A.V.C. COLLEGE OF ENGINEERING

| Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai |
| Accredited by NBA (CSE, EEE, ECE & MECH) & NAAC with "A" Grade (3rd Cycle) |
| An ISO 9001:2015 Certified Institution |
Mannampandal, Mayiladuthurai District, Tamilnadu-609 305.
Ph:04364-227202, www.avccengg.net

TechnothirsT 25-26

A National Level Student's Technical Symposium

8, 9 & 10th October 2025

SOUVENIR

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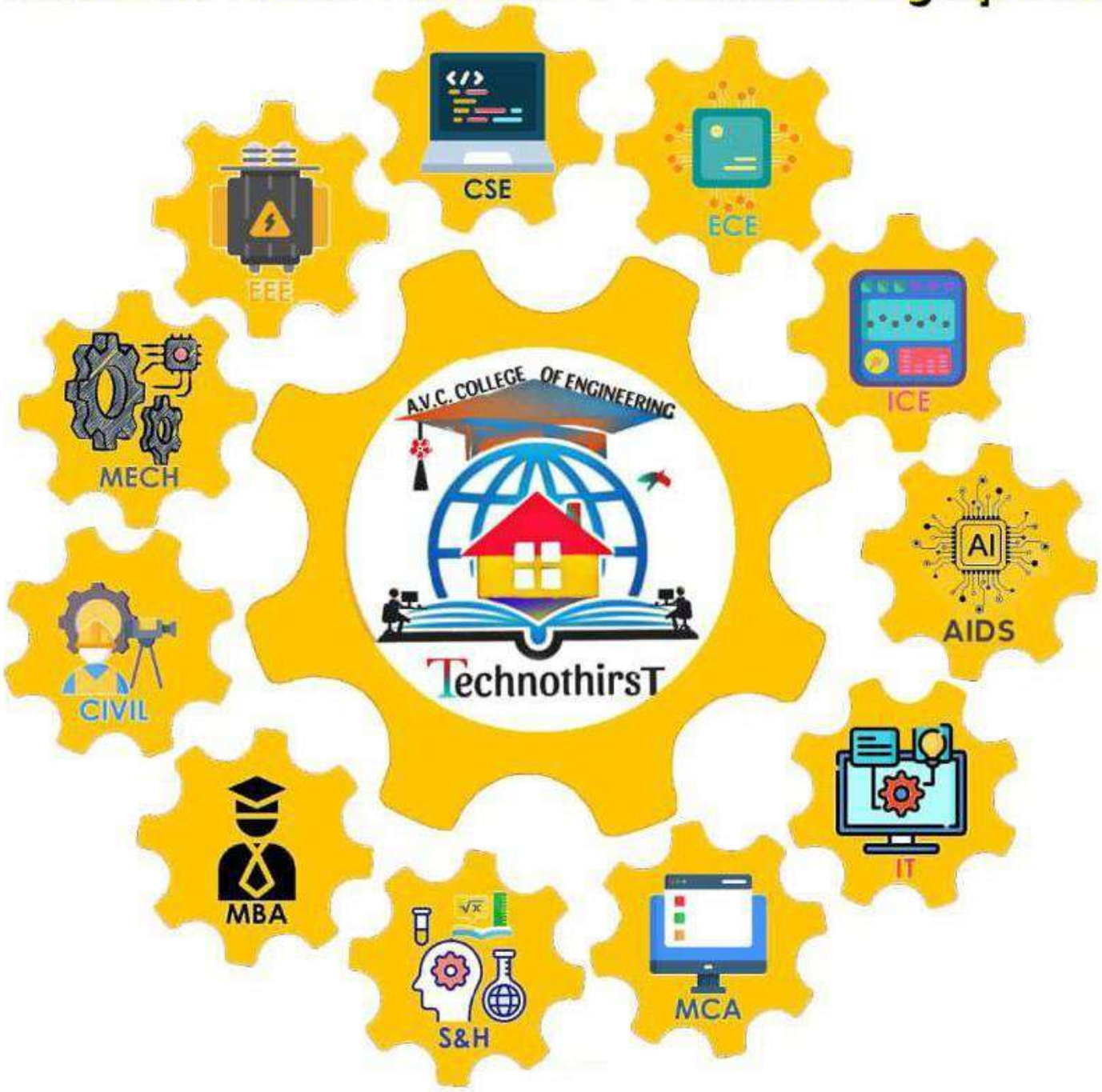
TechnothirsT 25-26

A National Level Student's Technical Symposium



8, 9 & 10th October 2025

SOUVENIR

ABOUT AVCCE

A.V.C. College of Engineering is located on the main highway from Mayiladuthurai to Thirukkadaiyur in the scenic landscape of Mannampandal, Mayiladuthurai District, Tamil Nadu, spread across 30.09 acres. The founding father Sri S. Ramalingam Pillai sowed the seeds of A.V. Charities in 1806 in memory of his beloved son Thiru Velayutham Pillai. A.V. Charities began its educational services by starting the A.V.C. College (Autonomous) in 1955, extended their horizon to A.V.C Polytechnic College in 1983 and in 1996 by opening the Engineering College. A.V. Charities serve as Beacon light in the field of education to the innumerable youth, with rural background.

CSE, EEE, ECE and MECH Programmes are Accredited by NBA. Additionally, our College Accredited by NAAC with 'A' Grade (3rd Cycle). Renowned for its commitment to academic excellence and holistic development, the institution continues to produce competent professionals equipped to meet global challenges while contributing to society.

Separate blocks in the college house the various departments , Library, Sports facilities, Students Waiting Hall (Both for Men & Women) and the office. Our Mission is to make the institution a Centre of Academic Excellence. The R&D facilities have been opened up to make the students as reservoir of knowledge, aptitude to advance and to face the global challenges. We have been recognized as Research centre in the fields of Mechanical Engineering and Chemistry. The institution offers eight UG Programmes in the field of Mechanical Engineering, Electronics and Communication Engineering, Electrical and Electronics Engineering, Computer Science and Engineering, Instrumentation and Control Engineering, Civil Engineering, Information Technology, Artificial Intelligence and Data Science Engineering and two PG programmes like Master of Business Administration and Master of Computer Applications.

ADMINISTRATOR MESSAGE

Justice K.VENKATARAMAN

Judge - Administrator
A.V.C. College of Engineering

I am heartened to know that our Institution is organizing a National Level Student Technical Symposium TechnothirsT 25-26 for core branches and first year students for three days from 8th October to 10th October 2025.

Education is the sharpest weapon to mould and chisel the young brains. It has been realized by all nations of the world. The globalization has made an impact all over the world. The academic performance, technological innovations, research activities and social services are the key to determine the growth. Hope the deliberations and interactions of this symposium would play an anchor role in the career of budding engineers.

I congratulate Director, Principal and all the faculty members and staff for their efforts put forth in the symposium with untiring enthusiasm. I wish the symposium a grand success.

Mannampandal
06.10.2025

[K. VENKATARAMAN]

DIRECTOR MESSAGE

Dr. M. SENTHILMURUGAN, Ph.D.,
Director
A.V.C. College of Engineering

I am very much delighted that our Institution is organizing a National Level Student Technical Symposium TechnothirsT 25-26 for core branches and first year students for three days from 8th October to 10th October 2025.

Technology is the practical application of scientific and conceptual knowledge to solve problems, achieve goals and improve tasks in everyday life and specific industries. Technical Symposium is recognized as the premier exchange of information for the cable and connectivity to the industry. The speed of technology has emphasized the need to think faster, act faster and operate to achieve success target. I am confident that this symposium will enrich the young minds.

I congratulate all the faculty member and staff for making the Symposium a grand success.

Mannampandal
06.10.2025

[Dr. M. SENTHILMURUGAN]

PRINCIPAL MESSAGE

Dr. P. BALASUBRAMANIAN, M.E., Ph.D.,
Principal
A.V.C. College of Engineering

"Education is the most powerful weapon which you can use to change the world."

It gives me immense pleasure that our Institution is organizing the National Level Student Technical Symposium *TechnothirsT 25–26*, exclusively designed for core branches and first-year students, scheduled from 8th to 10th October 2025. This prestigious event serves as a vibrant platform for students to showcase their talents, exchange innovative ideas, and enhance their technical expertise.

Technology, at its essence, applies scientific principles to improve the way we live, drive industrial growth, and advance human progress. This symposium will provide students with a platform to explore new ideas, engage in insightful discussions, take part in practical challenges, and learn collaboratively—moulding them into innovative thinkers and future leaders in technology.

I deeply appreciate the dedication and hard work of the organizing team, faculty members, and students who have worked tirelessly to make this event a reality. I encourage every participant to embrace this platform, learn from one another, and explore new horizons of innovation. May *TechnothirsT 25–26* ignite curiosity, inspire creativity, and empower young minds to achieve excellence.

Mannampandal.
06.10.2025

[Dr.P.BALASUBRAMANIAN]

VICE PRINCIPAL MESSAGE

Dr. S. SELVAMUTHUKUMARAN, Ph.D.,
Vice Principal &
HoD, Department of Computer Applications
A.V.C. College of Engineering

It gives me great pride and joy to welcome you all to the National Level Technical Symposium – TechnothirsT 25-26 scheduled from 08.10.2025 to 10.10.2025.

In an era defined by innovation and rapid change, the true purpose of education goes beyond academic achievement. A college must create opportunities that inspire curiosity, encourage critical thinking, and prepare students to meet global challenges with confidence and competence. Events like TechnothirsT 25-26 provide the perfect platform for students to explore their potential, exchange knowledge, and showcase their talents, thereby shaping themselves into future-ready professionals.

I sincerely commend the students from our institution as well as from other colleges for their enthusiasm, creativity, and commitment to excellence.

On behalf of the organizing team, I extend my heartfelt appreciation to the faculty members for their relentless support and dedication in making TechnothirsT 25-26 a remarkable milestone in our institution's journey.

Mannampandal
06.10.2025

[Dr.S.SELVAMUTHUKUMARAN]

TechnothirsT 25-26

(A National Level Student's Technical Symposium)

TechnothirsT 25-26, the highly anticipated national-level technical symposium, is set to take place from 8th October 2025 – 10th October 2025, at A.V.C. College of Engineering. This event brings together students from diverse fields including IT, CSE, AIDS, ECE, EEE, ICE, MECH, CIVIL, MCA, MBA, and S&H. The symposium offers a dynamic platform for students of engineering and polytechnic institutions to showcase their technical prowess and innovative solutions to real-world challenges.

With a vision to encourage creativity, collaboration, and technical excellence, TechnothirsT 25-26 features a variety of events such as technical presentations, project exhibitions, coding competitions, and quizzes. These events are designed to test participants' skills, knowledge, and ability to think outside the box. In addition to intellectual stimulation, the symposium offers exciting cash prizes for the winners, providing an incentive to push boundaries and excel. Every registered participant will also receive a certificate of participation, acknowledging their effort and involvement in this prestigious event.

The symposium not only aims to foster learning and innovation but also provides a great opportunity for students to network with peers, industry experts, and thought leaders. It serves as a platform for young minds to exchange ideas, build new connections, and explore career opportunities.

TechnothirsT 25-26 is more than just a competition; it is a celebration of the spirit of technology and innovation. Whether you are presenting your project, competing in a quiz, or simply attending to learn and grow, TechnothirsT 25-26 promises to be an event filled with inspiration, learning, and memorable experiences.

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Ph: 04364-227202, Fax: 04364-227299 **www.avccengg.net**

Ref: AVCCE/Staff Cir/2025-26 **Date: 03.09.2025**

CIRCULAR

The following working committee has been formed for conducting **TechnothrisT 25-26** to be held during 08.10.2025 to 10.10.2025 (Wednesday to Friday).

TechnothirstT 25-26 Working Committee

Convener	: Dr. S. Selvamuthukumaran, Vice Principal & Head - CA
Coordinators	: Dr. G. Sridevi, Head-MBA,
	: Dr. R. Kanimozhi, Associate Professor – IT,
	: Dr. S.A.Chithradevi, Associate Professor – EEE.

S.No	Description	Committee
1.	**Poster, Invitation, Certificate Design Printing and Dispatch**	**Dr. J. Sudha, ASSOC. PROF-CSE** **Dr. T. Venkatesan, AP-MCA** Mr. K. Manikandan, AP-IT Mr. S. Suriyaprakash, AP-EEE Mr. S. K. Ayyappan, AP-Mech Mr. P. Yegnanarayanan, AP-Mech Dr. M. JoiceMolini, AP-S&H Mr. J. Arun, AP-CIVIL Ms.B. Bhakyalakshmi – AP-IT Mr. P. Manikandan, AP-CSE Mrs. K. Thamaraiselvi, AP-ECE Mr. U. Arul Prakash, LA-S&H Mr.R.Mohandoss-LA-CSE
2.	**Registration kit**	**Dr.KA.Suriyaprabha – AP-ICE** **Mr.R. Saravanan AP-MECH** Mrs.D.Mahalakshmi AP-IT Mr. G. Ashok kumar, AP-EEE Mr. K. Arunbala, TA-EEE Mr.K.Shanmugam, Welder-Mech
3.	**Reception, Rangoli & Lighting KuthuVilakku Arrangements**	**Dr. K. Keerthi,ASSOC. PROF-MBA** Dr. M. K. Sangeetha, AP-S&H Mrs. S. Gayathri, AP-IT Mrs. C.V.Abirami AP-EEE Ms. G.Kamini AP-EEE Ms. R. M. Nivedha, TA-CSE
4.	**Souvenir Preparation and printing (Message Collection - from Administrator, Director, Principal, Vice Principal cum Convener, HoD)**	**Dr. A. Balaji, ASSOC. PROF-MECH** Dr. C. Jayasri, AP-ECE Mr.S.S.Nivas AP-MECH Dr. R. Renukadevi, AP-MBA Dr. M. Umamaheswari, AP-S&H Dr. A. Suganthi, AP-MCA Mrs. B. Anusuya, AP-S&H Mrs. R. Ramya, AP-ECE Mrs. V. Ezhilarasi, AP-IT Mr. M. Alex, AP-EEE Mrs. M. Vinodhini, AP-ICE Mr. A. Vivekanandhan, AP-CSE Mrs. S. Alamelumangai, AP-CIVIL Mr.M.A.Mohamed AssamAP-AIDS Mr. M. Vijay, TA-IT Mr. N. Muthukumar, LA-MCA Mr. M. Vivekanandhan, OA-S&H
5.	**Cash Prize and Certificate Distribution (I, II and III Prizes)**	**Dr. M. Latha, ASSOC. PROF-EEE** **Dr. V. Padmavathi, ASSOC. PROF-IT** Dr. K. Aruna, AP-IT Ms.R.Valampuranayaki, AP-IT Dr. K. Rajaraman, AP-S&H Dr. M. S. Gayathri, AP-MBA Ms. M. Sushma Sri, TA-IT

6.	**Website Design – TechnothirsT' 25-26**	**Dr. R. Sudha, AP-CSE** Mrs. S. Jeevitha, AP-IT Mrs.M.Saranya AP-CSE
7.	**Badges and Banner Design, Printing and Distribution**	**Dr. S. Rajkumar, AP (Sl.Gr.)-MECH** **Dr. A. Ragavendiran, AP-EEE** Mr. M. Ashok Vel, AP-CSE Dr.A.Sathya AP-S&H Mrs.S.Abiramipriya AP-CSE Mrs.J.Jayadurgalakshmi AP-CSE Ms.A.Priyanka, AP-CIVIL Mr. B. Bharadhan, TA-MCA Mr. S. Natrajan TA-EEE
8.	**Purchase of Chief guest Momentous, Stage Decoration, Stage Management, and PEKAK hall Seating Arrangements**	**Dr. C. Ravikumar, ASSOC. PROF-ICE** Mr. R. Purushothaman, AP-Mech Dr. R. Selvaganapathy, AP-EEE Mr. S. Rameshwaran, AP-CIVIL Mr. K. Balasubramanian, TA-CIVIL Mr. N. Udayasankar, LA-T&P Mr. M. Ganapathisubramanian, LA-ICE Mr. A. Sivasundaram, OA-MCA Mr. M. Venkatraman, LA- ICE Mr. M.Senthil, OA-ECE
9.	**Refreshment & Catering**	**Dr. J. Swaminathan, ASSOC. PROF-MBA** **Dr.K.R.Vinothini, ASSOC. PROF-ECE** Dr.G.Geethalakshmi AP-S&H Mr. K. Ramesh, AP-CIVIL Dr. S. Sathya, AP-S&H Dr. G. Rajeswari, AP-S&H Mr. S. Sivakumar, AP-MCA Ms. M. Ishwarya, AP-CSE Mr. L. Solomon Soosaimanickam, Librarian Mr. S. Karthikeyan, Librarian Mr. R. Chokalingam Librarian Mr. A. Panneer Selvam, Foreman Mr. B. Viswanathan, TA-MECH Mr. S. Sankar, TA-MECH Mr. E.Chandramohan, Mason Mr. S. Somasundaram, TA-EEE Mrs. S. Maheswari, LA-MBA Mr. S. Baskaran,OA-MECH Mrs. A. Rajeswari, OA-CSE Mrs. R. Vinola, UG LIB Ms.Aarthi, LA- EEE Ms.Punitha, LA-ECE Mrs. R.Chitra, LA-IT Mr. Arunkumar. K TA-MBA Ms. Rajasounthari. K – TA-AIDS Ms. Kumaraveni. V – LA- AIDS
10.	**Accommodation, Student Hospitality, VIP Hospitality Boarding and Lodging (Refreshment, Breakfast and Dinner)**	**Mr. S. Bharathiraja, AP-ECE** Mr. J. Madhukarthick, AP-CSE Mrs.T.Keerthana, AP-CSE Mr. G. Vijayakumar, TA-Mech

		Mrs. K. ParimalaRenganayaki – UG LIB Mrs.M.MuthuNanthini, Asst - MBA
11.	**Transport Arrangement**	**Dr. A. HajaMaideen ASSOC. PROF-MECH** Mr. B. Sivakumar, TA-MECH
12.	**Master of Ceremony**	**Dr. K. Krishnamoorthy, ASSOC. PROF- S&H**& Staff Members of the Department of English
13.	**Campus Beautification**	**Dr. P. Ananda Kumar, PD** Dr. R. Subash, AP-S&H Mr. S. Pasupathiraja AP-ECE Mr. M. Sankar, Plumber Mr. S. Asokan, Marker
14.	**Audio, Video & Photo**	**Mr. K. Arulselvan, AP-ICE** Mr. N. Srinivasan AP-MCA Dr. S. Uma,AP-S&H Mr. S. Thillaigovindhan, TA-ECE Mr. N. Bharanitharan LA-IT
15.	**Power Supply**	**Mr. R. Ashokraj** & Power House Staff Members
16.	**Discipline & Decorum**	**Dr. J. Swaminathan,ASSOC. PROF- S&H** and Institutional Discipline Committee Members.
17.	**Media & Press**	**Mr. K. Arulselvan, AP-ICE**

[Dr.P.BALASUBRAMANIAN]

PRINCIPAL

Copy to:

1. All HoDs (MECH/ECE/ICE/IT/CSE/S&H/CIVIL/EEE/AI &DS/MBA/MCA)
2. File

8th – 10th OCTOBER 2025

Department of Artificial Intelligence and Data Science

HOD MESSAGE

Dr. R. KANIMOZHI, M.E., PH.D.,

Professor & Head

Department of AI&DS

As the Head of the Department, I take immense pride in witnessing TechnothirsT 25-26 evolve into a vibrant forum for innovation, creativity, and collaboration. The symposium stands as a beacon for aspiring engineers to explore the power of Artificial Intelligence and Data Science in solving real-world challenges.

This event provides a dynamic platform for students to showcase their analytical thinking, problem-solving capabilities, and technical expertise through diverse events such as Paper Presentation, Model Exhibition, Coding Challenges, and AI-based Innovation Contests. It also bridges the gap between academic learning and practical implementation, empowering students to translate their ideas into impactful solutions.

Such initiatives not only nurture the spirit of research and innovation but also prepare our students to meet future technological demands with confidence and competence. I appreciate the faculty coordinators and student organizers for their dedication and effort in making TechnothirsT 25-26 a remarkable success.

(Dr. R. Kanimozhi)

ABOUT THE DEPARTMENT

The B.Tech Artificial intelligence and data science program at A.V.C. College of Engineering, established in the 2024-2025 academic year with an initial intake of 60 students, has grown significantly .its sustained popularity and impact. Featuring an industry-driven curriculum, the program equips students to face dynamic and emerging technological challenges with confidence.

The department is led by skilled and accomplished faculty committed to excellence in teaching, mentoring, and research support. Equipped with advanced laboratories, students gain practical experience with modern technologies, reinforcing theoretical knowledge through real-world application. Ongoing collaboration with industry enhances students' adaptability, innovation, and professional edge.

The department holds permanent affiliation with Anna University, Chennai, and its students have regularly achieved top positions in university examinations, showcasing a long-standing record of academic distinction.

The Department of Artificial Intelligence and Data Science is dedicated to fostering innovation and creativity through advanced technologies. Guided by highly qualified faculty, the department offers a curriculum that seamlessly integrates strong theoretical foundations with extensive practical exposure. State-of-the-art laboratories provide students with hands-on training in areas such as artificial intelligence, machine learning, big data, and advanced analytics. A research-driven environment encourages students to explore real-world challenges while continuous collaboration with industry leaders keeps them updated with the latest tools and trends.

The department also nurtures critical thinking, problem-solving, and algorithmic skills, while promoting a culture of innovation and entrepreneurship through workshops, hackathons, and projects. With its consistent record of academic excellence, strong placement support, and opportunities for higher studies, the department equips students with the adaptability and lifelong learning mindset required to become global leaders in the fields of AI and Data Science.

TechnothirsT 25-26 COMMITTEE LIST

S.NO	COMMITTEE NAME	ROLES AND RESPONSIBILITIES	STAFF INCHARGE
1	Poster Design	Poster design and get approval from higher authority	Mrs.S.Silambarasi
2	Address Collection	• Collect address of various engineering colleges • Check the address with other departments to avoid repetition	Mrs.S.Silambarasi
3	Paper Presentation	• Announce and invite authors to submit their papers for symposium. Collect and manage paper submissions. • Assign papers to peer reviewers for evaluation • Intimation of selection • Collect camera ready paper • Preparation of Proceedings • Session attendance	1.Mrs.S.Silambarasi 2.Mr. M. A. Mohamed Assam
		Judge	1. Dr.R.Kanimozhi 2. Mr.G.Arulkumar
4	Registration	• Create a registration form • Collect payment	1.Mrs.S.Silambarasi 2.Mrs.K.Rajasounthari

		from participants • Pay the collected payment to the office and get invoice • Distribute the invoice to participants	
5	Event 1-Quiz	• Set up questions • Collect attendance • Organize the event • Collect session attendance • Identify the prize winners	Mrs.S.Silambarasi
6	Event 2	• Set up questions • Collect attendance • Organize the event • Collect session attendance • Identify the prize winners	Mr. M. A. Mohamed Assam
7	Refreshment	• Collect snacks from the hostel and distribute to the participants, student volunteer and staff	Mr.G.Arulkumar Mr. M. A. Mohamed Assam

Robotics in Space Exploration

Mr. Anusuya Gunabalan[1], Mr. Narkuzhali Kannan[2]
II Year AI & DS, MRK Institute of Technology, Kattumannarkoil
[1] anusuyagunabalan@gmail.com, [2] narkuzhalikannan@gmail.com

Abstract

Exploring space presents extreme challenges due to harsh environments and human limitations. Robotics has become a key enabler, allowing precise and safe exploration of planets, moons, and asteroids. Robotic systems—such as rovers, robotic arms, autonomous drones, and AI-driven spacecraft—carry out tasks like surface mapping, sample collection, satellite maintenance, and infrastructure construction. These systems operate effectively in extreme temperatures, radiation, and low-gravity conditions. This paper highlights recent advancements in space robotics, their applications in planetary exploration, and the potential of autonomous robots for future deep space missions, enhancing our understanding of the cosmos while reducing risks.

