10.3233/JIFS-221905

Dr. A. Vasantharaj published a research paper titled "Child Safety Wearable and Visually Impaired Assistive Device with Location Tracking System using IoT" in the journal **Mathematical Statistician and Engineering Applications**, **SCI** indexed, Vol. 71, No. 3s (2022), pp. 343–351, ISSN: 2094-0343. Available at: http://philstat.org.ph/

Dr. A. Vasantharaj published a research paper titled "Efficient Feature-Based Video Retrieval and Indexing Using Pattern Change with Invariance Algorithm" in the **Journal of Intelligent and Fuzzy Systems**, **Scopus** indexed, Vol. 44, Issue 2, 2023.DOI: 10.3233/JIFS-221905

Patent: Dr. A. Vasantharaj (ID: 202241067919 A) filed a patent for "Artificial Intelligence-Based Approach Integrated with IoT Powered by Solar Energy for Unmanned Air Filling of Tires of Vehicles," published on **16/12/2022**.

Dr. K. Tamilarasi published a research paper titled "Deep Neural Network for Image Recognition in Medical Diagnosis" in the **Journal of Pharmaceutical Negative Results**.

Dr. K. Tamilarasi authored the book "**Machine Learning Algorithms**", published by **SciTech Publications**, ISBN: **978-93-5757-455-6**.

Dr. S. Jayapoorani published a research paper titled "Systolic Optimized Adaptive Filter Architecture Designs for ECG Noise Cancellation by Vertex-5" in the journal **Aerospace Systems**, **Scopus** indexed, November 2022.DOI: https://doi.org/10.1007/s42401-022-00177-3

Dr. S. Jayapoorani published a research paper titled "Efficient Employment of Optical Sources Integrated with Both Light Detectors and Free Space Communication Modulated Channel under Ambient Conditions Effects" in the **Journal of Optical Communication**, **Scopus** indexed, March 2023. DOI: https://doi.org/10.1515/joc-2023-0007

Ms. K. Kodeeswari published a research paper titled "Deep Learning Based Remotely Monitoring COVID Patient and Vaccine Side Effects Using Wearable Devices" in the **International Journal of Research and Analytical Reviews**.

Mr. N. Rajagopala Krishnan published a research paper titled "IoT Based Real-Time Soldier Health Care Monitoring System in Battlefield" in the **International Journal of Research and Analytical Reviews**, Vol. 9, Issue 2, 2022.

Ms. A. Anitharani published a research paper titled "Plant Leaf Disease Image Detection and Classification Using ANN" in the **International Journal of Research and Analytical Reviews**.

Ramya M (ID: 202241052856A) published a research work titled "Machine Learning and IoT Based Approach to Analyse the Characteristics of Various Nano Materials and Their Impact in Improving the Agricultural Field" on **07/10/2022**.

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Student Achievements

S. Madhavaraj won II Prize in the Fine Arts and Cultural Club event held on 03.06.2022 at KSR Institute of Engineering and Technology.

M. Archanaa won **II Prize** in **SA Writing** held on **11/09/2022** at **Excel Engineering College – English Literary Association of EEC**.

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Student Corners

DRAWING

20EC019-KUNDAN KUMAR

21EC010-ARAVINDHAN S

20EC001-AARTHI S

21EC008-ANJALI KUMARI

PHOTOGRAPHY

21EC120-VIVEK P

21EC079-PAVITHRA S

20EC012-DHURGA K

21EC100-SANTHOSH V

TAMIL POEM

மலர்களின் மௌனம் ❀

மலரொன்று விழும் நேரம்,
மழைத் துளி கண்ணீராய் சேரும்,
அது சொல்வது இனிய ரகசியம்,
அந்தி காற்றில் கீதமாய் மிதக்கும்.
சூரியன் சிரிக்கும் காலையில்,
மலர்கள் விரித்து வரவேற்கும் நாளையில்,
மனதில் மலரும் நம்பிக்கைகள்,
மலர்களோடு வாழ்வு மலரச் செய்கின்றன.

Meaning in English:

When a flower falls,
a raindrop joins like a tear,
whispering a sweet secret,
floating like a song in the evening breeze.
In the sunny morning,
flowers bloom with a warm welcome,
just like the hopes blooming in our hearts,
making life blossom beautifully.

21EC006 AMUTHA S

TECHNICAL ARTICLE

Edge Computing: Driving Faster and Smarter IoT Applications

20EC022-NITHYA S

In 2023, edge computing emerged as a critical technology for handling the exponential growth of Internet of Things (IoT) devices and real-time data processing needs. Unlike traditional cloud computing, which relies on centralized data centers, edge computing processes data closer to the source, reducing latency, bandwidth usage, and response time. This advancement is revolutionizing industries such as smart cities, autonomous vehicles, healthcare monitoring, and industrial automation, where immediate decision-making is crucial. By integrating AI at the edge, devices can now perform intelligent tasks locally, ensuring faster insights and enhanced privacy. With 5G networks expanding globally, the synergy between edge computing and IoT is enabling seamless connectivity and improved performance, positioning 2023 as a pivotal year for real-time, data-driven innovation.

Green Hydrogen: The Future of Clean Energy in 2023

21EC024-DHANUVARSHINI R

In 2023, green hydrogen gained global attention as a sustainable solution to the growing energy crisis and environmental concerns. Produced through electrolysis using renewable energy sources like solar and wind, green hydrogen emits zero carbon emissions, making it a clean alternative to fossil fuels. Governments and industries worldwide have started investing heavily in green hydrogen projects for applications in transportation, power generation, and industrial manufacturing. With advancements in storage and distribution technologies, the cost of green hydrogen production has significantly reduced, bringing it closer to widespread adoption. This innovation not only supports the transition to net-zero emissions but also strengthens energy security, positioning green hydrogen as a key driver of the global renewable energy revolution.

Cybersecurity in 2023: Combating AI-Driven Threats

21EC121-YOGESHWARAN M

The year 2023 witnessed a sharp rise in AI-driven cyberattacks, pushing cybersecurity to the forefront of technological innovation. Hackers began using machine learning and deepfake technologies to create highly sophisticated phishing attacks, ransomware, and identity theft schemes. In response, cybersecurity firms integrated artificial intelligence and predictive analytics to detect anomalies in real-time and neutralize threats before they could cause damage. Industries such as banking, healthcare, and e-commerce adopted Zero Trust Security models, multi-factor authentication, and quantum-safe encryption to safeguard sensitive data. With cyberattacks becoming more complex and frequent, 2023 marked a pivotal year where AI-powered defense systems evolved into a necessity, laying the foundation for a secure and resilient digital ecosystem.