Real-Time Multilingual Conversational Agents with Generative Models

Mr, S.R. Hemadharshini[1], Mr. I. Tamilselvan[2]
II Year CSE, K.S.K College of engineering and technology, Darasuram
[1] hemadharshini@gmail.com, [2] tamilselvan@gmail.com

Abstract

The construction industry faces major challenges in communication, safety, and efficiency due to multilingual workforces and complex project coordination. Traditional voice assistants and translation tools are limited by latency, lack of contextual understanding, and poor adaptability in noisy environments. This paper proposes the integration of real-time multilingual speech translation with Conversational AI powered by generative models into construction environments. The system leverages speech recognition, neural machine translation, and generative dialogue models to enable seamless communication, improve productivity, and enhance safety across multilingual teams. Keywords—Artificial Intelligence, Construction Technology, Real-Time Speech Translation, Conversational AI, Generative Models, Multilingual Communication.

An AI Chat Application for Emotional Role-Play and Support: Unifying Family, Friends, and Companionship

Mr. J. Srinivasan[1], Ms. R. Janani[2]
III Year AI & DS K.S.K College of engineering and technology, Darasuram
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Abstract

This paper presents அன்புion, a AI chat application engineered to provide comprehensive emotional support and companionship through dynamic role-play. Addressing the pervasive issues of loneliness and the limitations of conventional chatbots, அன்புion distinguishes itself by offering a range of customizable personas, including family members (Father, Mother, Son, Daughter, Brother, Sister) and companion roles (Friend, Boyfriend, Girlfriend). The system incorporates real-time mood detection, empathetic response generation, and seamless persona switching capabilities. A stringent safety framework, encompassing consent checks, multi-layer moderation, and privacy controls, ensures a secure environment. Built on a robust technology stack featuring GPT/LLaMA fine-tuned for emotional intelligence, அன்புion provides continuous emotional support, stress relief, and a highly personalized user experience. This paper details the problem statement, proposed solution, key features, technological architecture, ethical considerations, and future enhancements for this innovative emotional support system.

Virtualized Genetic Algorithm for Load Balancing in Hybrid Clouds

Ms. R. Gnanashri[1], Mr. G. Naveena[2]
III Year AI &DS K.S.K college of engineering and technology, darasuram
[1]Gnanashri@gmail.com, [2]Naveena@gmail.com

Abstract

This report presents an in-depth study on the application of a virtualized genetic algorithm (VGA) for achieving effective load balancing in hybrid cloud environments. The proposed approach demonstrates promising results in terms of both accuracy and computational efficiency, thereby addressing one of the most critical challenges in modern cloud infrastructure—optimizing resource utilization while maintaining service quality. By leveraging virtualization, the algorithm adapts dynamically to fluctuating workloads, reducing the likelihood of bottlenecks and ensuring higher levels of scalability and performance. In addition to highlighting the algorithm's effectiveness, the report identifies several key directions for future research. These include extending the framework to federated cloud systems where multiple cloud providers collaborate, integrating machine learning models to enhance dynamic decision-making and predictive optimization, and systematically addressing security and privacy challenges that arise in multi-tenant and distributed environments. Collectively, these avenues aim to strengthen the reliability, adaptability, and trustworthiness of cloud-based systems, thereby contributing to the evolution of intelligent, resilient, and secure cloud infrastructures.

Ethics in machine learning

Ms. Harini K[1] , Ms. Poornima T[2]
II Year AI & DS University college of engineering Thirukuvalai, Nagapatinam
[1]harini@gmail.com, [2]poornima@gmail.com

Abstract

Ethics in machine learning is a critical consideration in the development and deployment of AI systems, as these technologies increasingly influence many aspects of human life, including healthcare, education, finance, and law enforcement. Ethical concerns arise because machine learning models often learn from historical data, which can contain biases based on race, gender, or socio-economic status, potentially leading to unfair or discriminatory outcomes. Transparency and explainability are also essential, as complex models like deep neural networks can act as "black boxes," making it difficult to understand how decisions are made. Protecting user privacy and securing sensitive data are key responsibilities, especially given the vast amounts of personal information that ML systems require. Accountability is another major ethical issue, as it must be clear who is responsible when AI systems make harmful or incorrect decisions. Additionally, the social impact of machine learning must be considered, including potential job displacement, misuse in surveillance, or the spread of misinformation. Ultimately, ethics in machine learning ensures that these technologies are developed and applied in a way that is fair, responsible, and beneficial to society, keeping humans at the canter of decision-making and safeguarding human dignity.

Enhancing Block chain Technology: A Deep Framework For Voting System

Ms. Keerthana.E[1], Ms. Hemapriya. U. S[2]
II Year CSE University college of engineering Thirukuvalai, Nagapatinam
[1]Keerthana@gmail.com, [2]hemapriya@gmail.com

Abstract

Block chain technology, a decentralized and tamper-resistant digital ledger, has the potential to revolutionize voting systems by providing enhanced security, transparency, and trust. Traditional voting systems often face challenges such as vote tampering, fraud, lack of transparency, and administrative inefficiencies. Block chain addresses these challenges by storing each vote as an immutable record on a distributed ledger, which is cryptographically secured and verifiable by all participants. This ensures that votes cannot be altered or deleted once recorded, significantly reducing the risk of manipulation. Smart contracts, which are self-executing programs on the block chain, can automate critical processes such as vote counting, eligibility verification, and enforcement of election rules. This reduces human intervention, minimizes errors, and enables near real-time tallying of results. Furthermore, block chain enables secure remote voting, increasing accessibility for voters who may face geographical or physical constraints, while preserving anonymity and privacy through advanced cryptographic techniques. Despite its potential, block chain based voting systems face challenges related to scalability, energy consumption, regulatory acceptance, and the technological literacy of voters. Ensuring the integrity of the voting process also requires careful system design to prevent attacks such as Sybil attacks or network-based manipulations. Pilot implementations in countries experimenting with digital voting demonstrate that block chain can enhance trust, transparency, and efficiency in electoral processes, making it a viable solution for the future of democratic governance.

Enhancing Machine Learning: A Deep Learning Framework for Intelligent Data Processing Systems

Ms. B.Priyanka[1], Ms. M.Priyadharshini[2]
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Abstract

Our framework considers various perspectives on Deep Learning within Machine Learning. This paper examines fundamental aspects of Enhancing Machine Learning: A Deep Learning Framework for Intelligent Data Processing Systems. We found that Enhancing Machine Learning: A Deep Learning Framework for Intelligent Data Processing Systems presents unique challenges. What's more, we've integrated theoretical constructs that form the foundation of enhancing machine learning: a deep learning framework for intelligent data processing systems. Integration with complementary frameworks seems particularly promising, enhancing machine learning: a deep learning framework for intelligent data processing systems' significance lies in its transformative potential. What's more, developing more comprehensive models will better capture phenomena in Machine Learning. We believe future directions could include expanding to emerging domains (especially Natural Language Processing and Computer Vision). Resource requirements often exceed what's practical for many research teams. Current approaches face several challenges—I've seen this repeatedly in my own work. The lack of standardized frameworks has been frustrating for many researchers. We've observed inconsistent performance across different contexts. Limited generalizability remains a substantial hurdle (particularly in real-world scenarios). We propose a novel approach—DLP-SYS (Deep Learning Processing System)—to address these limitations. I'm particularly proud of how our solution handles complex input requirements.

Internet Of Things: Connecting Devices For Intelligent Decisions

Mr. Leela Benist. V[1], Mr. Sangeerthana P[2]
II Year CSE Government College of Engineering, Srirangam
[1]leelabenist@gmail.com, [2]sangeerthana@gmail.com

Abstract

The Internet of Things (IoT) connects devices and sensors to the internet to collect and share data. It helps make life smarter by enabling automation in areas like healthcare, agriculture, and transportation. Traditional systems are slow and lack real-time monitoring, which leads to delays, wasted resources, and human errors. IoT devices use sensors to gather data, send it through networks, and analyze it in the cloud. The processed data helps devices take automatic and intelligent actions. IoT improves efficiency, saves time, and solves real-world problems like traffic congestion and energy wastage.

Ethical issues AI and machine learning

M.Sivaraman[1] , M.Saravanan[2]
II Year AI & DS SINCET College, nagapattinam
sivaraman@gmail.com[1] , Saravanan@gmail.com[2]

Abstract

Artificial Intelligence (AI) and Machine Learning (ML) are revolutionizing industries with data-driven decision-making and automation. However, their rapid adoption raises critical ethical concerns that must be addressed responsibly. Key challenges include algorithmic bias, lack of transparency, and threats to data privacy. The accountability of automated systems and potential job displacement further complicate their societal impact. Ethical dilemmas also emerge in sensitive areas like healthcare, surveillance, and criminal justice. This paper highlights these issues and emphasizes the need for fairness, explainability, and global ethical guidelines.

Exploring the Synergy of Internet of Things and Artificial Intelligence

Ms. AbinayaV[1], Ms. Akshaya A[2]
II Year AI & DS MRK institute of technology
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Abstract

The integration of Internet of Things (IoT) and Artificial Intelligence (AI) is driving transformative changes across multiple industries, enhancing the capabilities of both technologies. IoT refers to the network of interconnected physical devices that collect and exchange data, while AI involves the development of systems capable of performing tasks that normally require human intelligence, such as learning, decision-making, and problem-solving. When combined, IoT devices provide rich, real-time data that AI algorithms can process, analyze, and make decisions upon, creating an intelligent ecosystem where devices not only connect but also "think" and adapt. This synergy facilitates advancements in a variety of fields, including smart cities, healthcare, manufacturing, and agriculture. For instance, in smart homes, IoT devices can collect data on energy usage, and AI can optimize energy consumption based on user preferences and external conditions. In healthcare, AI-driven analytics of IoT-generated patient data can lead to predictive diagnostics and personalized treatments. Furthermore, the automation of tasks, predictive maintenance in industries, and optimization of logistics are all accelerated through this convergence.

Advancements in Machine Learning: Techniques, Applications, and Future Directions

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Abstract

Machine Learning (ML) has emerged as a cornerstone of modern technology, enabling systems to learn from data, identify patterns, and make decisions with minimal human intervention. This paper presents a comprehensive overview of recent advancements in machine learning, focusing on novel techniques, real-world applications, and potential future directions. It explores the evolution of ML algorithms, including deep learning, reinforcement learning, transfer learning, and federated learning, highlighting how these approaches have significantly improved performance in complex problem domains. Finally, it outlines future research directions, including the integration of ML with emerging technologies like quantum computing, edge computing, and explainable AI. By examining current trends and anticipating future developments, this paper provides valuable insights into the transformative impact of machine learning and its continuing evolution.

Overview of Blockchain Technology

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Abstract

Blockchain technology has emerged as a groundbreaking innovation with the potential to transform industries by enabling decentralized, secure, and transparent data management. Originally developed as the foundational technology for cryptocurrencies like Bitcoin, blockchain has since evolved into a versatile solution for a wide range of applications beyond digital currencies. This paper provides a comprehensive overview of blockchain technology, outlining its fundamental structure, key components, and working principles. Core concepts such as distributed ledgers, consensus mechanisms, cryptographic hashing, and smart contracts are discussed to explain how blockchain ensures data integrity, immutability, and trust in a trustless environment.

Overview of Internet of Things (IoT)

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Abstract

The Internet of Things (IoT) represents a rapidly growing technological paradigm that connects everyday physical objects to the internet, enabling them to collect, exchange, and act on data. This interconnected network of devices — ranging from sensors and wearables to smart appliances and industrial machines — is revolutionizing how data is gathered and used in real-time across various sectors. This paper provides an overview of the fundamental concepts, architecture, and components of IoT, including sensors, actuators, connectivity protocols, data processing units, and cloud integration. It also explores the layered structure of IoT systems, comprising perception, network, and application layers, and discusses how these elements work together to enable seamless device communication and automation. Key applications in areas such as smart homes, healthcare, agriculture, transportation, and industrial automation are examined to illustrate the transformative impact of IoT on efficiency, decision-making, and user experiences. The paper also addresses major challenges facing IoT implementation, including data security, privacy concerns, interoperability, and the need for scalable infrastructure.

Blockchain Technology

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Abstract

Blockchain technology is a decentralized and distributed digital ledger system that enables secure, transparent, and tamper-proof record-keeping across a network of computers. Initially introduced as the underlying technology behind cryptocurrencies like Bitcoin, blockchain has evolved into a powerful tool with wide-ranging applications in finance, supply chain, healthcare, identity management, and beyond. This paper presents an in-depth exploration of blockchain technology, focusing on its core components, including blocks, cryptographic hashing, consensus mechanisms, and smart contracts. The decentralized nature of blockchain eliminates the need for intermediaries, reduces fraud, and increases trust among participants in a network.

Data Science: Concepts, Applications & Futures

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Abstract

Data is increasing every second, and using it properly is very important today, Data Science is the study of collecting, cleaning, analysing, and using data to make better decisions. It combines computer science, statistics, and logical thinking. Data Science uses tools like Python, R, TensorFlow, Tableau and PowerBI. It is applied in many areas such as predicting diseases in healthcare, finding fraud in finance, giving product suggestions in e-commerce, and even running self-driving cars. Machine Learning is the main part of Data Science, where computers learn patterns and improve automatically, Our presentation explains the basic concepts, applications, and future of Data Science, showing how it is transforming industries and impacting the way we live and work in the modern world.

Artificial Intelligence: Foundations, Techniques, and Emerging Trends

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Abstract

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines programmed to think, learn, and perform tasks autonomously. It encompasses a broad range of techniques including machine learning, natural language processing, computer vision, and robotics. AI has become a pivotal technology driving innovation across numerous fields by enabling systems to analyze vast amounts of data, recognize patterns, make decisions, and adapt over time. The paper also addresses critical challenges such as ethical concerns, data privacy, algorithmic bias, and the need for transparency and explainability in AI systems. Future directions in AI research, including the development of general AI, AI governance frameworks, and integration with emerging technologies, are discussed. Overall, this paper aims to provide a foundational understanding of artificial intelligence, its transformative impact, and the ongoing efforts to harness its potential responsibly and effectively.

NFTs in Blockchain Technology

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Abstract

Non-Fungible Tokens (NFTs) have emerged as a revolutionary application within blockchain technology, redefining concepts of ownership, provenance, and digital asset management. Unlike cryptocurrencies such as Bitcoin or Ethereum, which are fungible and interchangeable, NFTs represent unique digital assets verified on a blockchain, ensuring authenticity and scarcity. This paper explores the underlying principles of NFTs, including their creation, storage, and transfer on blockchain platforms. It highlights the role of smart contracts in automating and securing NFT transactions, and examines popular standards such as ERC-721 and ERC-1155. The study also investigates diverse use cases of NFTs across digital art, gaming, collectibles, music, and virtual real estate, illustrating their transformative impact on the creative economy and digital marketplaces.By providing a comprehensive overview, this paper aims to shed light on how NFTs are reshaping the digital landscape and the potential they hold for innovation in asset ownership and exchange.

Cyber Security Using Ai Tools

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Abstract

In today's digital era, cybersecurity has become a critical necessity. With the rapid growth of internet usage, cloud computing, IoT devices, and online services, the risk of cyber threats such as hacking, data breaches, malware, and phishing has increased significantly. Cybersecurity refers to the practice of protecting systems, networks, and data from digital attacks. It ensures the confidentiality, integrity, and availability of information. Technologies like Artificial Intelligence and Blockchain are now being integrated into cybersecurity to enhance threat detection and response. Cybersecurity is essential not only for organizations but also for individuals—especially students—to stay safe online. This paper explores the importance, functions, tools, and real-world applications of cybersecurity in modern life.

Department of Civil Engineering

HOD MESSAGE

Dr. R. JAYASANKAR, M.E., Ph.D

Professor & Head

Department of Civil Engineering

It is with great pleasure and enthusiasm that our Civil Engineering Department announces the **National-Level Student Technical Symposium, 'Technothirst 25-26'**, to be held at our college on **9th October 2025**. This symposium celebrates the limitless possibilities and innovations in the field of civil engineering, bringing together students to engage in inspiring discussions and knowledge exchange.

Our profession plays a pivotal role in shaping **sustainable, resilient, and innovative infrastructure** for the future. It is our collective responsibility to drive advancements in technology, design, and construction practices that positively impact communities, economies, and the environment.

This symposium provides an excellent opportunity to **gain insights into emerging trends, explore cutting-edge research, and engage in meaningful conversations** with peers and professionals. I encourage all participants to actively participate in the sessions, discussions, and networking opportunities offered during this event.

I extend my heartfelt thanks to all **speakers, organizers, and participants** for contributing to the success of this event. Your efforts and dedication to civil engineering are invaluable, and I look forward to witnessing the innovative ideas and impactful discussions that will emerge from this gathering.

Let us work together to **"blossom into a cynosure of technological innovations."**

(Dr.R.Jayasankar)

ABOUT THE DEPARTMENT

The **Department of Civil Engineering** was established in **2011** and currently offers an undergraduate **B.E. in Civil Engineering** with an intake of **30 students**. The curriculum covers key areas including **Highway Engineering, Surveying, Concrete Technology, Structural Engineering, Hydraulics and Water Resources Engineering, Construction Materials and Practices, Environmental Engineering, and Transportation Engineering**.

The department is equipped with **state-of-the-art laboratories** to support academic and research activities. These include **Concrete and Highway Engineering Lab, Surveying Lab, Environmental Engineering Lab, Soil Mechanics Lab, Hydraulic Engineering Lab, Strength of Materials Lab, CAD Lab, ICT Academy Centre of Excellence for Design powered by Autodesk, Construction Practices Lab, and Project & Consultancy Lab**.

Our **highly qualified faculty and dedicated staff** provide guidance in a modern infrastructure environment, including smart classrooms, spacious laboratories, and advanced machinery. Students are encouraged to participate in **co-curricular and extra-curricular activities** to develop leadership, teamwork, and problem-solving skills.

The department actively promotes **industry collaboration** through MoUs with leading organizations such as **Land Coordinates Technology, E-Star Max Technologies**, and others. Initiatives like **guest lectures, seminars, webinars, industrial and site visits, value-added courses, and online learning platforms** ensure students stay updated on emerging technologies in Civil Engineering, including **sustainable construction, smart cities, green building practices, BIM, GIS, and 3D printing**.

Our Civil Engineering program is designed to produce **engineering leaders** equipped with strong fundamentals and flexible learning pathways. Graduates are prepared to tackle challenging projects as specialists or pursue broader civil engineering roles. Many of our alumni hold **prestigious positions in academia, industry, and government** across the globe.

TechnothirsT'25-26 COMMITTEE LIST

The committees listed below were established to ensure the successful execution of the technical symposium at the national level on October 9, 2025.

Chair Person : Dr.P.Balasubramaniyan, Principal
Coordinator : Dr.G.Sridevi, Professor & Head
Staff Coordinator :Mr.S.Harikrishnan, Asst. Prof.
Date :9th October, 2025

Organizing Members

Staff In Charge	Student Co Ordinator	Year
Mr.S.Harikrishnan	D. Subatheeswaran	IV
	C. Sanajai	IV

Rangoli Committee

Staff In Charge	Student Co Ordinator	Class
Mrs.S.Alarmelumangai	A.Farhana	II
	B. Kalaiselvi	II
	J. Jayasri	II
	K.Latchumi Prabha	II
	K.Aswathy	III

Souvenir Editing Committee

Staff In Charge	Student Co Ordinator	Class
Mrs.S.Alarmelumangai	D. Subatheeswaran	IV
	C. Sanajai	IV

Quiz Committee

Staff In Charge	Student Co Ordinator	Class
Mr.K.Ramesh	B.Farhana	II
	E.Sugavanishwaran	III
	S.Mithran	III
	K.Aswathy	III

Reception Committee

Staff In Charge	Student Co Ordinator	Class
Mr.S.Harikrishnan	B. Kalaiselvi	II
	J. Jayasri	II
	K.Latchumi Prabha	II
	K.Aswathy	III

Registration and Feedback Committee

Staff In Charge	Student Co Ordinator	Class
Mr.S.Harikrishnan, Mr.J.Arun	B. Kalaiselvi	II
	K.Latchumi Prabha	II
	R.Thangadurai	IV
	M.Gowtham	IV

Prize Distribution Committee

Staff In Charge	Student Co Ordinator	Class
Mr.A.Priyanka	S. Nitheesh	II
	B. Farhana	II
	V.VimalRaj	III
	R.Thangadurai	IV

Paper Presentation Committee

Staff In Charge	Student Co Ordinator	Class
Mr.J.Arun	B. Farhana	II
	J. Jayasri	II
	S. Nitheesh	II
	C. Sanajai	IV

Accommodation Committee

Staff In Charge	Student Co Ordinator	Class
Mr.S.Harikrishnan,	R.Ashok Kumar	III
	R.Narayanan	III

Connections Committee

Staff In Charge	Student Co Ordinator	Class
MrS.Rameshwaran	K. Kishore	II
	K. Sasikumar	III
	A.Ajay	IV

Discipline Committee

Staff In Charge
Mr.K.Ramesh, Mrs.S.Alarmelumangai, Mr.S.Rameshwaran, Mr.S.Harikrishnan.

Decoration Committee

Staff In Charge	Student Co Ordinator	Class
Mr.J.Arun	C. Sanajai	IV
	M.Gowtham	IV
	E.Srikanth	III
	R. Ranganathan	II

Refreshment Committee (Catering)

Staff In Charge	Student Co Ordinator	Class
Mr.K.Ramesh	R.Harish	IV
	S.Ragul	IV
	R.Vetrivelsozhan	IV
	R.Narayanan	III
	S.Mithran	III
	R.Ashokkumar	III

Department Co ordinator
Mr.S.Harikrishnan

HOD
Dr.R.Jayasankar

Eco-Bricks: A Sustainable Solution to Plastic Waste

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Abstract

Plastic waste has become a major environmental challenge globally, contributing to land, water, and air pollution. Traditional waste management systems often fail to effectively handle non-recyclable plastic materials, leading to accumulation in landfills and natural habitats. Eco-bricks offer an innovative and sustainable solution to this problem. An eco-brick is a plastic bottle tightly packed with clean, dry, and non-biodegradable plastic waste. These bricks can be used as low-cost, durable building materials for constructing benches, garden paths, furniture, and even entire buildings. This project explores the concept of eco-bricks as a practical method of reducing plastic waste and promoting sustainable construction.

Environment and Energy: Towards a Sustainable Future

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Abstract

The interdependence between environment and energy plays a crucial role in shaping global development. The increasing reliance on fossil fuels has led to environmental degradation, climate change, and energy crises. This paper explores the global energy scenario, associate environmental issues, conventional and non-conventional energy sources, and sustainable solutions for a cleaner and secure future. Environment refers to the natural surroundings that sustain life, while energy is the driving force for development. A major challenge today is balancing growing energy demand with environmental this paper explores the global energy scenario, associated environmental issues, conventional and non-conventional energy sources protection.

Biomass as a Renewable Energy Source

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Abstract

Biomass is one of the most promising renewable energy resources that can help reduce dependence on fossil fuels, mitigate greenhouse gas emissions, and promote sustainable waste management. This paper presents an overview of biomass resources, conversion technologies, advantages, disadvantages, and global case studies demonstrating its potential for electricity generation, biofuels, and industrial applications. Biomass refers to organic matter derived from plants, animals, and microorganisms that can be used as a source of energy. It is renewable, widely available, and considered an eco-friendly alternative to fossil fuels

Driver Drowsiness Detection Using OpenCV

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Abstract

Drowsy driving is a major cause of road accidents worldwide. To address this issue, we propose a real-time Driver Drowsiness Detection System using OpenCV and Python. The system captures live video through a webcam, detects the driver's face and eyes using facial landmarks, and calculates the Eye Aspect Ratio (EAR) to monitor eye closure. If the eyes remain closed beyond a set threshold, the system immediately triggers an audible alarm to alert the driver. This solution is cost-effective, non-intrusive, and real-time, requiring only a camera and software. The system can be extended to include yawn detection and head tilt recognition, and integrated with IoT-enabled vehicles for enhanced safety. Our approach demonstrates how computer vision can reduce accidents caused by fatigue and improve road safety.

Smart Transportation through Dynamic Space Utilization Prediction (DSUP) and Last-Mile Parking Accessibility (LMP)

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Abstract

Parking management has become one of the most significant challenges in modern urban mobility. Limited availability of parking spaces, inefficient utilization of existing lots, and lack of real-time accessibility information contribute to congestion and user frustration. This paper presents a Smart Parking Application that leverages dynamic space utilization prediction and real-time navigation support for last-mile parking accessibility. The proposed solution integrates predictive algorithms, real-time data analysis, and user-centered functionalities such as pre-booking, cost calculation, and walking distance estimation. A prototype implementation is demonstrated through the EasyPark application, which showcases the feasibility of the model in smart transportation systems.

Integrated Seawater Desalination and Green Hydrogen Production

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Abstract

The growing demand for clean and sustainable energy has positioned green hydrogen as a key player in the global energy transition. Traditional green hydrogen production relies on purified water electrolysis, which faces limitations due to freshwater scarcity, especially in coastal regions. This paper investigates an integrated approach combining seawater desalination and green hydrogen production, utilizing abundant seawater resources while ensuring environmental sustainability. The process employs renewable energy-powered desalination to produce purified water, subsequently used in electrolysis to generate hydrogen without harmful emissions.. By integrating seawater treatment with renewable-powered electrolysis, this approach offers a promising pathway for sustainable hydrogen generation, supporting decarbonization, energy security, and net-zero emission goals.

Recent Advances In Composite Materials

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Abstract

Composite materials have emerged as one of the most significant innovations in modern science and engineering due to their ability to combine the best properties of different materials. Recent advances in composite technology have focused on developing lightweight, high-strength, durable, and multifunctional materials that address the growing demands of aerospace, automotive, biomedical, construction, and energy industries. Nanocomposites, bio-composites, smart composites, and fiber reinforced polymers are at the forefront of research, offering superior mechanical, thermal, and chemical properties compared to conventional materials. These advancements not only enhance performance but also contribute to sustainability by enabling eco-friendly and recyclable materials. This presentation highlights the latest trends, applications, and future potential of composite materials, emphasizing their role in shaping next-generation technologies.

Smart Transportation And Digital Technology

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Abstract

Smart transportation, powered by digital technologies, is transforming the way people and goods move across cities and regions. The integration of advanced technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), Big Data analytics, cloud computing, and 5G communication has enabled intelligent traffic management, real-time monitoring, and improved mobility solutions. These innovations contribute to reducing congestion, enhancing road safety, lowering environmental impacts, and optimizing resource utilization. Smart transportation systems include intelligent traffic lights, connected and autonomous vehicles, smart parking, and integrated public transit platforms that provide users with seamless travel experiences. Digital technologies also enable predictive maintenance, efficient logistics management, and sustainable mobility through the use of electric and shared vehicles.

Bamboo Plastic Composite Road Panel

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Abstract

This idea proposes a low-cost transportation solution for the North-East Region (NER) of India by developing modular, prefabricated Bamboo-Plastic Composite (BPC) road panels. The innovation addresses critical challenges of connectivity in remote, landslide-prone terrains while simultaneously tackling the issue of plastic waste management. The composite integrates bamboo reinforcement for tensile strength with plastic waste as a waterproof binder, resulting in a durable, lightweight, and eco-friendly material. The modular "Lego-like" design ensures rapid installation, easy maintenance, and localized manufacturing, reducing both cost and construction time.

Smart Transportation And Digital Technology

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Abstract

Smart transportation is an emerging approach that integrate advanced digital technologies to improve the efficiency safety sustainability of modern transport system by leveraging tools such as IOT,AI , Big data analysis 5g connectivity and autonomous vehicles smart transportation enable real time monitoring, intelligent decision making and seamless mobility solutions. Digital technologies support traffic management minimise fuel conception and enhance user experience through smart navigation and predictive analysis.

Advanced Steel and Structural Application in Construction

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Abstract

Steel has become an essential material in modern construction due to its strength, versatility, and sustainability. With rapid technological advancements, the use of advanced steel and structural systems has transformed steel and structural systems has transformed the way buildings, bridges, and infrastructures are designed and executed. This paper highlights the significance of advanced steel materials such as High Strength Low Alloy (HSLA) steel, weathering steel, stainless steel, and composite structures, which offer superior strength-to-weight ratios, corrosion resistance, and longer life spans. The integration of Building Information Modeling (BIM), computer-aided design, and robotic fabrication has enabled precise, efficient, and eco-friendly construction processes. Furthermore, innovative concepts such as space frames, tensegrity structures, and smart steel systems with embedded sensors have enhanced both the performance and aesthetics of modern structures.

Recent Advances In Composites.

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Abstract

Composite materials have witnessed remarkable progress in recent years, driven by the demand for high-performance, multifunctional, and sustainable materials. This paper reviews the recent advancements in composite materials, with a particular emphasis on improvements in mechanical properties, durability, and functional versatility. One major area of development has been the introduction of enhanced fiber reinforcement techniques, which significantly improve strength, toughness, and fatigue resistance. These improvements are especially valuable in structural composites used for aerospace, automotive, and civil engineering applications, as well as in dental composites where long-term durability and biocompatibility are critical. Another important innovation is the incorporation of antimicrobial agents, such as silver nano particles and quaternary ammonium compounds, into composite matrices. These functional additives not only inhibit microbial growth but also enhance biocompatibility, opening new opportunities in medical, dental, and packaging industries. In addition, recent studies highlight the importance of filler–matrix interactions, which directly influence mechanical and thermal performance.

MAKING USE OF BAMBOO IN CONSTRUCTION

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Abstract

Bamboo, a rapidly renewable resources, is increasingly recognised as sustainable and versatile material for construction. Bamboo is eco-friendliness, strength and durability. It is one of the unique properties and low cost and then it is a alternative to traditional materials like steel and concrete. Bamboo possesses high tensile and compressive strength, making it suitable for various structural applications beams,columns,and walls. It's flexibility allows for easy bending and shaping, enabling creative and complex architectural design.

Smart Transportation And Digital Technology

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Abstract

Smart transportation is the integration of digital technology, iot, and intelligent systems to improve the efficiency, safety, and sustainability of transportation. Reduces traffic congestion Minimizes road accidents Lowers environmental pollution Improves public transport efficiency Supports connected and autonomous vehicles Iot-enabled sensors for traffic & road monitoring Gps & gis for vehicle tracking Ai-powered traffic signal control Smart helmets, connected vehicles, and mobile apps These improvements are especially valuable in structural composites used for aerospace, automotive, and civil engineering applications, as well as in dental composites where long-term durability and biocompatibility are critical. Another important innovation is the incorporation of antimicrobial agents

Recent Advances in Composite Materials

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Abstract

Composite materials have established themselves as essential components in the design of advanced technologies, thanks to their outstanding properties such as high strength-to-weight ratio, excellent corrosion resistance, and remarkable thermal stability. According to recent studies, the global market for composite materials reached $95.6 billion in 2024, with annual growth projections of 7.8% through 2030, driven mainly by demand for lightweight and durable solutions in key sectors.These materials, consisting of a matrix and a reinforcement, have undergone significant evolution with advances that make them indispensable in multiple industries, particularly in demanding industrial applications.

Strength Behaviour On Concrete With Partial Replacement Of Building Demolition Waste For Both Fine Aggregate And Coarse Aggregate.

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Abstract

In this paper we made an attempt on utilization of building waste as a partial replacement of fine aggregate in the concrete. As construction works are increasing at faster rate, the consumption of naturally available sand is more. The fine aggregate which we use for construction is available from natural rivers and streams. Use of large amounts of the fine aggregate affects the environment. Preventing the depletion of natural resources has become a challenge to the scientist and engineer. It is very difficult to dispose which may cause land pollution. In order to avoid the problem of dumping and disposal it is used as a coarse aggregate in the production of concrete. Due to demand of coarse aggregate and also process and production procedure and transportation is become very difficult and costly.

PARTIAL DESALINATION OF SEAWATER USING MONTMORILLONITE CLAY

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Abstract

Water covers 70% of our planet, and so it gives us a thought that it will always be more than enough. However, freshwater the stuff we drink, bathe in, irrigate our farm fields with is incredibly rare. Only 3% of the world's total water is fresh water, and two-thirds of the total is were as frozen glaciers or otherwise unavailable for our use. So, nearly 1.1 billion people worldwide lack access to water. Climate change is altering patterns of weather and water around the world, causing shortages and droughts in some areas and floods in others.

Department of Computer Science Engineering

HOD MESSAGE

Dr.S.PADMAPRIYA, M.E., Ph.D

Professor & Head

Department of CSE

It is my great pleasure to welcome all participants, guests, and organizers to this prestigious National Level Technical Symposium. Such events serve as a vibrant forum for young minds to showcase their innovative ideas, exchange knowledge, and collaborate across diverse fields of technology.

The symposium is more than just a competition; it is a celebration of knowledge and a catalyst for inspiration. It encourages participants to push the boundaries of their imagination, embrace interdisciplinary approaches, and develop solutions that can positively impact society.

My young students are probably stepping into the global world that is more challenging. Higher education has the responsibility of offering not just knowledge but the value based knowledge so that our integrity will help us to hold our head high while we accomplish our task.

I take this opportunity to sincerely appreciate the tireless efforts of the organizing committee, faculty members, and student volunteers whose dedication has made this symposium possible. I also extend my heartfelt wishes to all the participants—may your enthusiasm, curiosity, and passion for knowledge guide you to scale greater heights of success.

I am confident that this symposium will remain a memorable and enriching experience for every participant, leaving behind valuable learning and inspiring moments to cherish.

(Dr.S.Padmapriya)

ABOUT THE DEPARTMENT

- Department of Computer Science & Engineering at AVCCE has remained true to the vision onwhich it was founded by developing a distinct style and method. Technology changes rapidly, especially in the field of computing.
- Department of Computer Science and Engineering (BE-CSE) was established in the year 1996. M.E(CSE) started in the year 2013.
- Permanent affiliation from Anna university, Chennai. Accredited by **NBA** for 3 years (2025 to 2028)
- Promoting Student centric Learning. Superior teamwork among faculty and students.
- Periodically conducts various innovative activities like Webinars, Guest lectures, Competitions and Workshops for the benefit of students to supplement their curriculum.
- Encourage the students to update coding skills and other technical skills by doing various courses in **NPTEL, IIT Bombay Spoken tutorial** and various **value added courses** conducted by the department.The department has produced 53 university rank holders so far, including 27 at the undergraduate level and 26 at the postgraduate level.
- Innovative project proposals are submitted by the students for **TamilNadu State Council for Science and Technology(TNSCST)**, **TNCPL, Niral Thiruvizha**,**Smart India Hackathon** every year and fetched the project funds by which they can improve their coding skills.
- Research findings of UG and PG projects are published in National /International journals / conferences.Received grant of **Rs.14,32,000** under **AICTE –Research Promotion Scheme.**
- Students are continuously selected for grand finals in **Smart India Hackathon-National level Coding contest** since 2017. In the year 2020, one of the team won the contest and received **1 Lakh Cash Prize.**
- Our students participated in the **grand finals** of TamilNadu coders Premier League **(TNCPL) -State level Hackathon** at MIT, Chennai.Also our students participated in the finals of **Niral Thiruvizha-State level Hackathon** for Final year students at BIT campus, Trichy.
- Students Participated in Tamil Nadu Centre of Excellence for Advanced Manufacturing (**TANCAM**) - Hackathon for Women in Science and Engineering and won **Rs.10000 cash award**.Also participated in Tamil Nadu Smart and Advanced Manufacturing (**TANSAM**) Hackathon and won **Rs.20,000 cash award.**
- Students have participated in various intercollegiate co curricular and extracurricular activities and received championship awards. Also they are encouraged to participate in NCC, NSS, YRC, RRC and other activities.
- Training and placement activities are in routine practice through placement cell. Alumni interactions and support are continuously offered. Different companies are invited to recruit our eligible students. Lot of training programme and online tests are conducted.
- Every year Students are undergoing internships at various companies. Proud that our students got placement in Tier 1 companies such as Amazon, Infosys, CTS, TCS, WIPRO, HCL, Capgemini, COMcast, Chargebee Technologies, Clear Touch and other esteemed companies such as Unipro Software Pte Ltd., Alphind Software Solutions, Wilco Source.

TechnothirsT25-26 COMMITTEE LIST

Name of the Committee	Name of the Staff	Name of the Students	Year & Branch
POSTER DESIGN	Mr. P. Manikandan, Assistant Professor	-	-
SOUVENIR PREPARATION	Dr. R.Sudha, Assistant Professor Mr.A.Vivekananthan Assistant Professor	A.Sivagayathri C.Roshith	III CSE-B
STAGE, SEATING & DECORATION ARRANGEMENTS	Mr.M.Ashokvel, Assistant Professor Mr.J.MadhuKarthick, Assistant Professor Mrs. M. Saranya, 1 Assistant Professor Mrs.J.Jayadurgalakshmi, Assistant Professor Mr.R. Mohan Doss, Lab Assistant Mrs.A.Rajeswari, Office Assistant	D. Bharath kumar J. G. Sumit Balan T. Tamilarasan S. Abinesh S. Akilan R. Akash	IV CSE
REGISTRATION & RECEPTION	Mrs. M.Kavitha, Assistant Professor Mrs. T. Keerthana, Assistant Professor Mrs.Abiramapriya, Assistant Professor Ms.M.Ishwarya, Assistant Professor Mrs.R.Abirami, Technical Assistant	N. Dhara B. Dharshini R. Gopika M. Janani V. Jayakiruba G. Kalaivani P. Kavipriya J. Mahima S. Monika J. Rajeswari	III CSE
CERTIFICATE COMMITTEE	Ms.M.Ishwarya, Assistant Professor Mrs. T. Keerthana, Assistant Professor Mrs. M. Saranya, Assistant Professor Mrs. Abiramapriya, Assistant Professor Mr. P. Manikandan, Assistant Professor Ms.R.M.Nivetha, Technical Assistant	M.Sushmitha Sharan P. Harini N. Karthiga N. Kiruthika R. Abarna J. Rajeswari S. Mangaiyarkarasi	II CSE –'B' II CSE - 'A' II CSE - 'A' II CSE - 'A' II CSE - 'A' III CSE II CSE - 'A'
HOSPITALITY, LUNCH & REFRESHMENTS	Mr.M.Ashokvel Assistant Professor, Mr. A. Arunpandiyan Assistant Professor Mr. J. Madhu Karthick Assistant Professor Mrs. M.Saranya Assistant Professor	P. Dhasumitha A.B.Manikandan K. Sujitha G. Thamizhanban S. Sagasravadhana I. Gopikrishna S. Venkatesh	II CSE & III CSE

	Mr. P. Manikandan, Assistant Professor Mr.R. Mohan Doss Lab Assistant Mrs.A.Rajeswari , Lab Assistant	R. Swedha M. Vaishnavi S. Ajithkumar	
REPORT PREPARATION & BILL SETTLEMENT	Mrs. M.Kavitha Assistant Professor Mr.Arunpandian Assistant Professor	M. Balakumaran K. Swathilakshmi	III CSE
PAPER PRESENTATION	Dr. J.Sudha Associate Professor Dr. R.Sudha Assistant Professor J.Madhu Karthick, Ms.R.Abiramapriya, Assistant Professor Mrs.J.Jayadurgalakshmi, Assistant Professor Ms.M.Nivetha Technical Assistant	V. Aravind Malavan M. Balakumaran S. Harish J. Rajeswari S. Ramya R. Shivanambi K. Swathilakshmi C.Roshith P.Sathiyapriyaswathi	III CSE & IV CSE
TECHNICAL QUIZ	Mr.A.Vivekanandhan Assistant Professor Mr.M.Ashokvel, Assistant Professor Mrs. T. Keerthana, Assistant Professor Mrs. M. Saranya, Assistant Professor Mr.R.MohanDoss Lab Assistant	G. Sumit Balan K. Sujitha S. Sagasravadhana B. Indra Devi S. Harish S. Akilan A.Sivagayathri	III CSE-B IV CSE
CODE DEBUGGING	Mr. A. Arunpandiyan, Assistant Professor Mrs. M. Saranya, Assistant Professor Mr. P. Manikandan Assistant Professor Mrs.R.Abirami Technical Assistant	V. Vimal Dharshan J. Pradeepsakthi M. Balakumaran M. Janani J. Mahima K. Swathilakshmi P. Kavipriya A.Sivagayathri	IVCSE III CSE-B

Dept. Coordinator

Mrs.M.Kavitha

Mr.A.Arunpandiyan

HoD

Dr. S. Padmapriya

Artificial Intelligence

S Kamali[1], M Agalya[2]
University College of Engineering, Thirukkuvalai

Abstract

Artificial Intelligence (AI) is a field of computer science focused on creating systems capable of performing tasks that typically require human intelligence, such as reasoning, learning, problem-solving, and decision-making. It combines mathematics, logic, and cognitive science to simulate intelligent behavior in machines. Key areas include machine learning, natural language processing (NLP), generative AI, computer vision, and robotics. Applications span healthcare, education, cybersecurity, and daily life, with both positive impacts (efficiency, automation, personalization) and challenges (cost, ethics, security risks). The future of AI promises smarter systems, greater automation, and transformative effects across industries and society.

Research of Blockchain Financial Application Standard

A Arivazhagan[1], G Santhoshkumaran[2]
Sir Issac Newton College of engineering and technology, Papakovil

Abstract

This research emphasizes the importance of developing blockchain financial application standards as the foundation for trust, transparency, and innovation in finance. It outlines a comprehensive framework covering basic standards, business and application standards, process and method standards, trust and interoperability standards, and information security standards. The study explores core aspects such as consensus protocols, smart contracts, data formats, and IT operations management, while also highlighting national and international standardization practices. The development path proposed ensures scalability, security, compliance, and global collaboration. Standardization not only fosters innovation but also mitigates systemic risks, ensuring sustainable blockchain adoption in the financial sector.

Blockchain Technology

R Kanagashree[1], S Swathi[2]
Government College of Engineering, Srirangam

Abstract

This work presents a detailed study of Blockchain Technology, a revolutionary digital ledger system ensuring trust, transparency, and security without centralized control. The study explores blockchain's core components such as blocks, chains, hashes, distributed ledgers, and consensus mechanisms. Key features like decentralization, immutability, and security are explained along with their role in cryptocurrencies, smart contracts, and industry-wide applications. Real-world use cases in finance, supply chains, healthcare, voting, and real estate demonstrate blockchain's transformative impact. The discussion also addresses challenges like scalability, energy consumption, regulation, and security risks, while highlighting future prospects in Web3, decentralized applications (dApps), and AI–IoT integration.

Data Science: Concepts, Applications & Futures

I Aathika Sanofer[1], S Deepika[2]
Government College of Engineering, Srirangam

Abstract

Data Science is the study of collecting, cleaning, analyzing, and applying data for better decision-making, combining computer science, statistics, and logical reasoning. It uses tools like Python, R, TensorFlow, Tableau, and PowerBI across healthcare, finance, e-commerce, and autonomous systems. Machine Learning is its core, enabling systems to learn and improve automatically. Despite challenges like privacy concerns, unstructured data, and model bias, Data Science continues to grow with trends such as AI, IoT, real-time analytics, and automated machine learning. It not only transforms industries but also creates vast career opportunities, making it one of the most valuable skills of the modern era.

Overview of IoT (Internet of Things)

P. Kaviya[1], P. Malini[2]
University College of Engineering, Thirukkuvalai

Abstract

The Internet of Things (IoT) is a network of interconnected physical objects embedded with sensors, software, and connectivity to collect, exchange, and act on data. Its key components include devices, connectivity, data processing, and user interfaces. Applications span smart homes, healthcare, smart cities, industrial automation, and agriculture. IoT enhances efficiency, automation, and real-time decision-making while improving quality of life. However, it faces challenges such as security and privacy risks, device compatibility, big data handling, and energy consumption. The future of IoT lies in integration with AI, expansion of 5G/6G, autonomous systems, and massive device connectivity.

Brain–Computer Interface Technology: A Review of the First International Meeting

M.Mubish[1], A.Dravit Joshwa[2]

SIR ISSAC NEWTON COLLEGE OF ENGINEERING AND TECHNOLOGY, NAGAPATTINAM.

Abstract

Over the past decade, Brain–Computer Interface (BCI) technology has emerged as a novel communication method for individuals with neuromuscular impairments, bypassing the need for peripheral nerves and muscles. Current BCI systems use electroencephalographic (EEG) or cortical recordings to control cursors, select icons, or operate neuroprostheses. The key lies in translation algorithms that convert electrophysiological signals into actionable outputs. Present systems transfer 5–25 bits/min, but further progress depends on improved signal processing, algorithms, and user training. Interdisciplinary collaboration and standardized evaluation are essential to expand BCI applications and ensure practical usability for intended user groups.

AI-Based Skill Gap Analyzer for IT and CSE Job Roles

V Tharani[1], V Vaishnavi[2]
MRK Institute of Technology, Kattumannarkoil, Cuddalore

Abstract

The gap between industry-required skills and graduate competencies creates challenges for employability. This paper proposes an AI-Based Skill Gap Analyzer to bridge this mismatch. The system gathers learner-provided skills, compares them with predefined role-specific requirements, and produces a graphical analysis highlighting existing and missing skills. Learners can then focus on acquiring the missing competencies. The system can also recommend relevant courses and resources, making it useful for institutions, training centers, and placement preparation.

Internet of Things: Connecting Devices for Intelligent Decisions

V Leela Benist[1], P Sangeerthana[2]
Government College of Engineering, Srirangam

Abstract

The Internet of Things (IoT) links devices and sensors to the internet to collect and share data for smarter decision-making. Traditional systems lack real-time monitoring, leading to inefficiencies and human errors. IoT addresses these issues through sensor-based data collection, cloud processing, and automated actions. Applications span healthcare, agriculture, smart transportation, and energy management. IoT enhances efficiency, reduces costs, and improves quality of life by enabling intelligent, automated systems for real-world problem-solving.

INTERNET OF THINGS (IOT) FOR SMART CITY, AGRICULTURE AND HEALTHCARE

S.HARIHARAN[1],S.MONHISH[2]

SIR ISSAC NEWTON COLLEGE OF ENGINEERING AND TECHNOLOGY, PAPPAKOVIL

ABSTRACT

The Internet of Things (IoT) has emerged as a transformative technology that is reshaping multiple domains of human life by enabling seamless interconnection between physical objects and the Internet. IoT creates a self-configurable network where devices exchange data with minimal human intervention, leading to automation, efficiency, and smarter decision-making. Organizations benefit from IoT by automating processes, optimizing resource use, and improving service delivery through real-time data collection and cloud integration. Today, IoT is recognized as a key driver of innovation and is considered the next stage in the evolution of the Internet. This paper explores the applications of IoT in three critical domains: **smart cities**, where IoT improves urban services such as transportation, parking, and waste management; **agriculture**, where IoT enhances crop monitoring, irrigation, and resource management; and **healthcare**, where IoT enables real-time patient monitoring and medical decision support. The study highlights the strengths and limitations of existing systems in these domains and proposes improvements using advanced tools, technologies, and techniques.

AI Integrated Railway Automation & Management System

R.Soorya[1],A.Ajay Kumar [2]

Arasu Engineering College

Abstract

The proposed AI Integrated Railway Automation & Management System aims to create a smart, adaptive, and data-driven railway ecosystem that leverages Artificial Intelligence (AI), Internet of Things (IoT), and predictive analytics to enhance operational safety, efficiency, and reliability. Traditional railway systems rely heavily on manual operations and static scheduling, often resulting in human errors, delays, and limited responsiveness to real-time conditions. The AI-powered framework integrates IoT sensors for continuous data collection from trains and tracks, enabling predictive maintenance, optimized scheduling, and intelligent traffic management. A centralized management architecture ensures real-time coordination across regional networks, improving punctuality and resource utilization. The system employs Python-based AI frameworks such as TensorFlow and PyTorch for analytical processing, with C++ and PLC logic handling real-time control and signaling. Technical feasibility is high, leveraging proven technologies, while long-term economic and environmental benefits include reduced operational costs, fewer accidents, and enhanced sustainability.

Humanoid In Society From Sophia To Service Robots

V.Subalakshmi[1], M.Subhasree[2]
E.G.S PILLAY ENGINEERING COLLEGE

Abstract

Humanoid robots are advanced machines designed to replicate human appearance, movement, and interaction. Equipped with artificial intelligence (AI), sensors, and actuators, they can walk, talk, recognize faces, and respond to emotions, enabling them to assist humans in various social, educational, and industrial roles. From early automata of the 18th and 19th centuries to pioneering models like WABOT-1 in the mid-20th century, and modern AI-driven robots such as ASIMO, Sophia, and Pepper, the evolution of humanoids reflects the fusion of mechanical engineering and intelligent computing. Their core technologies include sensors that provide vision, touch, and balance; AI and natural language processing for communication and decision-making; and actuators that mimic human muscle movements for realistic motion. Today, humanoid robots are transforming sectors like healthcare, education, retail, and manufacturing by enhancing efficiency, safety, and user engagement. As AI and robotics continue to advance, humanoids are becoming vital companions and co-workers, bridging the gap between humans and intelligent machines.

AI in road transportation

K.Swathi[1], N.Anjutha[2]

E.G.S PILLAY ENGINEEEING COLLEGE

Abstract

Road transportation is the backbone of modern civilization—connecting people, facilitating trade, and driving economic growth. However, with rapid urbanization and population growth, transportation networks face severe challenges such as traffic congestion, high accident rates, poor traffic management, and increasing pollution. Traditional traffic systems struggle to handle these problems efficiently in real time. Artificial Intelligence (AI) offers innovative solutions by introducing automation, predictive analytics, and data-driven decision-making into transportation management. Through technologies like machine learning, deep learning, computer vision, and sensor fusion, AI enables smarter traffic flow optimization, accident prevention, and efficient route planning. Intelligent traffic management systems use live data and IoT sensors to predict congestion, regulate signals, and enhance road safety through automated number plate recognition and driver-assist features. AI also supports pollution control by minimizing fuel wastage through optimized routing and fleet scheduling. Furthermore, AI underpins emerging applications such as autonomous vehicles, predictive maintenance, and smart logistics. By integrating edge and cloud computing with big data analytics, AI is transforming road transportation into a safer, cleaner, and more efficient ecosystem—paving the way for the future of intelligent mobility.

AI-Based Smart Attendance and Parent Notification System

B.Gokul[1], H.Ahammed Ussain[2]
MRK Institute of Technology, Kattumannarkoil, Cuddalore

Abstract

Ensuring student safety and accurate attendance tracking remains a major concern for educational institutions and parents. Traditional attendance systems—such as manual roll calls, ID card swipes, or register entries—are time-consuming, error-prone, and susceptible to manipulation. To address these limitations, this project proposes an AI-based Smart Attendance and Parent Notification System that uses face recognition technology for automated, real-time attendance monitoring. A webcam placed at the school or college entrance captures student faces, which are processed using Python, OpenCV, and the face_recognition library to identify each student accurately. Once a student is recognized, an integrated AI agent (Gemini) instantly sends attendance notifications to parents via Gmail and WhatsApp APIs, confirming safe arrival without requiring any manual intervention. The system eliminates the need for traditional attendance databases by focusing solely on real-time recognition and communication. This approach not only saves valuable classroom time but also enhances transparency, reliability, and parental confidence in student safety.

Machine Learning

B. Tharigasri[1], R.Sumithra[2]

SIR ISSAC NEWTON COLLEGE OF ENGINEERING AND TECHNOLOGY, PAPPAKOVIL

Abstract

Machine Learning (ML), a subset of Artificial Intelligence (AI), enables systems to learn from data and improve automatically without explicit programming. Its primary goal is to enhance prediction, classification, and decision-making processes by analyzing large datasets efficiently. ML plays a vital role in reducing human effort in repetitive tasks and increasing the accuracy and adaptability of modern systems. Depending on the learning approach, ML can be categorized into Supervised Learning, which uses labeled data for tasks like spam detection; Unsupervised Learning, which identifies hidden patterns such as customer segmentation; and Reinforcement Learning, where systems learn through trial and error, as seen in robotics and gaming AI. Core algorithms include regression models, decision trees, neural networks, and clustering methods. ML applications span multiple fields—healthcare (disease prediction, drug discovery), education (personalized learning, smart grading), finance (fraud detection, stock prediction), and agriculture (crop yield prediction, smart irrigation). As a transformative technology, Machine Learning continues to revolutionize industries and everyday life, shaping a future driven by intelligent systems and human innovation.

Deepfake: Understanding the Risks of Synthetic Media

Mohamed Jahid[1],R.Vigneshwaran[2]
Arasu Engineering College

Abstract

Deepfakes are AI-generated synthetic media that manipulate images, audio, or video to create highly realistic yet fabricated content, making it appear as if individuals performed actions or made statements they never did. Powered primarily by Generative Adversarial Networks (GANs), deepfakes learn facial expressions, voice patterns, and behaviors from real data to produce convincing forgeries. While this technology demonstrates the remarkable progress of artificial intelligence in media generation, it also poses severe risks to privacy, security, and digital trust. Deepfakes have been misused in political misinformation, identity theft, cyber fraud, and non-consensual content creation, threatening both individuals and society. To combat these challenges, researchers and organizations are developing AI-based detection models, enforcing media authentication standards, and promoting collaboration between governments and technology companies. The future of deepfake security depends on balancing innovation with ethical responsibility, ensuring that artificial intelligence serves as a tool for creativity and not deception.

Intent Aware Smart Timetable Schedule system

S.Sheik Mohamed[1], Z. Mohamed Asharaf[2]

St. Anne's College Of Engineering and Technology

Abstract

The existing academic scheduling systems rely on manual slot allocation, leading to frequent conflicts, limited flexibility for electives or shifts, and poor engagement tracking. They also lack wellness monitoring and emergency management features. To overcome these issues, the proposed AI-driven Smart Timetable and Student Management System introduces an intent-based scheduling logic with predictive conflict alerts and threaded change requests. It supports multi-department operations, shift-based scheduling, and QR-based attendance with offline synchronization. Additional modules such as a gamified student dashboard, wellness tracker, emergency scheduler, and voice assistant enhance usability and engagement. This intelligent, adaptive approach minimizes scheduling errors, improves faculty well-being, enhances student participation, and supports NEP-aligned modular learning, ensuring a more resilient and responsive academic environment.

Hydroponics and vertical forming automation

P.Kalki[1], M.Rajeshwari[2]

Arifa Institute of Technology

Abstract

This project presents an automated IoT, AI, and robotics-based smart farming system designed to optimize crop production through intelligent monitoring and control. The system integrates IoT sensors to track environmental parameters such as temperature, humidity, pH, and nutrient levels in real time. Using AI-driven analytics, it automates irrigation, lighting, and nutrient delivery to enhance resource efficiency and crop yield. The setup combines hydroponics and vertical farming techniques, enabling soil-less, space-efficient, and sustainable agriculture. A cloud-based platform allows remote monitoring and control, reducing manual labor while ensuring continuous productivity. This approach promotes precision agriculture, conserving water and energy while supporting year-round cultivation with minimal environmental impact.

Data Analysis

S.Monika[1],Kowsalya[2]

SIR ISSAC NEWTON COLLEGE OF ENGINEERING AND TECHNOLOGY

Abstract

Data analysis is the process of systematically collecting, cleaning, and interpreting data to uncover meaningful insights that support informed decision-making. It plays a vital role across industries such as business, healthcare, finance, and technology, helping organizations make data-driven strategies. The process begins with data collection through surveys, experiments, or digital sources like web scraping and sensors. The collected data is then cleaned to handle missing values, remove duplicates, and correct inconsistencies, ensuring accuracy and reliability. Data analysis involves both qualitative and quantitative approaches applied to structured, unstructured, time-series, or cross-sectional data. Its key benefits include enhanced decision-making, improved efficiency, risk mitigation, and a competitive advantage in dynamic markets.

DATA SCIENCE

G.Yugasri[1] ,K.Madhumitha[2]

SIR ISSAC NEWTON COLLEGE OF ENGINEERING AND TECHNOLOGY,NAGAPATTINAM

Abstract

Data Science is an interdisciplinary field that combines statistics, programming, and domain knowledge to extract meaningful insights from vast and complex datasets. In today's digital age, data—structured, unstructured, and semi-structured—is growing rapidly, forming the foundation of Big Data analytics. The 5 P's of Data Science—Purpose, People, Processes, Platforms, and Performance—define how data is collected, analyzed, and applied for effective decision-making. Using advanced tools and technologies such as Python, R, and Hadoop, data scientists and analysts uncover patterns that drive business growth, innovation, and automation. The key advantages include better decision-making, predictive analytics, personalized user experiences, and operational efficiency, making data science an essential component of modern organizations.

Department of Electronics and Communication Engineering

HOD MESSAGE

Dr. CHITRAVALAVAN, M.Tech., Ph.D

Professor & Head

Department of ECE

It's a great honour to welcome you to **TechnothirsT'25-26 - National Level Technical Symposium,** an event that celebrates innovation, creativity and team work. I am delighted to welcome you to the Department of Electronics and Communication Engineering.

This symposium provides a focused, intimate platform for individual participant to share knowledge, discuss a specific topic in depth, and exchange diverse perspectives. Participants gain a comprehensive understanding of the topic from multiple angles, enabling them to identify various aspects of complex problems.

I wish the faculty members and students in the Department of Electronics and Communication Engineering for successful conduct of the symposium. I also offer my thanks to all the participants for their enormous support and dynamic participation with genuineness and regularity.

Wishing you all an inspiring and successful event!

Dr. CHITRAVALAVAN

ABOUT THE DEPARTMENT

Bachelor of Engineering in Electronics and Communication Engineering was started in the year of 1996. Master of Engineering in Applied Electronics was started in the year of 2013. The ECE department has a vital role in enriching the knowledge and career opportunities for the students. The Department has highly qualified and dedicated faculty members to impart latest technologies to the students. Department has an excellent infrastructure with well-equipped laboratory facilities of modern tools and latest software. Imparting quality education is the objective of Electronics and Communication Engineering. The department has been accredited by NBA from 2022-2025 (Three Years) and is also certified with ISO 9001-2015 standard.

HIGHLIGHTS OF THE DEPARTMENT

The ECE Programme has been accredited by the NBA – AICTE during the Academic year 2012-2015 & 2022-2025. The ECE Programme has got Anna University permanent affiliation from the year 2014 onwards. ECE department has secured 36 [UG-23, PG-13] Anna University Rank holders. The department has received Rs.10,00,000(Ten Lakhs) fund under AICTE MODROB for the title "Software Defined Radio in design and teaching of RF communication Systems". Our department has continuously fetched Academic Excellence award. The department has well qualified, practiced and enthusiastic faculty members to meet up the desires of the students.

Department is having 5 doctorates, 2 Research scholars and all the faculty members are PG qualified. Our department faculty members have been enriching their knowledge and thereby enlightening the students by their continuous effort in publishing books and book chapters as per the updating syllabus and lifelong learning by attending faculty development programmes, presenting papers in International/National conferences and also they are contributing by publishing research papers in reputed journals. Our faculties and students have received funds from TNSCST, Niral Thiruvizha and also from ICSSR for conducting Seminars. The department has received Rs.90, 000 /- fund under ICSSR –Seminar for the title "Social Engineering attack Techniques and Prevention". The department has also received TNSCST project fund of Rs.7, 500/- for the title "Design of Low cost Ardunio based Ventilator" during the academic year2021-2022 and also received a project fund of Rs.7,500/- from TNSCST for the title "Iris cursor: A New vision in AI Driven Mouse control".

The department has achieved 100% Pass Percentage in all the three Passed out batches. Training and placement activities are in routine practice through placement cell. Our students have been placed in reputed companies and are also undergoing Internships through on- campus drive. Our department students are motivated to participate in the extra-curricular and co-curricular activities. The students have also won various prizes by participating in such events. The students also undergo

Inplant training, Industrial visits as field exposure programmes. The students enhance their knowledge by attending courses like NPTEL, Spoken tutorial-IIT Bombay and Naan mudhalvan. The students also involve themselves in submitting project proposals in Smart India Hackathon, Niral Thiruvizha 2.0 and TNSCST. Automatic Hand Sanitizer, Automatic Irrigation System and IOT Based Controlling Appliances products are developed for the institution by the faculty and students. Consecutively six years period of time the department has achieved overall academic excellence shield for UG batches. IETE Students Chapter established in the department and inaugurated in the year 2017 and conducted Guest Lectures.

TechnothirsT' 25-26 COMMITTEE LIST

The committees listed below were established to ensure the successful execution of the technical symposium at the national level on 9th October, 2025.

Chairperson : Dr. P. Balasubramanian, Principal

Coordinator : Dr.Chitravalavan, Professor and Head

Faculty Coordinator : Dr.S.K.Rajalakshmi, AP/ECE

Dr.S.Bharathiraja, AP/ECE

Student Coordinators : Mr.S.Sivabalan / IV ECE

: Ms.E.Nikitha Rajam/ IV ECE

S.No	Committees	Faculty Incharge	Student Committee Members (III ECE Students)
1.	Certificate Committee	Mrs. K. Thamaraiselvi,AP/ECE	1. Abiramasundhari S 2. Nivetha S 3. Santhiya R 4. Arini.S 5. Raji.R
2.	Registration & Prize distribution Committee	Mrs.R. Ramya, AP/ECE	1. Abinaya Sri M 2. Swasthika Janani S 3. Priya Dharshini R 4. Raji R 5. Mahalakshmi S
3.	Reception Committee	Mrs.K.Thamaraiselvi, AP/ECE	1. Madhumitha V 2. Aswini R 3. Logeshwari M 4. Brindha M
4.	Stage Decoration & Seating Arrangement Committee	Mr.S.Pasupathiraja, AP/ECE Mr.Senthil, OA/ECE	1. Abinaya Sri M 2. Madhumitha V 3. Prithika D 4. Mahalakshmi.S 5. Anishma.R 6. Srithaila.K

			7. Priyadharshini.P 8. Anitha.S
5.	Audio ,Video and Photo Committee	Mr.S.Pasupathiraja, AP/ECE Mr.S.Thillaigovindhan,Tech.Asst/ ECE	1. Yogesh Prabhu M 2. Sadagoban M
6.	Refreshment Committee	Mr.S.Bharathiraja, AP/ECE Mr.S.Thillaigovindhan, Tech.Asst/ECE Mrs.M.Punitha, Tech.Asst/ECE	1. Jeeva S 2. Kamesh C 3. Rajamohan K 4. Sundharavel R 5. Ariharan S 6. Santhosh S 7. Guganesh R
7.	Hospitality Committee & Accomodation	Mr.S.Bharathiraja, AP/ECE Mr.S.Thillaigovindhan, Tech.Asst/ECE	1. Kavya J 2. Nivetha K 3. Roshini Aarthi R K 4. Sakthi Sowmiya M P 5. Srijanya M 6. Raji.R
8.	Paper Review Committee	Dr.Chitravalavan, Prof.&Head/ECE Dr.B.S.Sathishkumar, ASP/ECE	1. AbinayasriM 2. MathumithaV 3. RathnasriR 4. Prithika 5. Abirami.R 6. Santhiya .J
9.	Event-1 Committee [Paper Presentation Event]	Dr.B.S.Sathishkumar, ASP/ECE	1. Sivakumar G 2. Saravanan I 3. Sakthivel J 4. Yogesh Prabhu M 5. Roshini Aarthi R K 6. Sakthi Somiya M P 7. Harini L M
11.	Event-2 Committee [Brain Waves]	Dr.C.Jayasri, AP/ECE	1. Abinaya Sri M 2. Madhumitha V 3. Prithika D 4. Rajeswari R
12.	Event-3 Committee [Wire Wizards]	Dr.K.R.Vinothini, ASP/ECE	1. Nikitha Rajam E 2. Gayathiri P 3. Sandhiya M 4. Devadharshini B 5. Abirami R 6. Anisma R 7. Arini S

Recent Trends in 5G/6G

Bairavi Sankarkumar[1]
Department of CSE, EGS PILLAY ENGINEERING COLLEGE
bairavisankarkumar47@gmail.com

Abstract

The evolution of wireless communication has been marked by rapid generational shifts, each addressing the limitations of its predecessor. While 5G networks are now being deployed globally, offering enhanced mobile broadband, ultra-reliable low-latency communication, and massive machine-type communication, they are still unable to fully meet the demands of emerging applications such as holographic telepresence, extended reality (XR), large-scale Internet of Things (IoT), and real-time digital twins. This has motivated the research and development of sixth-generation (6G) networks, which are expected to provide data rates in the Terabit-per-second (Tbps) range, sub-millisecond latency, and near-ubiquitous connectivity.

Recent trends in 5G include the use of millimeter-wave (mm-Wave) frequencies, massive multiple-input multiple-output (m-MIMO), edge computing, network slicing, and artificial intelligence (AI) for intelligent resource allocation. However, 5G faces challenges in terms of limited coverage, energy efficiency, and spectrum scarcity. The proposed vision for 6G integrates breakthrough technologies such as terahertz (THz) communication for ultra-high capacity, reconfigurable intelligent surfaces (RIS) to enhance coverage and signal propagation, integrated sensing and communication (ISAC) for environment-aware networks, and quantum-secure communication for enhanced trust. Furthermore, 6G will involve deeper convergence of terrestrial and non-terrestrial networks, including satellite and UAV-based systems, to provide global connectivity. The integration of AI and machine learning into every layer of the communication stack is another defining trend for 6G, enabling autonomous self-optimizing networks with unprecedented levels of adaptability. These innovations are expected to unlock revolutionary applications such as autonomous vehicle ecosystems, smart healthcare, immersive extended reality, Industry 5.0, and the metaverse. Nevertheless, the challenges of hardware complexity, high energy demand, security vulnerabilities, and the need for global standardization remain open research problems. This paper provides an overview of these recent trends in 5G and 6G technologies, highlighting their potential applications, advantages, and research directions.

Virtual Fencing in Agriculture Using YOLO V8

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Abstract

Animal welfare is an important aspect of animal husbandry, and monitoring the behaviour and health of livestock is crucial for ensuring their well-being. With the rise of technology advancement, virtual monitoring of animals has become a viable solution for farmers and ranchers. In particular, monitoring the activity and vital signs of animals can provide insights into their health status, enabling early detection of any health issues or diseases. The proposed project aims to develop a virtual monitoring system for animals using AI/ IoT technology. The system will consist of wearable sensors attached to the animals that will collect data on their activity levels, heart rate, and other vital signs. This data will be transmitted to a centralized platform where it will be analyzed in real-time using machine learning algorithms. The system will also provide alerts to farmers and ranchers in case of any anomalies or deviations from normal behaviour or health. The virtual monitoring system will help farmers and ranchers to track the health of their animals more effectively, enabling them to take timely action in case of any health issues or diseases. The system will also help to reduce the workload of farmers and ranchers by automating the monitoring process, allowing them to focus on other important aspects of animal husbandry. In conclusion, the proposed virtual monitoring system for animals using IoT technology has the potential to revolutionize animal husbandry by providing real-time monitoring and early detection of health issues or diseases. This can lead to better animal welfare, reduced workload for farmers and ranchers, and ultimately, improved productivity and profitability in the agricultural industry.

Design of Portable Smart Plastic Recycler Using IoT Based Monitoring

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Abstract

Plastic recycler which is an eco-friendly invention and helps to get down the quantity of existing plastic around the places. The invention is heating the plastic at 160°C and melting down and the whole process is done with solar power as the ideal source of energy. From molten plastic, methanol can be extracted and used as a by product of solid content. Those materials are taken into consideration for recycling and are installed as shock absorbers in the field of construction and heavy

machinery. This device is not an existing one, the methanol extracted from this process can be used as an admixture for bio fuels and it creates huge effect on society. It greatly supports the Indian economy to bring down the hiking price of the fuel nowadays. The final recycled material for absorption of heavy shock will play an active role in the corporate market if made under the make in India concept. It will take the advancement of India towards saving the environment and allowing the go green concern worldwide. It helps to greatly reduce global warming and influences the well–being of all the organisms. It also helps to increase the Growth of Birds on the environment.

Efficient Automatic Sun Tracking System for Solar Industry IoT

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Abstract

The proposed system uses a fusion of smart sensors, microcontrollers and real time IoT connectivity to track the sun's position from dawn to dusk, adjusting the orientation of solar panels dynamically for optimal exposure. Unlike static systems that lose efficiency as the sun arcs across the sky, this design mimics nature always adapting, always optimizing.

Recent Trends in 5G and Emerging 6G Technologies

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Abstract

The rapid evolution of mobile communication technology has led to significant advancements from 4G to 5G, and the world is now preparing for the transition to 6G. This project explores the recent trends in 5G and emerging 6G technologies, focusing on their capabilities, challenges, and future applications. Using software-based simulations, the project compares the performance of 4G, 5G, and 6G networks in terms of speed, latency, and device connectivity. An IoT device simulation demonstrates how 5G and 6G enable massive machine-type communication and ultra-reliable low-latency communication, which are essential for applications such as smart cities, autonomous vehicles, AR/VR, and remote healthcare. The results are visualized through interactive dashboards, providing clear insights into network performance improvements. The study also highlights the integration of AI, edge computing and block chain in shaping next-generation networks. This work concludes that while 5G is laying the foundation, 6G will enable ubiquitous connectivity, immersive experiences and intelligent systems, transforming the future of communication.

Acoustic Device for Detecting Red Palm Weevils Using Deep Learning And IoT

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Abstract

In this project, an ESP32-WROVER-based bioacoustics sensor is introduced for the early detection of Red Palm Weevil (RPW) infestations in palm trees. The system utilizes an INMP441 MEMS microphone to capture the distinct acoustic signals produced by RPW larvae within tree trunks. A Simple Neural Network (SNN) processes these signals, achieving a 98.79% detection accuracy. By leveraging the low-power and cost-effective ESP32-WROVER, the system enables real-time, on-device classification, making it an efficient alternative to traditional detection methods. Designed for large-scale agricultural deployment, this solution reduces the need for manual inspections and costly imaging techniques. The study also compares the ESP32-WROVER implementation with a Raspberry Pi 4-based alternative, emphasizing differences in cost, power consumption, and practical field performance. The results highlight that the ESP32-WROVER offers superior energy efficiency and affordability, making it more suitable for resource-limited agricultural environments. Additionally, the system supports IoT-based data transmission, allowing farmers to receive real-time infestation alerts and take timely action. By integrating bioacoustics with AI and IoT, this project provides a scalable and sustainable approach to pest monitoring, contributing to smart agriculture and improved crop protection strategies.

Wireless Sensor Networks for Extreme Environment

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Abstract

Using wireless sensor network (WSN) for building new sensing and actuating applications in space and extreme environments (SEEs) can fuel a new application paradigm if it can be adopted into a new strategy. This complementary contribution from the Guest Editors carries an important message of breaking away from conventional WSN research and developments and adopting a heterogeneous agile unconventional wireless sensing (UWS) approach deployment. For this, we urge the use of lightweight WSN known as wireless sensor systems (WSS) to develop optimized solutions for SEE. A further clarification for deployment of UWS is demonstrated using a table with six groups of typical application areas from the recent publications media.

Advanced Medical Service System Based On AI Using IoT

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Abstract

The dramatically increasing deployment of the Internet of Things (IOT), remote monitoring of health data to achieve intelligent healthcare has received great attention recently. In the Proposed system, Health chain, a large-scale health data privacy preserving scheme based on block chain technology, where health are encrypted to conduct fine grained access control. In the modification, Modification part is our implementation. We deploy the Anytime Medical Counter in all the rural areas where people cannot get good doctor on track. We install Heart Beat sensor, Temperature sensor, Ultrasonic sensor, load cell, Camera and Head phone are also connected to the Medical machine. Medical counter user and is monitor from the remote area. Application is installed in both the ends for voice communication & call with doctor. Doctor examines the patient and prescribes the medicines and the Medicine Dispatcher Will dispatch the Medicines from the AMM machine to the User. User can send the request to the server to get the tablets intake timings.

IMAGE PROCESSING TECHNICS WITH OBJECT MOTION DETECTION

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Abstract

The integration of image processing techniques with object motion detection and deep learning represents a significant advancement in computer vision applications. This project explores the implementation of various image processing methods within the realm of object motion detection, bolstered by the power of deep learning algorithms. The primary objective is to enhance the accuracy and efficiency of motion detection systems by leveraging cutting-edge image processing techniques alongside sophisticated neural networks. The project involves the study and application of fundamental image processing operations such as filtering, segmentation, and feature extraction. These techniques serve as the foundation for detecting and tracking moving objects within a given scene. Additionally, deep learning models, including convolutional neural networks (CNNs), recurrent neural networks (RNNs), and their variants, are employed to analyze and interpret the visual data for robust motion detection.

Underwater Communication System

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Bharath Institute of Higher Education and Research

Abstract

The ocean is a vast and mysterious place, and to explore it, we need special tools that help send messages underwater. These tools are called underwater communication systems. They allow submarines, underwater robots, and sensors to share information. There are three main ways to send signals underwater: sound waves, which can travel long distances but are slow and sometimes unclear; light signals, which are fast but only work in clean water and short distances; and radio waves, which work in shallow water but don't go very far. Scientists are now using smart computers to help these systems work better, and some new methods are inspired by how sea animals send signals. By combining sound, light, and radio, we can get better results. These systems help us study sea life, protect the ocean, find resources like oil and gas, and keep underwater areas safe. Even though there are still challenges like saving battery power and making small devices, new technology is helping us learn more about the deep sea and unlock its secrets.

VLSI Design (Very Large Scale Integration Design)

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Abstract

VLSI technology enables the integration of millions to billions of transistors onto a single microchip, creating powerful and compact electronic systems. This modular approach transforms complex circuits into miniaturized, efficient components that form the backbone of modern computing. Key advantages include miniaturization excellence, superior performance, and cost efficiency. VLSI impacts various applications like processors, memory systems, and graphics processing. Future trends include integration with artificial intelligence, quantum computing, and edge computing. In consumer electronics, VLSI enables multifunctional, power-efficient devices like smartphones and tablets. Despite challenges like design complexity and manufacturing hurdles, VLSI's transformative impact on technology is evident. With continuous evolution and future promise, VLSI remains foundational to advancing computing capabilities.

Digital Image Processing and Its Biomedical Application

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Abstract

Image processing in medical applications is a technique used to improve and analyze images of the human body. It helps doctors and researchers to study internal organs and detect diseases more accurately. By using computers, medical images such as X-rays, CT scans, MRI, and ultrasound can be enhanced, segmented, and analyzed. This process allows for early diagnosis, better treatment planning, and improved patient care. With the help of modern technology like artificial intelligence, medical image processing continues to grow and plays a vital role in the future of healthcare.Digital Image Processing (DIP) is the computational analysis and manipulation of images to extract meaningful information and improve their quality for human interpretation or machine perception. In the medical domain, image processing plays a vital role in enhancing, reconstructing, and analyzing images obtained from modalities such as X-ray, CT, MRI, Ultrasound, and PET. The medical image processing workflow involves data acquisition, reconstruction, enhancement, analysis, visualization, and management, with techniques such as segmentation, registration, and quantification supported by artificial intelligence. These methods enable disease detection, surgical planning, therapy guidance, cellular and molecular research, and assistive technologies. Applications also extend to telemedicine, remote diagnostics, and 3D printing of anatomical models. Different imaging tests, including X-ray, CT, MRI, Ultrasound, and PET, each provide unique diagnostic insights ranging from bone fractures and cardiovascular conditions to neurological disorders and cancer detection. Overall, medical image processing enhances clinical decision-making, improves treatment accuracy, and supports biomedical research, making it an indispensable tool in modern healthcare.

Microwave And Radar Application

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Abstract

Microwave and radar technologies play a vital role in modern communication, navigation, industrial, and defense systems. Microwaves, which occupy the frequency range between 1 GHz and 300 GHz, are utilized in diverse applications such as satellite communication, wireless networking, medical diagnostics, remote sensing, and microwave heating. Radar (Radio Detection and Ranging), which operates using microwave signals, is extensively used for detecting, locating, and tracking objects by

analyzing reflected electromagnetic waves. It has significant applications in air traffic control, weather forecasting, automotive safety systems, and military surveillance. The integration of microwave and radar systems has led to advanced technologies such as synthetic aperture radar (SAR), Doppler radar, and phased array antennas, enhancing accuracy and reliability. This paper explores the principles, working mechanisms, and wide-ranging applications of microwaves and radar, highlighting their importance in technological development and modern-day innovations.

Medical Image Processing and Image Processing

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Abstract

Medical Image Processing (DIP) is the computational analysis and manipulation of images to extract meaningful information and improve their quality for human interpretation or machine perception. In the medical domain, image processing plays a vital role in enhancing, reconstructing, and analyzing images obtained from modalities such as X-ray, CT, MRI, Ultrasound, and PET. The medical image processing workflow involves data acquisition, reconstruction, enhancement, analysis, visualization, and management, with techniques such as segmentation, registration, and quantification supported by artificial intelligence. These methods enable disease detection, surgical planning, therapy guidance, cellular and molecular research, and assistive technologies. Applications also extend to telemedicine, remote diagnostics, and 3D printing of anatomical models. Different imaging tests, including X-ray, CT, MRI, Ultrasound, and PET, each provide unique diagnostic insights ranging from bone fractures and cardiovascular conditions to neurological disorders and cancer detection. Overall, medical image processing enhances clinical decision-making, improves treatment accuracy, and supports biomedical research, making it an indispensable tool in modern healthcare.

Wireless Sensor Networks / Communication

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Abstract

Wireless Sensor Networks (WSNs) are composed of numerous low-power, spatially distributed sensor nodes that collaborate to monitor and collect data from various physical or environmental conditions such as temperature, pressure, motion, and chemical concentrations. These nodes communicate wirelessly and transmit the gathered data to a central base station or sink for further processing and

analysis. WSNs have gained significant attention due to their wide range of applications in areas such as environmental monitoring, industrial automation, smart agriculture, healthcare systems, disaster management, and military surveillance. Communication is a critical aspect of WSN performance, directly impacting energy consumption, data latency, network lifetime, and reliability. Since sensor nodes are typically battery-powered and deployed in inaccessible or harsh environments, energy-efficient communication protocols are essential. Technologies such as Zigbee, Bluetooth Low Energy (BLE), LoRaWAN, and 6LoWPAN have been developed to support low-power, long-range, and scalable communication in WSNs.Key challenges in WSN communication include limited bandwidth, node mobility, data congestion, interference, and security vulnerabilities. To address these issues, researchers have developed various communication protocols and routing algorithms, including clustering techniques, data aggregation, and adaptive transmission strategies. Additionally, integrating WSNs with the Internet of Things (IoT) has opened new opportunities for remote monitoring and real-time data analytics through cloud platforms. This abstract provides an overview of wireless sensor networks with a focus on communication strategies, highlighting their role in enabling intelligent, responsive, and autonomous systems.

Smart Traffic Control System Using Wireless Communication

M.Anbumani[1],II ECE, R.Rajalakshmi[2], II ECE, Sir Issac newton Engineering and Technology,Nagappatinam

Abstract

In this paper smart traffic control system using wireless communication is implemented. By using Arduino microcontroller entire system is controlled. When an emergency vehicle approaches the crossing, the RFID Reader reads the information and this information is passed to the poles of nearest junction. When the sensing device nearest to the traffic light finally receives the signal from its preceding pole, the traffic light changes to green. In the same way when green light is on then buzzer also give indication. This facilitates the smooth and quick passage of the emergency vehicle.

Smart Helmet For Accident Detection

C.Anantha selvam[1], A.Saradha[2],
III ECE, Sir Issac Newton Engineering and Technology, Nagappatinam

Abstract

A smart helmet is a type of protective headgear used by the rider which makes bike driving safer than before. The main purpose of this helmet is to provide safety for the rider. This can be implemented by using advanced features like alcohol detection, accident identification, location tracking, use as a hands free device, fall detection. This makes it not only a smart helmet but also a feature of a smart bike. It is

compulsory to wear the helmet, without which the ignition switch cannot turn ON. An RF Module can be used as wireless link for communication between transmitter and receiver. If the rider is drunk the ignition gets automatically locked, and sends a message to the registered number with his current location. In case of an accident it will send a message through GSM along with location with the help of GPS module. The distinctive utility of project is fall detection; if the rider falls down from the bike it sends a message.

Department of Electrical and Electronics Engineering

HOD MESSAGE

Dr.A.Ravi

Professor and Head

Department of Electrical and Electronics Engineering

Dear Students, Participants, and Esteemed Guests,

I am truly delighted to welcome you all to TechnothirsT 25–26, the National Level Technical Symposium organized by the Department of Electrical and Electronics Engineering at A.V.C. College of Engineering. This event serves as a platform for young talents to showcase their technical expertise, innovative ideas, and problem-solving skills in the ever-evolving domain of electrical and electronics engineering. As technology continues to advance at a rapid pace, it is essential for us to stay ahead through continuous research, learning, and collaboration.

TechnothirsT 25–26 is designed to foster creativity, enhance technical knowledge, and promote knowledge-sharing among students, researchers, and faculty members. I encourage every participant to make the most of this opportunity by engaging actively in paper presentations and other technical events. My sincere appreciation goes to the organizing committee, faculty members, student volunteers, and management for their dedicated efforts in bringing this symposium to fruition. I wish all participants a productive, inspiring, and memorable experience at this grand event.

Best Wishes,
Dr. A. Ravi
Professor and Head-EEE

ABOUT THE DEPARTMENT

Being the Youngest Department of A.V.C College of Engineering, it was established in the year 2011. The main motto of this department is to provide innovative training and education in the latest technological part of Electrical and Electronics Engineering. The department is having well equipped laboratories and has the most dedicated and knowledge-oriented faculty members. The department has also sought for MoU with reputed industries for the industry institution interaction through workshops and seminars. Apart from the high-quality education offered, the students are motivated to participate in extracurricular and co-curricular activities. Periodical updating and maintenance of Laboratory equipment is done in an effective manner. Also, the department provides adequate opportunities to the students to learn and expertise themselves by attending workshops and conferences.

DEPARTMENT HIGHLIGHTS

Accreditation & Academic Excellence

- NBA-accredited department with a strong academic and research foundation.
- Highly qualified faculty – over 90% hold Ph.Ds., many serving as recognized research supervisors.

Research & Publications

- Faculty have published 50+ research papers in high-impact journals and authored 12 books.
- Patents: 2 published and 1 granted.
- Faculty members recognized with NPTEL ELITE (Silver) certifications.

Student Development & Certifications

- Students encouraged to pursue online certifications (NPTEL, Spoken Tutorial, etc.).
- Regular motivation to engage in co-curricular and extracurricular activities at reputed institutions.

Innovation & Collaboration

- Special Interest Groups (SIGs) formed for research and funded project collaborations.
- MoUs with NIN Energy Pvt. Ltd., Chennai & GK Tech Automation for Energy Auditing and Robotics.
- Expertise in Power Electronics, Power Systems, Control Systems, MEMS, Renewable Energy, and Electric Vehicles.

Funding & Support

- Received funding from AICTE and TNSCST for faculty and student projects.

Industry Connect & Career Growth

- Industrial visits, in-plant training, and internships arranged for students.
- Active memberships in professional bodies like IEI and ISTE.
- Strong placement record (80%+ for the last three years) with students placed in TCS, Infosys, Kaynes, Abirami Electricals, Snipe Engineers, and others.

Continuous Improvement

- Regular feedback from alumni, employers, and parents integrated for academic enhancement.

TechnothirsT 25-26 COMMITTEE LIST

The committees listed below were established to ensure the successful execution of the technical symposium at the national level on 09.10.25.

Name of the Committee	Name of the Staff	Name of the Students	Year & Branch
Poster Design	Dr.I.Mahendravarman , AP/EEE	1. JAGAN P 2. SAJESH YADAAV S 3. SURYA M	II EEE
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Registration Committee	Dr.I.Mahendravarman , AP/EEE	1. POORANI J 2. AMITHAVARSHNI K 3. ANGELIN JENIFAR D	III EEE
Reception & Rangoli	Mrs.CV.Abirami, AP/ S&H Mrs.G.Kamini, AP/ S&H	1. ABINAYA R 2. ASHVITA R	IV EEE
		3. RITHIKA S 4. DHIVYA G 5. JANANI R 6. KALAISELVI G 7. SUBASRI S 8. SUBHAKSHAYA K 9. SUBI P	III EEE
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Refreshment & Lunch	Mr.G.Ashokkumar, AP/EEE Dr.R.Selvaganapathy, AP/EEE	1. SILAMBARASAN P 2. SOUNDAR M 3. SOUNDARRAJ C 4. SRIRAMSUNDAR K 5. VASANTH R 6. RANJITHKUMAR M 7. VISHNU P	IV EEE

		8. KABILAN S	III EEE
Technical Review (Paper Presentation)	Dr.A.Ragavendiran, AP/EEE	1. MITHUN HARIHARAN M 2. RAAGUL S 3. HAREESHWAR R	IV EEE
		4. PREMKUMAR R	III EEE
Panel Members (Paper Presentation)	Dr.A.Ravi Professor & Head/EEE Dr.M.Latha Associate Professor/ EEE	1. MITHUN HARIHARAN M 2. RAAGUL S 3. AYYAPPAN S	IV EEE
Technical Quiz	Dr.A.Ragavendiran, AP/EEE Mrs.G.Kamini, AP/S&H	1. MITHUN HARIHARAN M 2. RAAGUL S 3. PARASURAMAN B	IV EEE
		4. SAKTHIVEL K 5. SIVAGANESH S	III EEE
		6. SAJESH YADAAV S 7. JAGAN P 8. PRAVEENKUMAR S 9. SURYA M	II EEE
Technical Connection	Mr.M.Alex, AP/EEE	1. ISHANTH M 2. SILAMBARASAN P	IV EEE
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		4. AKTHIGANESH 5. JAGAN P 6. SAJESH YADAAV S 7. PRAVEENKUMAR S 8. SURYA M	II EEE
Discipline	ALL DISCIPLINE STAFF MEMBERS.	-	-
Accommodation	Dr.R.Selvaganapathy, AP/EEE	-	-
Souvenir	Mr.M.Alex, AP/EEE	-	-

Adaptive Control Approaches for Enhancing Micro Grid Stability Under Renewable Penetration and Load Fluctuations

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Abstract

In recent contemporary power systems, with the increasing penetration of various renewable energy sources into power systems, the stability of micro grid is a crucial and vital aspect to be considered. This prepare develops an intelligent control scheme to enhance t h e Microgrid stability is achieved by synchronizing artificial intelligence-enabled control with appropriate optimization techniques, *this* investigation targets to improve power quality of micro grid. This paper works to achieve advancement in smart grid technologies assuming reliable and sustainable power distribution in power systems. The small-signal stability has been discussed based on uncertain load, limitation in power generation capacity, and nature of sluggish feedback observed in few micro grid systems. Instability caused by a transient phenomenon in micro grid has been thoroughly analyzed for losses in distributed energy resources, islanding and transition modes of operation, load shedding, and faults causing instability. The voltage fluctuations are duly considered in the perspective of load shedding, type of loads, power unbalancing, and different types of faults in micro grid systems. The existing controllers have been compared based on steady-state error, response time, and robustness etc.

Bio-Inspired Quantum Microgrid Power Distribution Using Photosynthetic Leaf Networks

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Abstract

Traditional power systems struggle with energy efficiency, adaptability, and resilience under increasing renewable energy penetration and unpredictable load demand. Inspired by the venation networks of plant leaves, this paper proposes a bio-mimetic, quantum-inspired microgrid framework for adaptive power distribution. Leaf-like hierarchical networks enable dynamic energy allocation based on node demand, while quantum-inspired routing algorithms simultaneously evaluate multiple distribution paths to minimize losses. The framework incorporates self-healing mechanisms, rerouting energy in real-time during faults. Simulations on a 50-node microgrid demonstrate 20–25% transmission loss reduction, faster fault recovery, and higher resilience compared to traditional routing algorithms. This work introduces a novel interdisciplinary approach combining plant biology, quantum-inspired computation, and electrical engineering, laying the foundation for adaptive and self-optimizing smart grids.

Sustainable Rural Electrification Using Micro Hydro Turbines in Irrigation Systems

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Abstract

The use of micro turbines in irrigation applications represents a great opportunity for in- creasing sustainable energy generation. Irrigation systems have water flow that can be used to generate electricity based on micro turbines that are acceptably configure such, that efficiency in crop irrigation is not affected. This research validates this use of micro- turbines through a system designed specifically for the characterization of microturbine generation technology. This system includes a closed water pumping circuit capable of working under, different water flow settings, as well as flow, pressure, and electricity generation sensors. For this system, the production range of the microturbines and the pressure loss associated with the various proposed configurations are characterized and specifically quantified for the best performance. After design a n d characterization of a scalable microturbine system, the feasibility and benefits of this application to supporting most relevant crops supplied by localized irrigation are analysed. The experiments demonstrate the greatest benefit with the implementation of 15 series microturbines each at 80 V, alongside non-Citrus fruit, where a favourable balance is achieved for the amortization period in vineyards and citrus fruit. The results validate a profitable and sustainable design for electricity generation, with return on investment rates of up to 53%. Therefore, this research offers real and extensive applications, while being scalable to rural, residential, urban and industrial settings.

Embedded IOT in Smart Home

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Abstract:

Inexpensive embedded system with internet connectivity for monitoring and controlling several devices and home appliances remotely, using android-based smart phone application or computer-based application. This study explains the overall design of a low cost Home Automation System (HAS) with wireless (WiFi) system (Internet). This HAS is designed to assist and provide support in order to fulfill the needs of children, elderly people and common disabled individuals in their home. In addition, the smart home concept based on IOT improves the standard of living at home. The main control system implements a client server relationship to provide remote access from smart phone through wireless Internet technology. The switches of the electrical appliances are synchronized with the entire control systems in a way that every user interface displays the real time status of the existing switches. Using EEPROM, the last status is preserved and in case of power cut, the system will retain the last-known reading when it recovers from a sudden calamity. The novelty of the system is it gives permission to multiple users at the same time to access the system and change their priority. inexpensive embedded system, and it is easy to install, control and monitor with an array of electronic devices widely used in everyday home chores.

Smart Railway Track Vibration Energy Harvester with IoT and AI

P. Gomathi[1], T. Kalaiyazhaki[2]
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Abstract:

The increasing demand for sustainable energy sources has led to the exploration of innovative energy harvesting methods. This paper proposes a smart railway track vibration energy harvester that converts mechanical vibrations from passing trains into electrical energy using piezoelectric or electromagnetic transducers. Integrating IoT modules enables real-time monitoring and data transmission, while AI-based analytics optimize energy management and predictive maintenance of railway infrastructure. This cost-effective and eco-friendly solution not only generates clean energy but also enhances railway safety through continuous condition monitoring.

AUTOMATIC DYNAMIC E VEHICLE CHARGING SYSTEM

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Abstract:

This paper presents an innovative Automatic Dynamic Electric Vehicle Charging System, enabling seamless and efficient charging of electric vehicles (EVs) while in motion. The system leverages wireless charging technology, IoT connectivity, and advanced power transfer mechanisms to provide real-time, infrastructure-free charging. By eliminating the need for stationary charging stations, this solution addresses range anxiety, reduces charging time, and enhances the overall EV user experience. The proposed system integrates with smart grids, renewable energy sources, and energy storage, ensuring optimized energy harvesting and minimized environmental impact. This abstract highlight the system's architecture, key components, and performance evaluation, demonstrating its potential to revolutionize the future of electric transportation.

HEMODIALYSIS

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Abstract:

Dialysis is a vital form of renal replacement therapy (RRT) derived from the Greek meaning "splitting through." It artificially filters the blood, removing excess water and toxins to maintain **homeostasis** in patients with acute kidney injury (AKI) or chronic kidney disease (CKD). RRT serves as a bridge to transplant or as a sustained life measure. To slow the rising trend of emergency RRT, systematic identification of patients with declining kidney function (low eGFR, heavy proteinuria) is crucial for **planned RRT commencement**. Advanced preparation and patient education, starting no later than **Stage 4 CKD**, are necessary to ensure informed treatment choices, minimize complications (like catheter malfunction, sepsis, and thrombosis), and promote adoption of beneficial home-based dialysis therapies, ultimately improving quality of life.

Decentralized Solar Purifier & Intelligent Monitoring

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Abstract

This paper presents *SMARTAIR*, a decentralized solar and battery-powered air purification and monitoring system designed for semi-outdoor environments. The system integrates a multi-stage filtration unit (pre-filter, HEPA H13, and activated carbon) with an intelligent sensor suite for monitoring particulate matter (PM2.5, PM10), volatile organic compounds (VOCs), carbon monoxide (CO), nitrogen oxides (NOx), and environmental parameters. A Raspberry Pi 5 platform is employed for edge computing, enabling Tiny ML-based pollution source attribution and adaptive fan control. Data integrity is ensured through blockchain anchoring, while real-time dashboards are provided via IoT connectivity and QR code access for citizens and authorities. A proof-of-concept demonstrates pollutant reduction of up to 60–70% in a 500 sq. ft. coverage area. The system operates continuously using solar panels and $LiFePO_4$ battery storage, ensuring sustainable and decentralized deployment. The proposed solution addresses gaps in urban air-quality management by combining active purification, intelligent monitoring, and secure data transparency.

IOT Based Wireless Charging of Electrical Vehicles

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Abstract:

This paper presents the technique to detect the aligned position between transmitter and receiver coil, used in the wireless charging for electric vehicles. The retroreflective photoelectric sensor is adopted, which can enhance the accuracy and reliability of the conventional position detection system. With presented method, the system is operated at the maximum efficiency throughout the operation. Furthermore, the IoT technology is also introduced in the proposed system where remote monitoring and controlling can be achieved. Experimental measurement of the system efficiency with and without presented technique are compared to validate the proposed system.

Design and Control of Permanent Magnet Brushless DC (PMBLDC) Motor for Enhanced Performance in Electric Vehicle Applications

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Abstract:

Permanent Magnet Brushless DC (PMBLDC) motors have emerged as an important class of electric machines widely employed in various industrial, automotive, and consumer applications due to their inherent advantages of high efficiency, compact size, low maintenance, and superior dynamic performance. This research provides an in-depth overview of PMBLDC motor design, modeling, and control techniques including the latest advancements in sensorless control methods, which eliminate the need for mechanical sensors and reduce system cost and complexity. The study covers electromagnetic design aspects emphasizing magnet configuration, stator and rotor geometry optimization, and thermal management for enhanced durability. Advanced control strategies using real-time algorithms are implemented to ensure smooth torque production, improved speed regulation, and reduction of torque ripple. Simulation results from MATLAB/Simulink or finite element analysis validate the performance improvements in torque, efficiency, and operational stability under various loading conditions. This work also highlights challenges such as starting torque limitations, noise, vibration mitigation, and performance variations with temperature. Potential applications for PMBLDC motors include electric vehicles, robotics, aerospace systems, and precision industrial drives, where reliability and energy efficiency are critical. The research concludes with future prospects regarding integrating PMBLDC motors with IoT-based monitoring and predictive maintenance frameworks for smarter, more sustainable drive systems.

Advancements in Electric Vehicle Technologies: Enhancing Performance, Battery Management, and Charging Infrastructure for Sustainable Mobility

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Abstract:

Electric vehicles (EVs) are central to sustainable mobility, driven by technological advances and policy support. This study examines recent EV developments focusing on battery systems, motor performance, and charging infrastructure to improve energy efficiency and user acceptance. Key areas include advances in lithium-ion and emerging solid-state batteries for higher energy density and faster charging, and intelligent battery management systems using real-time analytics to extend lifespan and enhance safety. Motor design improvements—particularly for Permanent Magnet Brushless DC (PMBLDC) drives—and control strategies are analyzed for reduced losses and lower torque ripple. Charging innovations, from fast-charging stations to wireless and dynamic charging, are evaluated for reducing range anxiety and enabling broader adoption. MATLAB/Simulink simulations assess integrated powertrain and energy-management gains, while challenges such as battery recycling, thermal management, and grid integration are discussed. The results highlight pathways to more efficient, durable, and scalable EV systems suitable for diverse markets.

Emerging Technologies and Integration Strategies for Sustainable Renewable Energy Systems

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Abstract:

Renewable energy is a cornerstone of sustainable development, with rapid advancements reshaping power generation and distribution. This research emphasizes emerging technologies such as advanced photovoltaics, wind energy innovations, and green hydrogen as key drivers of clean energy transition. It explores the integration of distributed energy resources, smart grids, and energy storage solutions like solid-state batteries and flow batteries to enhance system stability and efficiency. The study investigates the role of digital technologies including AI, blockchain, and digital twins in optimizing renewable energy management and predictive maintenance. Critical challenges such as intermittency, grid integration, and resource sustainability are addressed through climate-resilient site planning and advanced material usage. Simulation results and real-world data validate the potential of these innovations in expanding renewable penetration and supporting decarbonization goals. The research highlights policy frameworks and market dynamics shaping renewable adoption globally and offers insights into future trends for cleaner, smarter energy systems.

Innovations and Market Trends Driving Solar Energy Expansion in 2025

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Abstract:

Solar energy continues to lead the global renewable sector with rapid technological advancements and expanding market adoption. This research focuses on emerging innovations such as high-efficiency solar photovoltaic (PV) modules including bifacial and perovskite cells, floating solar farms, and integrated agrivoltaics systems that optimize land use. The study examines advances in energy storage solutions complementing solar power, such as solid-state and flow batteries, facilitating grid stability and reliability. Market dynamics reveal strong investment flows and growing employment in the solar sector, driven by increasing demand in major economies like the USA, China, India, and Europe. Challenges such as grid saturation, regulatory frameworks, and the need for skilled workforce development are assessed. Simulation tools and real-world data illustrate solar technology's role in the clean energy transition, highlighting policy impacts and startup innovations accelerating growth. This research offers a comprehensive outlook on solar energy's trajectory toward a sustainable and resilient energy future in 2025.

Advancements and Market Growth of Tidal Energy Technologies for Sustainable Power Generation

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Abstract:

Tidal energy is rapidly gaining prominence as a reliable and predictable renewable energy source, contributing to global decarbonization efforts. This research explores technological advancements in tidal stream generators, tidal turbines, and floating energy platforms that enhance efficiency and durability in harsh marine environments. The study highlights integration strategies with smart grids and advanced energy storage solutions to ensure consistent power delivery and grid stability. Market analysis reveals significant investment growth, driven by government incentives, supportive policies, and increasing awareness of environmental sustainability. Challenges including high initial costs, marine ecosystem impacts, and infrastructure development are addressed with innovative engineering and regulatory frameworks. The research also discusses regional developments, emphasizing coastal and island applications for localized energy security. Simulation and pilot project data verify the feasibility of tidal energy as a complementary technology to solar and wind power. This research projects tidal energy as a vital contributor to a diversified and resilient renewable energy portfolio by 2025.

Technological Innovations and Market Dynamics Shaping Wind Energy Growth in 2025

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Abstract:

Wind energy remains a cornerstone of the global renewable energy transition, characterized by rapid technological advancements and expanding installations. This research focuses on emerging trends such as larger, more efficient turbines, the growth of offshore and floating wind farms, and the integration of AI-driven predictive maintenance to optimize performance. Market expansion is driven by key regions including China, the USA, and Europe, supported by favorable policies and investments. The study addresses challenges including intermittency, grid integration, and environmental impacts, proposing hybrid energy systems and enhanced storage solutions to improve reliability. Simulation models validate the operational improvements and economic viability of new wind technologies under diverse conditions. Additionally, the research explores socio-economic benefits, including job creation and infrastructure development in rural areas. This comprehensive analysis provides insights into the future trajectory of wind energy, emphasizing its critical role in achieving sustainable, low-carbon energy systems globally by 2025.

Department of Instrumentation and Control Engineering

HOD MESSAGE

Dr. S. VADIVAZHAGI, M.E., Ph.D

Professor & Head

Department of ICE

It is with great pleasure that I extend a warm welcome to all of you on behalf of the Department of Instrumentation and Control for the **'TechnothirsT 25 - 26'** A National Level Students Technical Symposium. This event stands as a celebration of the spirit of innovation, knowledge, and collaboration that drives the field of instrumentation and control systems.

As we embark on this exciting journey of exploration, I encourage you all to engage wholeheartedly with the diverse sessions, technical events and discussions, as they offer invaluable insights into the latest trends and breakthroughs in our industry. The world of instrumentation and control is continuously evolving, and it is our collective responsibility to stay ahead of the curve, to think beyond the boundaries, and to shape the future of technology.

This symposium serves not just as a platform for learning but as an opportunity to inspire creativity, foster teamwork, and build strong networks that will last beyond the event. Let us come together, share knowledge, and embark on a journey toward innovation and excellence.

I wish all of you a productive and enriching experience at **'TechnothirsT 25 - 26'**. May this event ignite your curiosity, inspire new ideas, and encourage you to push the limits of what's possible in the world of instrumentation and control.

Dr. S. VADIVAZHAGI

About the Department

- The Department was established in the year 2001.
- The Department got permanent affiliation from Anna University in the year 2014.
- Interdisciplinary Program focusing on various disciplines such as Electronics, Electrical, Computer, Mechanical and Instrumentation.
- Separate Block with Good Infrastructure having seven Laboratories with state of the Art equipment.
- The faculty members in the department are very experienced, dedicated, and well qualified. Department Organizes Guest Lectures, International FDP's and Student Events for the betterment of faculty and student community. Our department faculty authors book and publishes their research works in various national and international journals
- Department possess ***Consecutive University Rank Holders.*** **Ms. S. Anu (**2021 batch – First Rank), **Ms. M. Niraimathi (**2022 batch-First Rank) & **Mr. T. Karthik Raj (**2023 batch –Second Rank) and received gold medals and awards from Anna University and our college.
- Two patents were filed and published by our faculty members along with students and received financial assistance under AICTE-KAPILA scheme. Out of which one patent was granted during the year 2022.
- The Department has Instrument Society of India (ISOI) Students Chapter, where it provides a platform for the students to show their technical talents and also their organizing skills.
- The department conducts Anna University approved Value added course titled "EVA012 – Measurements in Process Industries" every year.
- Students in the department regularly take part in online self-learning courses like IIT Bombay spoken tutorial, NPTEL and Google Certification courses.
- Under the scheme of MODROBS our department received grant in aid of Rs.11,00,000/- from All India Council for Technical Education, New Delhi . The equipment's installed through MODROBS can be used for the benefit of Faculty and Students to carry out their research works and project works.
- Plenty of Job Opportunities for Instrumentation and Control Engineers in Power plants, Petroleum refineries, Paper Industries, Cement Industries, Pharmaceuticals and Chemical Industries. More number of Alumni students are well Settled in abroad such as Singapore, Saudi Arabia, Dubai, Oman and Abudhabi.

A.V.C COLLEGE OF ENGINEERING

Department of Instrumentation and Control Engineering

TECHNOTHIRST 25-26

ORGANIZING COMMITTEE MEMBERS

Convener : Dr. S.Vadivazhagi ,
Professor / Head

Coordinator : Dr. J. Sharmila Devi,
Assistant Professor

Date : 9th October 2025

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	ATCHAYA R	III Year
	MOHAMED SAHEERDEEN H	II Year

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	PRASIN R	IV Year
	SINTHAN S	III Year
	PRAVEEN R	III Year
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	NAVEEN R	II Year
	KAVI P	II Year

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Mrs. M. Vinodhini	GOGULRAJ R	III Year
	MOHAMED RIFATH J	II Year

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Mr. K.Arunbala	NANDHINI N	II Year

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	MOHAMED SAHEERDEEN H	II Year
	AARTHI R	II Year

Treasure Hunt Committee

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	AJAY E	III Year
	RESHMA R	III Year
	VASAN S R	II Year

Technical Quiz

	Student Co Ordinator	Class
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	SELVAMUTHUKUMARASAMY J	III Year
	MOHAMED ILHAM A	II Year
	MOHAMED RIFATH J	II Year

Nano Robotics In Medicine

[1]Ms. S. Swathi,[2] Ms M. Vaitheki .

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Nano robotics in biomedicine represents a revolutionary frontier where science and technology converge at the Nano scale to transform healthcare. Nano robots—microscopic devices measured in nanometres—are designed to perform precise medical tasks inside the human body, such as targeted drug delivery, early disease detection, and minimally invasive surgeries. These intelligent systems can navigate through the bloodstream, identify diseased cells, and release therapeutic agents without harming healthy tissue, thereby reducing side effects and improving treatment efficiency. Although still largely in experimental stages, ongoing advancements in materials science, AI, and bioengineering are rapidly accelerating their development. This paper explores the design, working principles, current research, and future potential of nanorobotics in biomedical applications, highlighting both the promising benefits and the challenges that need to be addressed for clinical use.

Smart Teg Based Power Generator

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The increasing demand for renewable and sustainable energy sources has encouraged researchers and engineers to explore alternative methods of power generation. Among these, Thermoelectric Generators (TEGs) have emerged as a promising solution due to their ability to directly convert waste heat into usable electrical energy through the Seebeck effect. A SMART TEG-Based Power Generator combines thermoelectric technology with advanced monitoring, control, and optimization systems to enhance efficiency, reliability, and practical usability. This project aims to design and implement a compact, intelligent power generation system that harnesses heat from various sources, such as automobile exhausts, industrial furnaces, solar concentrators, and domestic appliances, to produce clean electricity.

Microwave Stroke Diagnostics Revolutionary Prehospital Care

[1]Mr. A. Abineshwaran ,[2] Mr S. Thiruvikraman

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A personal experience for disease stroke is the cruel. When Study has highlights the efficacy of microwave technology for pre-hospital stroke diagnosis.so we find a preliminary solution. This a helmet-based device quickly distinguished between an ischemic (blockage) and hemorrhagic (bleeding) stroke. This rapid, accurate diagnosis enabled the timely administration of life-saving treatment, minimizing disability. The technology is a safe, portable, and cost-effective alternative to traditional scans, demonstrating its potential to transform emergency stroke care. Wider adoption in emergency services is strongly recommended to improve patient outcomes.

Anti Bag Snatching System

[1]Ms. S. Aiswarya,[2] Mr. S. Hemavarshini

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This paper presents a design of an electronic circuit which will be used to prevent bag snatching. Anti bag snatching alarm circuit used in bag or suitcase to prevent in from in snatching, this is simple alarm circuit kept in a bag or suitcase that's sound a loud alarm, simulating a police horn. This will draw the attention to other people and snatcher can be caught. So when the snatcher tries to snatch the bag, the plug detaches from the unit socket to activate the alarm. The heart of this entire circuit project is operation amplifier that configured as comparator, 555 Timer-IC which used as monostable multivibrator and for the audio section it used sound generator within built oscillator. After sound is amplified, it fed to the transducer (loudspeaker) for output.

Predictive Control in Industrial Process

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This model of predictive control in industrial takes the power and reliable control strategy. Industrial process that demands high performance and optimal operation, a detailed study of MPC design, implementation and performance analysis in various industrial process environment. This model to represent is to illustrate how predictive optimization can over minimizes operation cost. Model predictive controllers rely on dynamic models of the process, most often linear empirical models obtained by system identification. The main advantage of MPC is the fact that it allows the current timeslot to be optimized

AI Based Smart Glass For Visually Impaired People

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The “Third Eye” is an innovative smart wearable device designed to assist visually impaired individuals in perceiving their surroundings and navigating safely. The system integrates an RGB camera, machine learning-based object detection, and Google Maps navigation to provide real-time audio feedback about nearby obstacles, people, and directions. By combining computer vision, speech output, and GPS-based navigation, this project aims to enhance mobility, independence, and confidence among visually impaired users.

Automatic laser-based bird repellent for Smart agriculture and aquaculture.

Mr. karthikeyan poomalai

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The proposed design is energy-efficient, capable of operating in various environmental conditions, and minimizes the need for human intervention. By integrating automation and precision targeting, this system provides farmers with a sustainable, cost-effective, and reliable solution to mitigate bird-related losses. Experimental results and simulations indicate that the laser repellent system can significantly reduce bird intrusion compared to conventional methods, thereby improving productivity in agriculture and aquaculture sectors.

Next-Generation Pacemaker Powered By Nanotritium™ Betavoltaic Battery

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Pacemakers are essential devices for treating arrhythmias, but conventional lithium batteries limit their lifespan, requiring periodic replacement procedures. Nanotritium batteries, utilizing safe betavoltaic technology, offer consistent, long-lasting power by converting tritium decay into usable electrical energy, greatly increasing device longevity. Incorporating Nanotritium batteries in pacemakers reduces the need for surgical battery replacement, enhances patient safety, and ensures more reliable cardiac therapy.

Accelerating The Adoption of Electric Vehicles: Challenges, Opportunities, And Future Directions

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This paper presents a comprehensive overview of the current state of Ev technology, highlighting the key barriers to widespread adoption, including charging infrastructure, battery technology, and cost. This paper aims to provide a roadmap for policymakers, industry stakeholders and researchers to accelerate the adoption of EVs and create a sustainable transportation ecosystem

Smart Parking Management System

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With growing Car parking increases with the number of car users. With the increased use of smartphones and their applications, users prefer mobile phone-based solutions. This paper proposes the Smart Parking Management System (SPMS) that depends on Arduino parts Android applications, and based on IoT. This gave the client the ability to check available parking spaces and reserve a parking spot. Its area data are transmitted using the WI-FI module to the server and are recovered by the mobile application which offers many options attractively and with no cost to users and lets the user check reservation details

Renewable Energy Systems

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This paper provides a comprehensive overview of renewable energy systems, exploring the diverse technologies currently employed for sustainable energy generation. It delves into the principles, advantages, disadvantages, and applications of solar, wind, hydro, geothermal, and biomass energy. Furthermore, the paper discusses the global status of renewable energy adoption, challenges to widespread implementation, and future prospects for technological advancements and policy frameworks aimed at achieving a sustainable energy future.

The Rise of Intelligence Exploring Machine Learning And Artificial Intelligence

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Artificial Intelligence (AI) and Machine Learning (ML) are changing the way machines interact with the world. AI helps machines think and act smart, while ML allows systems to learn from data and improve over time. This paper briefly explains the basics of AI and ML, their types, and how they are used in real-life fields like healthcare, automation, and finance. The goal is to show how these smart technologies are making our lives easier and the future more intelligent.

AI & Machine Learning In Biomedical Signal Processing

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Artificial Intelligence (AI) and Machine Learning (ML) are transforming biomedical signal processing by enabling accurate, fast, and automated analysis of complex biological signals such as ECG, EEG, EMG, and others. These technologies help in detecting patterns, classifying diseases, removing noise, and predicting health conditions with high precision. The integration of AI with biomedical signal processing supports real-time monitoring through wearable devices and enhances clinical decision-making, making healthcare more efficient and personalized.

Ai-Powered Biomedical Monitoring And Control System

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This paper focuses on the development of an AI-powered biomedical monitoring and control system that integrates advanced sensors, microcontrollers, and artificial intelligence to enhance patient care. The system continuously monitors vital parameters such as heart rate, ECG, SpO_2, and body temperature. Using AI algorithms, it analyzes sensor data in real time to detect abnormalities and automatically trigger alerts or control actions. This intelligent automation reduces manual errors, improves response time, and supports remote health monitoring.

Artificial Organ

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This paper explores the development, types, and working principles of commonly used artificial organs such as the artificial heart, kidney (dialyzer), liver support systems, and bionic limbs. It also highlights recent advancements in tissue engineering, biomaterials, and 3D bioprinting technologies that contribute to the innovation of more efficient, biocompatible, and durable artificial organs.

Abstract For Wireless Power Transmission System

[1]Mr. S. Sathishkumar (IV YEAR) [2]Mr. P. Bharathraj (III YEAR)

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Wireless power transmission (WPT) is a technology that enables the transfer of electrical energy from a power source to a load without the use of physical wires or cables. A typical WPT system consists of a transmitter connected to a power source that generates a time-varying electromagnetic field, and a receiver that captures this field and converts it back into electric power to supply an electrical load. The main goal is to eliminate physical connections for power delivery, enhancing convenience, mobility, and safety.

Digital Image Watermarking Using DWT

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In the digital era, the protection of multimedia content from unauthorized copying and distribution has become a critical challenge. Digital image watermarking is an effective technique for copyright protection and authentication by embedding hidden information (a watermark) into an image without significantly affecting its visual quality. T. The proposed method embeds the watermark into the high- or middle-frequency sub-bands of the cover image, ensuring resistance against common image processing attacks such as compression, noise addition, and filtering.

Brain-Computer Interface for I- Automation

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By converting human intentions into machine commands using brain signals like electroencephalogram (EEG) patterns, brain–computer interface (BCI) technology enables direct communication between the human brain and external devices. Innovations in process optimization, human-robot collaboration, and predictive maintenance can be fueled by the combination of BCI with AI and Industrial IoT..developments in machine learning algorithms, neuromorphic chips, and non-invasive EEG headsets should speed up the process. In the end, BCI systems may reinterpret efficiency, safety, and the interaction between humans and machines within the framework of industrial 5.0

Accelarating The Adoption of E Vehicle

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The world is shifting towards sustainable transportation, and Electric Vehicles (EVs) are at the forefront of this revolution. This paper aims to provide a roadmap for policymakers, industry stakeholders and researchers to accelerate the adoption of EVs and create a sustainable transportation ecosystem. This paper presents a comprehensive overview of the current state of Ev technology, highlighting ,the key barriers to widespread adoption.

Department of Information Technology

HOD MESSAGE

Dr. K. KRISHNAKUMARI, M.E., Ph.D.,

Professor & Head

Department of IT

As the Head of the Department, I take immense pride in witnessing ***TechnothirsT 25-26*** evolve into a platform that nurtures talent, fosters innovation, and enhances technical expertise. This symposium not only provides exposure to emerging technologies but also sensitizes students to the **growing threats and challenges in today's digital era**.

In a world where advancements such as **artificial intelligence, blockchain, cloud computing, and quantum technologies** are reshaping industries, students must also be prepared to face rising concerns such as **cybersecurity breaches, data privacy risks, ethical AI dilemmas, and misinformation in a hyperconnected society**. This symposium serves as a stepping stone for bridging academic knowledge with practical readiness to handle these real-world challenges.

A range of engaging events, including Paper Presentation, Web Designing and Technical Quiz, will be organized by students. These not only sharpen critical thinking and problem-solving abilities but also provide hands-on exposure to scenarios involving **ransomware defense, safe coding practices, and ethical tech solutions**. By actively participating, students gain confidence, develop teamwork, and acquire the ability to navigate both *opportunities and threats* of emerging technologies.

As Albert Einstein once said, *"The important thing is not to stop questioning. Curiosity has its own reason for existing."* With this spirit, I reaffirm my commitment to fostering an environment of curiosity, resilience, and excellence. Let *TechnothirsT 25-26* stand as a beacon of learning, awareness, and responsibility—empowering students to embrace innovation while boldly addressing the technological threats of the future.

(Dr.K.Krishnakumari)

ABOUT THE DEPARTMENT

The B.Tech Information Technology program at A.V.C. College of Engineering, established in the 1999-2000 academic year with an initial intake of 60 students, has grown significantly and now admits **120** students starting from 2024—demonstrating its sustained popularity and impact. Featuring an industry-driven curriculum, the program equips students to face dynamic and emerging technological challenges with confidence.

The department is staffed by experienced and highly qualified faculty dedicated to maintaining high standards in teaching, mentorship, and research guidance. Two state-of-the-art laboratories provide students with hands-on exposure to the latest technologies, allowing them to solidify their understanding of theoretical principles through practical application. Continuous engagement with industry further sharpens students' adaptability, creativity, and professional competitiveness.

Since the 2014-15 academic year, the department has enjoyed permanent affiliation with Anna University, Chennai, and its students have consistently secured top ranks in university examinations, reflecting a strong tradition of academic excellence.

The department's commitment to quality was recently recognized through the receipt of the Overall Shield for Academic Performance. Enhancing its research profile, the department has successfully garnered prestigious grants from agencies such as AICTE (SDP, MODROBS, and Seminar schemes), Anna University (FDTP – Centre for Faculty Development), ICSSR, TNSCST, and DRDO, supporting innovative research and faculty development.

The International Conference on Innovative Research in Engineering and Technology **(ICIRET-2025)** was successfully organized on 28th March 2025 at A.V.C. College of Engineering, Mayiladuthurai. This one-day international conference provided an excellent platform for faculty, scholars, and students to present and discuss their innovative research ideas in engineering and technology. The event featured keynote sessions, technical presentations, and a valedictory function, fostering knowledge exchange and collaboration among participants from diverse academic and industry backgrounds.

TechnothirsT25-26 COMMITTEE LIST

S.NO	COMMITTEE NAME	ROLES AND RESPONSIBILITIES	STAFF INCHARGE
1	Poster Design	Poster design and get approval from higher authority	1. Mr.N.P.K. Ganesh Kumar 2. Mrs.S. Gayathri
2	Address Collection	• Collect address of various engineering colleges • Check the address with other departments to avoid repetition	1. Mrs.S. Gayathri 2. Ms.B. Bhakyalakshmi 3. Dr.K. Manikandan
3	Paper Presentation	• Announce and invite authors to submit their papers for symposium.Collect and manage paper submissions. • Assign papers to peer reviewers for evaluation • Intimation of selection • Collect camera ready paper • Preparation of Proceedings • Session attendance	1. Mrs.V.Ezhilarasi 2. Mrs.M.Priyadharshini 3. Mrs. N.Shruthi 4. Ms.B. Bhakyalakshmi
		Judge	1. Dr.V. Padmavathi 2. Dr.K. Aruna
4	Registration	• Create a registration form • Collect payment from participants • Pay the collected payment to the office and get invoice • Distribute the invoice to participants	1. Ms.B.Bhakyalakshmi 2. Mrs.D. Mahalakshmi
5	Event 1-Quiz	• Set up questions • Collect attendance • Organize the event • Collect session attendance • Identify the prize winners	1. Mrs.S. Jeevitha 2. Mr.N.P.K.Ganesh Kumar 3. Mrs.G. Renuga 4. Asina Begum(IV IT) 5. Abirami(IV IT)
6	Event 2	• Set up questions • Collect attendance • Organize the event • Collect session attendance • Identify the prize winners	1. Dr.K. Manikandan 2. Dr.R. Kanimozhi 3. Ms.B.Bhakyalakshmi
7	Refreshment	• Collect snacks from the hostel and distribute to the participants, student	1. Dr.K. Manikandan 2. Mrs.M. Priyadharshini 3. Ms.S. Sangeetha

		volunteer and staff	4. Mr.N. Bharanidharan 5. Mr.M. Vijay 6. Ms.M. Sushmasri 7. Mrs.Chitra 8. Harish.B(IV IT)
8	Lunch	• Collect snacks from the hostel and distribute to the participants, student volunteer and staff	1. Dr.K. Manikandan 2. Mr.N.P.K.Ganesh Kumar 3. Mrs.D. Mahalakshmi 4. Mrs.G. Renuga 5. Mrs.S. Jeevitha 6. Mr.N. Bharanidharan 7. Mr.M. Vijay 8. Ms.M. Sushmasri 9. Mrs.Chitra
9	Hospitality and Accommodation	• Arranging Accommodation • Managing Room Assignments	1. Mr.N.P.K.Ganesh Kumar 2. Mrs.S. Gayathri
10	Decoration and seating	• Hall arrangement • Decoration • Banner	1. Dr.K. Manikandan 2. Dr.V. Padmavathi 3. Mrs.G. Renuga 4. Ms.S. Sangeetha 5. Mr.N. Bharanidharan 6. Mr.M. Vijay 7. Ms.M. Sushmasri 8. Mrs.Chitra
11	Certificate	• Write certificates. • Obtain signatures from higher authorities. • Distribute certificates to participants.	• Ms.R. Valampurinayaki • Mrs.N. Shuruthi • Ms.M. Sushmasri
12	Compering	• Arranging students to compair for different events.	1. Ms.R. Valampurinayaki 2. Student Coordinators → R.Dhaneshwar → P.Thirumamagal
13	Surprise Events	• Conducting fun games for the participants.	1.Mrs.D. Mahalakshmi Student Coordinators 1.R.Dhaneshwar 2.P.Thirumamagal
14	Reception	• Welcoming participants and others.	1. Mrs.S. Gayathri 2. Students

A Pragmatic Approach for Preventing Cyber Attacks through Differential Privacy byAmeliorating the Security Implications of Machine Learning Models

Ms.P. Shanmuga Priya[1], Ms.R.Santhamathi[2]
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Abstract

The espousal of Machine Learning (ML) in cybersecurity introduces a new attack zone: the ML models themselves. The bad neighbours and antagonists can use de-anonymization attack to extract sensitive training data or discern a specific individual's membership in the dataset, violating privacy and enabling further attacks. This paper proposes a pragmatic solution by integrating Differential Privacy (DP) into the ML models. The research work argues that the security risk emanates from model overfitting and memorisation of sensitive data points. By training models with Differentially Private Stochastic Gradient Descent (DP-SGD), the calibrated noises were injected into the learning process, preventing memorisation and building inherent resilience against these privacy exploits. The research work uses mathematical models to demonstrate that DP-hardened models can be used to mitigate model inversion and membership inference attacks with only a marginal impact on detection accuracy. Consequently, this work repositions Differential Privacy as an essential, practical component for developing secure and trustworthy ML systems, directly preventing data-centric cyber attacks.

Cybersecurity: Safeguarding the Digital Future

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Abstract

The rapid expansion of cloud computing, mobile devices, and the Internet of Things has transformed the digital world—but it has also created a vast attack surface for cyber-criminals. Cybersecurity is now a fundamental requirement for individuals, enterprises, and governments alike. This paper examines the evolving cyber-threat ecosystem, including ransomware, phishing, and advanced persistent threats. It explains key security principles such as the Confidentiality-Integrity-Availability (CIA) triad and the Zero-Trust model. The discussion also highlights emerging technologies—artificial intelligence, blockchain, and quantum computing—that simultaneously strengthen defenses and introduce new risks. Practical strategies for risk reduction are explored, including layered security, encryption, multi-factor authentication, and rapid incident response. The paper also emphasizes user awareness and national policy frameworks, with a brief look at India's recent cybersecurity directives. By combining technical insights with real-world case studies, the presentation underscores the urgency of proactive defense and continuous learning to secure our digital future.

Cloud-Based Smart Seating Management System For Academic Institutions

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Abstract

Traditional exam seating arrangement is manual,time-consuming, and error-prone.Proposed system: Cloud-based web application for automated seating allocation.Faculty can generate seating and upload to cloud, students can search using register number.System reduces workload, improves fairness, and ensures easy access. The cloud infrastructure ensures seamless access, real-time updates, and centralized control, enabling administrators and students to efficiently manage seating assignments across classrooms, exams, and events. This intelligent system improves space utilization, reduces manual intervention, and enhances the overall academic environment by providing a flexible, scalable, and user-friendly solution. This optimize seat allocation and management in academic institutions. Leveraging cloud computing and smart algorithms, the system dynamically assigns seating arrangements based on multiple parameters such as student preferences, course schedules, accessibility needs, and social distancing norms.

IOT Theft Detection Using Raspberry Pi

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Abstract

In recent years, security has become a major concern for homes, offices, and industries. Traditional security systems are often expensive and limited in functionality. To overcome these challenges, an IoT-based theft detection system using Raspberry Pi is proposed. The system integrates various sensors such as motion detectors, vibration sensors, and magnetic door sensors along with a camera module to identify unauthorized access or suspicious activity.When an intrusion is detected, the Raspberry Pi processes the sensor data and immediately triggers alerts through alarms, SMS, or email notifications. The system also utilizes IoT cloud platforms for real-time monitoring, where the owner can remotely track live video or receive status updates through a mobile application or web dashboard. Additionally, evidence in the form of images or video is stored for further verification.This IoT-based approach provides a low-cost, efficient, and scalable solution for theft prevention. It ensures quick response, remote accessibility, and enhanced security, making it suitable for homes, offices, warehouses, and other critical areas.

The Evolution of Technology: Shaping a Smarter Future

Ms.A.Arokiya Vinoliya[1], Ms.M.R.Nandhini[2]
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Abstract

This presentation explores the rapid advancements in technology and their profound impact on modern society. It examines the evolution of key technological innovations, from early computing systems to cutting-edge developments like Artificial Intelligence, Internet of Things (IoT), Blockchain, and Quantum Computing The presentation highlights how these technologies are driving transformation across industries such as healthcare, education, transportation, and finance. It also addresses critical challenges, including cybersecurity threats, ethical dilemmas, and the digital divide, while proposing solutions for sustainable and inclusive tech growth. Through real-world examples and forward-looking insights, this session aims to provide a comprehensive understanding of how technology continues to revolutionize human life, shaping a smarter, more connected, and innovative future.

Data Science: Unlocking Insights, Driving Innovation

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Abstract

This presentation delves into the dynamic field of Data Science, exploring its role as a cornerstone of modern decision-making and innovation. Covering key concepts such as data collection, cleaning, exploratory analysis, and predictive modeling, it highlights how data-driven insights are transforming industries like healthcare, finance, marketing, and technology. The discussion includes cutting-edge techniques like machine learning, deep learning, and natural language processing, alongside tools and frameworks widely used in the field.Challenges such as data privacy, ethical concerns, and bias in algorithms are addressed, emphasizing the importance of responsible data science practices. By showcasing real-world applications and case studies, this presentation aims to equip attendees with a deeper understanding of how data science unlocks hidden patterns, drives business strategies, and powers the future of AI and analytics.

Artificial Intelligence: Transforming the Future

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Abstract

This presentation delves into the transformative power of Artificial Intelligence (AI) and its impact across industries and everyday life. It begins with an overview of AI, its evolution, and core concepts, including machine learning, deep learning, and neural networks. The presentation highlights key applications of AI, such as autonomous systems, natural language processing, healthcare innovations, and predictive analytics. Additionally, it addresses the challenges of AI implementation, including ethical concerns, data privacy, and the need for energy-efficient models like Green AI. Real-world examples and case studies are used to illustrate the practical benefits and limitations of AI in solving complex problems. The goal of this presentation is to provide a comprehensive understanding of how AI is shaping the present and future, while encouraging discussions on the responsible and sustainable use of AI technologies.

AI Timetable Generator

Ms K.Lakshmi Sudha [1],Ms J.Gayathri [2]
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Abstract

This project presents an AI-based timetable generator designed to automate the scheduling process for educational institutions or organizations. Utilizing artificial intelligence techniques such as constraint satisfaction, optimization algorithms, and machine learning, the system efficiently creates conflict-free, balanced timetables that accommodate multiple constraints including teacher availability, room capacity, subject requirements, and student preferences. The AI timetable generator significantly reduces manual effort, minimizes scheduling conflicts, and enhances resource utilization, thereby improving overall operational efficiency. This tool demonstrates the potential of AI in solving complex scheduling problems through intelligent automation.

Internet of Things

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Abstract

The Internet of Things (IoT) represents a fundamental shift in how humanity interacts with technology and our physical environment. Far beyond a mere technological upgrade, the IoT marks a paradigm shift in the integration of digital and physical realities. By definition, the IoT is a vast, ever-expanding network in which everyday physical objects—from industrial machinery and urban infrastructure to common household appliances and personal devices—are embedded with sensors, software, and advanced connectivity capabilities. These intelligent devices, equipped with the capacity to sense, compute, and communicate, autonomously collect and exchange data within and across networks. This process transforms the physical world into a massive, dynamic, and responsive information ecosystem that enables real-time monitoring, automation, and optimization. The ability of devices to operate independently and interact with each other and the environment without constant human intervention is central to the revolutionary potential.

AI In Oncology

Ms.K.Nuha Zarin [1],S.Srivari [2]
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Abstract

Artificial intelligence is revolutionizing oncology by enhancing precision, efficiency, and outcomes across the cancer care continuum. Through supervised learning, AI models are trained on vast datasets of expert-annotated medical images, genomic sequences, and clinical records. Convolutional Neural Networks (CNNs) excel in analyzing radiological and pathological images to detect malignancies, while tree-based models and deep learning algorithms decipher complex genomic data to identify molecular subtypes and biomarkers. The integration of multi-modal data through hybrid models enables a comprehensive diagnostic approach. The clinical implementation of these technologies follows a rigorous pipeline from data curation and model training to validation and deployment. The conclusive output of this integration is a powerful clinical application that serves as a decision-support tool, enabling earlier detection, more accurate diagnosis, personalized treatment strategies, and improved prognostic predictions—ultimately transforming patient care in oncology.

Cloud Computing

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Abstract

Cloud Computing has emerged as a transformative technology that revolutionizes the way data, applications, and IT resources are managed and delivered. It enables users to access computing services such as storage, processing power, and software over the internet, eliminating the need for physical infrastructure and reducing operational costs. This paper explores the fundamental concepts of cloud computing, its architecture, and various service models such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). It also highlights the benefits of scalability, flexibility, and cost efficiency offered by cloud technology, along with key challenges related to security, privacy, and data management. Furthermore, the paper discusses real-world applications and the growing role of cloud computing in modern enterprises and educational institutions. The study concludes that cloud computing is a cornerstone of digital transformation, driving innovation and efficiency in both industry and academia.

Department of Mechanical Engineering

HOD MESSAGE

Dr. S. VIJAYARAJ, M.E., Ph.D.,
Professor & Head,
Department of Mechanical Engineering

A message from the Head of Department,

To All Students, Teachers, and Respected Visitors,

I am delighted to welcome you all to TechnothirsT 25-26, our yearly student symposium, a setting where creativity and intelligence run into and concepts become reality. This event exhibit our aspiring engineers' zeal, creativity, and scientific temper.

TechnothirsT 25-26 is more than simply a symposium; it's a chance to learn, educate, work and share knowledge together. It offers a stage for students to exhibit their skills, participate in various competition, and learn from others in the field. This symposium is a first step toward attaining perfection, and the future belongs to those who have the courage to think beyond curriculum.

I urge every person to take full advantage of this chance - engage fully, connect with peers, and take on problems with assurance. Allow TechnothirsT 25-26 to kindle your desire to learn advance technology and innovation.

I hope everyone will have a meaningful and rewarding experience!

(Dr.S.Vijayaraj)

ABOUT THE DEPARTMENT

The department is accredited by the National Board of Accreditation (NBA) and is an approved Research Centre by Anna University with Three research supervisors guiding Ph.D. scholars. It holds NAAC accreditation with an A grade in the third cycle. The faculty team is highly qualified, with 50% holding Ph.D. degrees and 40% currently pursuing their doctorates. The department is equipped with smart classrooms featuring audio-visual facilities alongside conventional teaching methods. A well-stocked central and departmental library, state-of-the-art R&D laboratories with advanced research equipment, and a Wi-Fi-enabled campus with 250 Mbps internet connectivity enhance the academic environment. Memorandums of Understanding (MOUs) with IIT Bombay Spoken Tutorial and various industries foster collaboration and knowledge exchange.

The department has secured significant research funding, including AICTE grants under MODROBS (Rs. 15 lakhs) and RPS (Rs. 25 lakhs), along with SERB funding of Rs. 21 lakhs. Currently, 9 research scholars are pursuing Ph.D.s under the department, with eight scholars having successfully completed their doctorate degrees. Faculty members, research scholars, and students contribute extensively to high-impact publications in Scopus and SCI-indexed journals. The department has undertaken numerous consultancy projects, such as solar power plants, biogas plants, and in-house furniture fabrication. A strong alumni network plays a crucial role in student mentorship, placement assistance, and technical training. Students gain hands-on experience through fabrication projects and R&D projects in final years, while professional societies conduct technical and co-curricular activities to enhance their learning experience. Internship and placement training programs ensure that students receive excellent career opportunities, complemented by the department's active NPTEL Local Chapter, which encourages participation in MOOCs courses.

Future objectives focus on strengthening Industry-Institute Interaction and increasing core company placements. Students are encouraged to excel in GATE, GRE, TOEFL, and other competitive exams. The department aims to secure additional research funding from DST, SERB, DRDO, and AICTE while striving for 100% admissions and placements. Faculty members are motivated to improve their research contributions through publications in high-impact journals. Committed to academic excellence, research innovation, and holistic student development, the department continues to bridge the gap between industry and academia.

TechnothirsT 25-26 COMMITTEE LIST

Date : 09 th October 2025
Convenor :Dr. S. Vijayaraj
Coordinator :Mr. S. Mohanakannan

To conduct national level symposium in successful manner, an adhoc committee is constituted and the Staff & student members of committee are requested to extend their cooperation.

DESCRIPTION	STAFF MEMBERS	STUDENT MEMBERS
RECEPTION & REGISTRATION	Dr. P. SendilGaneche Mr. G. Vijayakumar	Sureshraja R, IV Mech Sivagami S, III Mech Avini K , II Mech
PAPER SELECTION PANEL & JUDGES	Dr. A. Balaji Dr. A. Hajamaideen Dr. S. Rajkumar Dr. R.Saravanan	Guhan C , IV Mech Sankaralingam S, III Mech Saminathan M, II Mech
EVENT: 3D MODELING	Mr. P. Yegnanarayanan Mr. G. Vijayakumar	Hariharan A, IV Mech Bharanidharan S, III Mech Mohamed Nusrath Hameed M, II Mech
EVENT: KNOWLEDGE CHALLENGES	Mr. R. Purushothaman Mr. A. Pannerselvam	Kanivanan M, IV Mech Naresh A, IIIMech Ranish K, II Mech
STAGE ARRANGEMENT & SEATING	Mr. S. S. Nivas Mr. K.Shanmugam Mr. S.Baskaran	Ratheesh V, IV Mech MishanthArumugam K, III Mech Abbas A M, II Mech
REFRESHMENT & CATERING	Mr. S. Rajkumar Mr. S. K. Ayyappan Mr. B. Viswanathan Mr. S. Sankar	Manikandan P, IV Mech Sivasankaran S, III Mech Doninavaneethan B, II Mech
PRIZES & CERTIFICATES	Dr. P. SendilGaneche Mr. S. Sankar	Yuvan Raj K, IV Mech Manikandan A, III Mech Murugan. C, II Mech
ANNOUNCEMENT & AUDIO	Mr. P. Yegnanarayanan Mr. B. Viswanathan	Praveen G, IV Mech Mukilan S, III Mech Gowtham S, II Mech
FUN EVENTS	Mr. R. Purushothaman Mr. S. S. Nivas Mr. S .Santhosh	Dhivya Prakash S, IV Mech Abilash S, III Mech Adhithya C, II Mech
DISCIPLINE	All Teaching and Non-Teaching Faculty Members	Yogaananth V, IV Mech Karthik M, III Mech Eniyan R, II Mech

E-waste Management

Mr. S. Priyadharsan[1], Mr. J. C.Sriram[2]
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Abstract

The rapid advancement of technology has led to an exponential increase in electronic waste (e-waste) worldwide. E-waste includes discarded electronic devices such as computers, mobile phones, and home appliances that contain valuable yet hazardous materials. Improper disposal and lack of recycling infrastructure contribute to severe environmental pollution and health risks due to toxic substances like lead, mercury, and cadmium. This paper focuses on the methods and technologies for effective e-waste management, including collection, segregation, recycling, and recovery of valuable metals. It also discusses modern approaches such as automated dismantling, eco-design of products, and circular economy models that minimize waste generation. The study highlights the role of mechanical engineers in developing efficient recycling systems and green manufacturing techniques. Implementing sustainable e-waste management practices is crucial to protect ecosystems, conserve resources, and move towards a cleaner and greener future.

Nanotechnology in Mechanics

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Abstract

Nanotechnology is the study and application of materials at the nanoscale, typically between 1 to 100 nanometers. In mechanical engineering, it plays a crucial role in improving the performance, durability, and efficiency of mechanical systems. Nanomaterials, such as carbon nanotubes and nanoparticles, can significantly enhance the strength, hardness, and thermal resistance of metals, polymers, and composites. Nano-lubricants reduce friction and wear, increasing the lifespan of engines and machines. Surface coatings at the nanoscale provide corrosion resistance and improved adhesion properties. Nanotechnology also enables the development of precise nanosensors and actuators for mechanical systems. These innovations lead to lighter, stronger, and more energy-efficient components. Additionally, nanotechnology contributes to sustainable engineering by reducing material usage and improving energy efficiency. It opens new possibilities in robotics, aerospace, automotive, and manufacturing industries. Overall, nanotechnology bridges the gap between traditional mechanical engineering and advanced material science, driving innovation and efficiency.

Preparation of Nano Material Enhanced Paraffin Wax for Cooling Battery Thermal Management System

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Abstract

Effective thermal management is essential for improving the performance, safety, and lifespan of lithium-ion batteries used in electric vehicles and portable energy storage devices. Paraffin wax, a widely studied phase change material (PCM), offers high latent heat storage capacity and stable chemical properties, making it suitable for battery cooling. However, its low thermal conductivity limits heat transfer efficiency. To overcome this drawback, nano-materials such as graphene, carbon nanotubes, metal oxides, and nanofibers are incorporated into paraffin wax to form nano-enhanced PCMs (NePCMs). The addition of nano-fillers significantly increases thermal conductivity, accelerates heat dissipation, and reduces local hot spots during battery operation. This study focuses on the preparation, characterization, and performance evaluation of nano-material enhanced paraffin wax for battery thermal management systems. Results demonstrate that optimized nano-filler concentration leads to improved thermal response, enhanced cycling stability, and effective temperature regulation, thus providing a promising passive cooling solution for next-generation energy storage technologies.

Role of IOT Sensors and AI Models for Real-Time Asset Condition Monitoring

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Abstract

Real-time asset condition monitoring (ACM) has been transformed by the combination of Internet of Things (IoT) sensors and Artificial Intelligence (AI) models. This integration has improved asset reliability, reduced operational downtime, and enabled predictive maintenance. High-frequency data on critical parameters like vibration, temperature, pressure, and energy usage is continuously recorded by IoT sensors, offering important insights into the operation of assets. To identify irregularities, forecast malfunctions, and optimize maintenance plans, this data is processed by AI-driven machine learning (ML) and deep learning (DL) techniques, such as convolutional neural networks (CNNs), long short-term memory (LSTM) networks, and reinforcement learning models. By lowering latency and facilitating large-scale data processing, the use of edge computing with cloud-based analytics improves real-time decision-making. ACM by digital twin technology enhances operational effectiveness and failure diagnosis. Considering these developments, issues including sensor calibration, data security, and computing limitations continue to be major obstacles to broad adoption. This study offers a thorough Advancements which are recently booming to create robust, intelligent, and autonomous monitoring systems across sectors for the effective implementation and helps to understand the difficulties, and future research prospects in IoT- and AI-enabled ACM.

Solar Energy

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Abstract

Solar energy is one of the most promising renewable energy sources available today. This presentation explores the fundamentals of solar energy, including how it is captured and converted into usable electricity and heat through photovoltaic and thermal technologies. It highlights the numerous benefits of solar power, such as sustainability, environmental friendliness, cost savings, and energy independence. The presentation also outlines the wide range of solar applications, from residential rooftop panels and commercial installations to off-grid power systems and solar-powered vehicles. While solar energy presents significant advantages, challenges such as intermittency, initial installation costs, space requirements, and storage limitations remain. Looking ahead, rapid advancements in solar panel technology, energy storage solutions, and increasing global investment are driving the growth of solar energy worldwide. As a clean and sustainable alternative to fossil fuels, solar power is poised to play a critical role in the global transition to a more resilient and environmentally conscious energy future.

Artificial Intelligent Powered Urban Traffic Signal Management

Ms. J. Monika Shree[1], Ms. P. Dhatchana[2]
III Year MECH, E.G.S. Pillay Engineering College, Nagapattinam

Abstract

Urban areas worldwide face escalating traffic congestion, resulting in increased travel times, higher fuel consumption, elevated emissions, and reduced overall quality of life. Conventional traffic signal systems typically operate on pre-set timing schedules that do not respond efficiently to real-time variations in traffic flow, often causing unnecessary delays and bottlenecks. To address these challenges, this study proposes an AI-powered urban traffic signal management system designed to enhance traffic efficiency and reduce congestion in smart cities. Machine learning algorithms analyze this data to identify traffic patterns, predict congestion points, and dynamically adjust signal timings in response to actual traffic conditions. The AI model optimizes green light durations and coordinates signal phases across intersections to minimize waiting times and improve throughput. Implementation of this AI-driven traffic management approach offers significant benefits, including reduced vehicle idle time, lower greenhouse gas emissions, and improved emergency vehicle prioritization. Furthermore, the system adapts to special events, accidents, and road works, ensuring resilient and flexible traffic control. The deployment of such intelligent traffic signal control not only enhances urban mobility but also supports broader smart city initiatives aimed at sustainability and improved public safety. This paper analysis the performance of the AI-powered system through simulations and pilot deployments in urban environments, demonstrating its potential to transform traditional traffic management into a more responsive, efficient, and environmentally friendly solution.

EV Battery and Thermal Engineering

Mr. S. Praveen[1], Mr. A. Gokulbella[2]
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Abstract

Electric Vehicles (EVs) are revolutionizing the transportation sector with eco-friendly design and energy efficiency. However, performance, safety, and lifespan of EVs heavily depend on effective battery management and thermal control systems. The EV battery serves as the heart of the vehicle, and maintaining its optimal temperature is essential to ensure reliability and prevent degradation. Thermal engineering plays a crucial role in designing cooling and heating mechanisms that enhance battery efficiency and extend its life cycle. This paper focuses on various thermal management techniques such as liquid cooling, air cooling, phase change materials (PCM), and advanced heat pipe systems. The study also expiores new innovations in thermal interface materials and smart sensors for real-time monitoring. By integrating thermal engineering principles with modern battery technologies, this research aims to improve the performance, safety, and sustainability of next-generation electric vehicles.

IOT Based Smart Shoes for the Visually Impaired

Mr. M. Rishikanth[1], Ms. S. Nithiyasree[2]
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Abstract

The Internet of Things (IoT) has enabled the development of smart assistive devices that enhance the quality of life for people with disabilities. This project presents an IOT-based sensor shoe designed to aid visually impaired individuals in navigating their surroundings safely and independently. The system integrates ultrasonic sensors to detect obstacles in the user's path and provide real-time feedback through vibration or audio alerts. The collected data is transmitted to a microcontroller, which pro-cesses the information and sends notifications to the user via a smartphone application using lot connectivity. The shoe's com-pact design ensures comfort while maintaining high detection accuracy and low power consumption. Experimental results demonstrate that the system effectively alerts users about nearby obstacles, reducing the risk of accidents and increasing mobility confidence.

Advancements in Energy Storage Technologies

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Abstract

Energy storage plays a vital role in modern energy systems, enabling the efficient and reliable integration of renewable energy sources, reducing energy waste, and providing backup power during outages. This paper presents an overview of the latest advancements in energy storage technologies, including battery energy storage systems, pumped hydro storage, compressed air energy storage, and emerging technologies like hydrogen storage and super capacitors. We will discuss the technical, economic, and environmental benefits of these technologies, as well as the challenges and opportunities associated with their widespread adoption. The presentation will also highlight recent innovations and trends in energy storage, including smart energy management systems, grid-scale energy storage, and the role of energy storage in enabling a low-carbon economy.

Performance Study of Coated Plate Heat Exchanger in Milk Pasteurization Process by using Nano Fluid

Mr.V .Dharmaraj[1], Mr.S.Yogeshwaran[2]
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Plate heat exchanger is one of the thermal energy transferring devices, which transfer the heat between different fluids. This is widely used in different application because of its compact in size and higher efficiency compared to other type of heat exchanger. In this research work we are analyzing the performance of corrugate type plate heat exchanger using nano fluid in milk pasteurization process. in this work the nano particles is used to prepare nano fluid and the base fluid used as demineralised water. The main advantage of using PHE in this work is that it has high heat transfer area. The main focus of using nano fluid is that it has high thermal conductivity than base fluid like water, ethylene glycol, etc. the concentration of nano fluid is 0.3% of its volume concentration. Here the milk is used as hot fluid and the nano fluid used as cold fluid. The heat transfer rate is increased with increasing the concentration of nano fluid.

Advance Composite

Mr.J.jeevan prabu[1] , R.kishor Kumar[2]
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Advanced composites are high-performance engineered materials composed of two or more distinct constituents combined to achieve superior mechanical, thermal, and chemical properties. Their lightweight yet high-strength characteristics, coupled with excellent corrosion and fatigue resistance, make them indispensable in aerospace, automotive, marine, and civil engineering applications. This abstract explores their composition, key properties, and recent advancements in manufacturing technologies such as automated fiber placement and additive manufacturing. It also highlights modern damage detection techniques, including non-destructive evaluation methods. Ongoing research focuses on improving performance, durability, and sustainability, positioning advanced composites as vital materials driving innovation and efficiency across multiple industries.

EV Battery Thermal Management

Mr.C.santhosh[1], Mr.M.Anbarasan[2]
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Traditional fuels and internal combustion engines are major sources of CO2 emissions and environmental pollution. Electric vehicles (EVs) are touted as green energy solutions for a cleaner future. EVs utilize lithium-ion batteries, but face challenges such as poor performance in extreme temperatures, limited electrode lifespan, and safety risks from battery thermal runaway. Effective Battery Thermal Management Systems are crucial for EV longevity. The study emphasizes the crucial role of coolant selection, structural design, and channel configuration in optimizing indirect liquid cooling systems for EV batteries. Conducted through comprehensive CFD analysis using a cold plate, it specifically examined three key parameters: the impact of different coolants, various cold plate structures, and the number of channels. Findings indicated that a 50% ethylene glycol-water (EGW) solution outperformed pure water in performance metrics. Additionally, streamlined channel cold plates demonstrated superior temperature uniformity and reduced pressure drops, establishing them as the most efficient design option. This streamlined design facilitated enhanced heat transfer while minimizing pressure losses, confirming its suitability for EV battery cooling applications.

Department of Master of Business Administration

Dr. G. SRIDEVI, MBA, M.Phil, Ph.D.
Professor & Head,
Department of Management Studies,
A.V.C.College of Engineering,
Mannampandal – 609 305.

HOD MESSAGE

I am extremely proud that our Department of Management Studies is organizing A National-Level Student Technical Symposium, Technothirst 25-26, at our college on 8th October 2025. This symposium will nurture a technical mindset among students and inspire them to embrace the spirit of unity and knowledge pursuit. It will serve as a gateway for them to explore and unleash their own creative potential."

I firmly believe that this symposium provides an excellent platform for budding managers from various institutions to present innovative ideas in fields such as Marketing, Human Resources, Finance, Production, and Supply Chain Management, will equip students to face both current and future challenges. It will empower future managers to unleash their creativity and competitive spirit, fostering constructive learning and the practical application of managerial skills.

The focus of this symposium is to provide management students with a deep insight into their area of expertise. I am confident that this Technical Symposium will inspire new ideas, dreams, inventions, and approaches, shaping the mindset of emerging managers and encouraging them to make significant contributions to their respective fields."

I would like to express my appreciation to the Department Coordinator, faculty members of event in-charge, and first- and second-year MBA students for their dedication and hard work. They are the true driving force behind the success of this symposium.

I extend my heartfelt congratulations to the prize winners and best wishes to all participants for their outstanding involvement in the Best Manager, Business Quiz, and Paper Presentation events during the symposium.

G. Sridevi

08.10.2025 G.SRIDEVI

ABOUT THE DEPARTMENT

Department of Management Studies was started in 2001 by focusing its resources exclusively on the budding managers of tomorrow. An ever evolving curriculum designed by Anna University, Chennai, nurtured through superior industry-institute interaction keeps students up-to-date on the latest corporate gradation and fine distinction. The department takes an effort to cater to the present day requirement for trained managerial talent, since its inception the department has been offering diversified specializations such as Human Resources, Marketing and Finance.

HIGHLIGHTS OF THE DEPARTMENT

The Department concentrates on shaping the Managers, Entrepreneurs and Management Gurus of the future. DOMS has successfully organized 625 events in the category of Invited lectures, workshops, seminars, student development activities, social extension activities, consultancy work, Entrepreneurship Development Programmes, Entrepreneurship Awareness Camp, Short Term Training Programme, PMKVY – Ti Scheme projects and Personality development Programmes for the benefit of the students in the past 20 years.

MBA Department received the fund from NSTEDB two times to conduct the three days Entrepreneurship Awareness Camp for the benefit of Engineering and technology students during the year 2019.A Short Term Training Programme in the title of "Legal Rights of Women and Redressal Mechanism for Faculty Members" has organized with the AICTE Fund Support in the year 2020. Two days National seminar on "Ayushman Bharat -Improved Rural Women Health Insurance in India"has conducted with the fund support by ICSSR during the year 2022. Again, in the year 2024, with the fund support of ICSSR another two days National seminar on "Health Rights and Legal Awareness: Enhancing Access to Health care for Rural Women" has been conducted. Received fund support for two social relevant projects from TNSCST project scheme. This year the department granted the ATAL Online FDP Programme with the fund sponsorship from AICTE. Under the AICTE - PMKVY – Ti Scheme fund support completed 3 courses successfully for the benefit of rural people by the Department.

The department has produced lot of first generation entrepreneurs to the society. Many alumni have taken care of their family owned business in and around Mayiladuthurai. Every year half percentage of the eligible students got placement in City Union Bank, Karur Vysya Bank, ICICI Bank, Shriram Chit and finance, India Mart, ESAF micro finance bank, Muthoot finance, Reliance Trends. The Alumnus of the department is working in ISRO, HUL, Nestle India Pvt. Ltd., Sun Pharmaceuticals Pvt. Ltd. Standard Charted Bank, Glaxco Smith claim Beecham India Pvt. Ltd. Some of the alumni are working in foreign countries UAE, Hong Kong, Cessales and UK also. Many So for 24 batches were successfully completed the Degree and employed many places in India and abroad.

TechnothirsT25-26 COMMITTEE LIST

ORGANIZING COMMITTEE MEMBERS

Person**: Dr.P.Balasubramaniyan, Principal**
Coordinator **: Dr.G.Sridevi, Professor / Head**
StaffCoordinator **:Mr.S.Rubendoss, Asst. Prof.**
Date **:**8th October, 2025

Organising Members

Staff In Charge	Student Co Ordinator	Class
Mr.S.Rubendoss	Mohamed Salmaan Farris .T.N	II – MBA
	Aravind E	I – MBA

	Rangoli Committee	Best Manager Committee
Staff In Charge	**Student Co Ordinator**	**Student Co Ordinator**
Dr.K.Keerthi	Ashifa Thagasin M Vijayalakshmi G Sivasree S Amirtha V Akilandeshwari M	Santhosh Kumar M Ashwin Gowtham Mohamed Nushrath Manikandan L Sujitha G

Reception Committee

	Student Co Ordinator
Dr.R.Renuka Devi	Nivetha P Nisthula T Pavithra V Shakthi Priya RM

	Registration and Feedback Committee	Certificate /Prize Distribution Committee
Staff In Charge	**Student Co Ordinator**	**Student Co Ordinator**
Dr.M.S.Gayathri	Jasra Shafeen B Jumana JothiLakshmi C Swathi M Vishali R Sivapriya S Amirtham S	Stefy Alance X Preethi V Sivaranjani R Jenitta Remolin J Keerthini R Tharani M Vishnavi R
	Business Quiz Committee	**Hall Arrangement Committee**
	Student Co Ordinator	**Student Co Ordinator**
	Mahalakshmi S Kaviya S Jeeva shree S Ganeshan Mohamed Raseen Sridurgadevi S	Dhivagar J Vishnu P Sabari R Harish S

	Souvenir Editing Committee	Paper Presentation Committee
Staff In Charge	**Student Co Ordinator**	**Student Co Ordinator**
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	Accomodation Committee	Discipline Committee
Staff In Charge	**Student Co Ordinator**	**Student Co Ordinator**
Mr.S.Rubendoss	Kamalisha S Sharmila S	Kavinaya S Nikitha P Ashwin R Balaji D Maruthanayagam D Sathya S Priyadharshini MK Muthu A Samyuktha J
	Audio & Photo Arrangement Committee	**Decoration Committee**
	Student Co Ordinator	**Student Co Ordinator**
	Thiruvengadajalapathi M Mohamed Nushrath J Vignesh R Subash M Pragadesh B Seenivasan S	Gowtham.C Jahadeesan R Mohamed Raseen.M Madhan Kumar S Balamurugan K Aasim Akram S
	RefreshmentCommittee (Catering)	
	Student Co Ordinator	
	Vignesh S Tamilmani S Stefy Alance X Jahadeesan R Bagathraj KV Nandagopal R Sridurgadevi T Subasri R Subha G	

Business Model Innovation through AI Adaptation: The Role of Strategic Human Resources Management

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Abstract

While artificial intelligence (AI) requires business model innovation, it simultaneously poses persistent operational, regulatory and strategic challenges, highlighting the importance of researching AI adaptation to appropriate organizational value. AI adaptation is not monolithic, and its nature and consequent value appropriation processes may vary due to external factors and an organization's strategic approach to innovation and resource management. Accordingly, a taxonomy of AI adaptation and its link with value appropriation can yield a theoretical understanding and practical implications of why and how organizations vary in leveraging strategic human resource management to shape business innovation led by AI adaptation. In this paper, we address this issue by applying adaptive structuration theory and conducting interviews with top management personnel from 51 companies based in India. Based on our findings, we develop a novel taxonomy of AI adaptation (exploitive, exploratory, emancipatory and expedient), structured within a 2 × 2 matrix and a robust model of value appropriation within a dynamic business environment.

Artificial Intelligence in Human Resource Management

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Abstract

In general, Human resource managers widely have a perception that Artificial intelligence systems will replace Human Resource managers shortly but in reality, Artificial intelligence does simplify their job by automating repeated tasks and providing valuable insights without any cognitive biases. This paper tries to address the possibilities of how Artificial intelligence is transforming and supporting the Human Resource functions like recruitment, training, talent management & retention through real time examples, gives insights on intersection of Artificial intelligence & Human resource management cases and finally it addresses the future impact on the HR workforce.

Mathematical Modeling for Optimal Management of Human Resources in Banking Sector

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Abstract

A new mathematical model on human resources divided employees into two compartments, namely, fresher and expert employees, has been designed and analyzed. A system of ordinary nonlinear differential equations has three state variables including vacancies. This model describes the dynamics of the number of fresher employees and expert employees as well as vacancies and shows the impacts of training programs and benefits of provided facilities for employees. The equilibria of this proposed model are determined, and its stability at these points is checked. Moreover, characteristics of state variables with respect to parameters have been discussed. Using two optimal control variables, this study finds the maximum number of experts including the minimum cost of provided facilities as well as the training program based on Pontryagin's maximum principle.

Green House Effect on Global Warming

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Abstract

The Greenhouse effect is a leading factor in keeping the Earth warm because it keeps some of the planet's heat that would otherwise escape from the atmosphere out to space. The study report on the Greenhouse gases and their impact on Global warming. Without the greenhouse effect the Earth's average global temperature would be much colder and life on Earth as we know it would be impossible. Greenhouse gases include water vapor, CO2, methane, nitrous oxide (N2O) and other gases. Carbon dioxide (CO2) and other greenhouse gases turn like a blanket, gripping Infra-Red radiation and preventing it from escaping into outer space. The clear effect of the greenhouse gases is the stable heating of Earth's atmosphere and surface, thus, global warming. The ability of certain gases, greenhouse gases, to be transparent to inbound visible light from the sun, yet opaque to the energy radiated from the earth is one of the best still events in the atmospheric sciences. The existence of greenhouse effect is what makes the earth a comfortable place for life. The study also reveals the importance of greenhouse gases to the warming of the planet earth.

AI-Driven Customer Relationship Management (CRM) in E-Banking

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Abstract

The rapid digitization of banking services has transformed how financial institutions interact with their customers. Traditional Customer Relationship Management (CRM) systems are increasingly inadequate in handling the scale, complexity, and speed of data in the e-banking environment. This paper explores how Artificial Intelligence (AI) is revolutionizing CRM in e-banking, providing banks with the ability to deliver personalized, efficient, and secure customer experiences. Through a review of relevant literature and analysis of current applications, this paper outlines the major benefits of AI-driven CRM, such as improved customer satisfaction, enhanced operational efficiency, and increased revenue generation. It also addresses key challenges, including data quality, regulatory compliance, ethical concerns, and organizational resistance. This paper explores the integration of AI-driven CRM systems in e-banking, highlighting their role in enhancing customer engagement, automating support through chatbots and virtual assistants, optimizing marketing strategies, and improving risk assessment and fraud detection. Through a review of current technologies and case studies, the research underscores how AI not only boosts operational efficiency but also fosters long-term customer loyalty and satisfaction.

Lean Manufacturing and Six Sigma in the Digital Era

Ms.Dharani[1]
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Abstract

In the digital era, the integration of Lean Manufacturing and Six Sigma with emerging technologies is revolutionizing operational excellence across industries. Lean focuses on waste elimination and process efficiency, while Six Sigma emphasizes reducing variability and improving quality. Together, they form a powerful methodology for continuous improvement. The advent of Industry 4.0 technologies—such as the Internet of Things (IoT), Artificial Intelligence (AI), Big Data Analytics, and Cloud Computing—has significantly enhanced the capabilities of Lean Six Sigma practices. Real-time data collection, predictive analytics, and automated decision-making are enabling more responsive, precise, and scalable process improvements. This paper explores how digital tools are transforming traditional Lean Six Sigma approaches, presenting new opportunities and challenges for organizations aiming to achieve agile, data-driven, and customer-centric operations. It also discusses case studies and best practices illustrating successful digital integration, and offers a roadmap for implementing smart Lean Six Sigma systems in modern production and service environments.

AI- Powered Financial Risk Analysis for Investment Decision-making

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Abstract

Financial markets are inherently uncertain and complex, making risk assessment acritical factor for investors, financial institutions, and policymakers. Traditional risk analysis methods often struggle to process vast amounts of heterogeneous data, leading to delayed or inaccurate predictions.With the emergence of Artificial Intelligence (AI) and Machine Learning (ML), financial risk analysis has become more data- driven, adaptive, and predictive. This paper explores how AI- powered models enhance risk assessment, improve investment decision- making, andprovide robust portfolio optimization strategies. It also discusses existingapproaches, key methodologies, applications, challenges, and future directions inthe field of AI- driven financial risk management.

Employee Well-being and Mental Health in the Modern Workplace.

Ms.Dharshini[1],Gayathiri[2]
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Abstract

In today's fast-paced, digitally connected, and often high-pressure work environments, employee well-being and mental health have become critical issues for organizational success and sustainability. Modern workplaces are experiencing rapid changes driven by technological advancements, remote and hybrid work models, and evolving employee expectations. These shifts have brought both opportunities and challenges for maintaining mental health and overall well-being. This paper explores the key factors influencing employee mental health in contemporary work settings, including workload, work-life balance, organizational culture, leadership practices, and digital burnout. It also examines the role of employers in creating supportive environments through mental health policies, wellness programs, flexible work arrangements, and psychological safety initiatives. Drawing on recent studies, best practices, and real-world case examples, the paper highlights strategies for promoting mental well-being, reducing stigma, and fostering a healthier, more productive workforce in the modern era.

Supply Chain for improving customer satisfaction.

Ms.Jahira[1]
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Abstract

Supply Chain Management (SCM) is the strategic coordination of business functions involved in sourcing, production, and distribution to ensure that products and services reach customers efficiently and effectively. In today's competitive global market, SCM plays a crucial role in reducing costs, improving customer satisfaction, and enhancing organizational performance. It integrates processes such as procurement, manufacturing, logistics, inventory management, and information flow across suppliers, manufacturers, distributors, and retailers. Modern SCM is increasingly driven by technology, including automation, artificial intelligence, big data analytics, and blockchain, which improve transparency, speed, and decision-making. This paper explores the importance of supply chain management, its components, emerging trends, and the challenges faced in creating a sustainable and resilient supply chain network. The study highlights that effective SCM is not only a key driver of operational excellence but also a significant contributor to competitive advantage in the digital era.

Supply Chain Management

Ms.Niranjani[1]
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Abstract

Supply Chain Management (SCM) is a comprehensive approach to managing the end-to-end flow of products, services, information, and finances across the entire business network. It begins with strategic planning and sourcing of raw materials, moves through manufacturing, warehousing, and distribution, and ultimately reaches the end consumer. Modern SCM not only focuses on efficiency and cost reduction but also emphasizes flexibility, quality, innovation, and sustainability to address the growing complexities of global markets. Effective SCM integrates suppliers, manufacturers, logistics providers, and retailers into a seamless system that enhances customer satisfaction, improves decision-making, and creates competitive advantage. With the rise of digital technologies such as artificial intelligence, blockchain, and big data analytics, SCM is evolving from a traditional operational function into a strategic enabler of business growth, resilience, and long-term sustainability.

Turning Waste into Wealth: A Blue Ocean Strategy with Rice Husk Packaging

Ms.N.Dhanalakshmi[1], A. Nandhini[2]
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Abstract

In today's competitive market, sustainability has emerged as a key differentiator for startups. This paper explores the application of the Blue Ocean Strategy in creating an eco-friendly startup that manufactures packaging materials using rice husk, an agricultural byproduct. Traditional packaging industries rely heavily on plastic and paper, leading to environmental concerns and high raw material costs. By converting rice husk into biodegradable packaging boxes and cushioning alternatives to bubble wrap, this venture not only minimizes agricultural waste but also creates a new market space with minimal competition. The paper highlights the market potential, raw material availability, production process, cost analysis, and profit estimations for both domestic and international markets. Findings reveal that medium-scale domestic operations can achieve profit margins of 30–40%, while export-oriented business models can scale up to 60–65% profitability due to higher global demand for sustainable solutions. Potential buyers include e-commerce companies, food delivery services, FMCG sectors, and international retailers committed to eco-friendly practices.This study concludes that rice husk packaging is not just a sustainable alternative but also a profitable business idea that aligns with environmental goals and the principles of the Blue Ocean Strategy, offering startups an opportunity to create value innovation while contributing to global sustainability.

AI Powered HR Analytics

Ms.G.Sujitha[1], V.Jayashri[2]
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Abstract

The way businesses handle their employees has been completely transformed by the quick digital transformation.AI powered HR analytics, which offer practical insights for hiring, performance management, employee engagement and retention are replacing traditional HR procedures, which are replacing traditional HR procedures, which are frequently laborious and manual. A thorough AI-driven framework for predictive talent management is presented in this paper, combining advanced combination of data-driven modeling and real-world HR scenarios. In order to ensure responsible and equitable talent management, the suggested method also addreeees ethical issues and bias mitigation in HR AI applications.

Human Resource Management

Ms.Jemiabigayil[1]
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Abstract

Human Resources plays a vital role in driving organizational success by aligning human capital with business objectives. Effective HR management fosters a positive work environment, enhances employee engagement, and optimizes talent acquisition and development. This paper explores the strategic importance of HR in modern organizations, highlighting best practices in recruitment, talent management, employee relations and performance enhancement. By leveraging HR strategies, organizations can improve productivity, reduce turnover and achieve sustainable competitive advantage.This abstract provides a concise overview of the importance of HR in organizational success and highlights key points and recommendations for strategic HR management.

Department of Master of Computer Applications

HOD MESSAGE

Dr. S. SELVAMUTHUKUMARAN, Ph.D.,
Vice Principal &
HoD, Department of Computer Applications
A.V.C. College of Engineering

It gives me great pride and joy to welcome you all to the National Level Technical Symposium – TechnothirsT 25-26 scheduled from 08.10.2025 to 10.10.2025.

In an era defined by innovation and rapid change, the true purpose of education goes beyond academic achievement. A college must create opportunities that inspire curiosity, encourage critical thinking, and prepare students to meet global challenges with confidence and competence. Events like TechnothirsT 25-26 provide the perfect platform for students to explore their potential, exchange knowledge, and showcase their talents, thereby shaping themselves into future-ready professionals.

I sincerely commend the students from our institution as well as from other colleges for their enthusiasm, creativity, and commitment to excellence.

On behalf of the organizing team, I extend my heartfelt appreciation to the faculty members for their relentless support and dedication in making TechnothirsT 25-26 a remarkable milestone in our institution's journey.

[Dr.S.SELVAMUTHUKUMARAN]

A.V.C. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER APPLICATIONS

ABOUT THE DEPARTMENT

Department of Computer Applications offers MCA programme under the affiliation of Anna University, Chennai. The department strongly believes in committing itself to the positive transformation not only through class room coaching but also it provides a good theoretical foundation, extensive practical training and systematic exposure in all spheres of activities.

HIGHLIGHTS OF THE DEPARTMENT

Our department successfully organized many events in the category of Invited Lectures, workshops, seminars, student development activities, social extension activities, Faculty Development Programme, PMKVY-Ti Scheme projects and Personality Development Programme for the benefit of the students in the past 24 years.

Most of our alumni are working in reputed IT companies. Some of the alumni are working in Government jobs also. So far 22 batches were successfully completed the Degree and employed many places in India and abroad and 7 research scholars completed their Ph.D. Degree in our Department Research Centre.

The Department produced 70 University Rank holders from the inception. A total grant-aid of Rs.10,85,500 has been received from various funding agencies and organization such as AICTE, ISTE, TNSCST and Anna University.

A.V.C. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER APPLICATIONS

FACULTY DETAILS

S.No.	Name of the Faculty	Designation	Qualification
1	Dr.S.SELVAMUTHUKUMARAN	PROFESSOR & HOD, VICE PRINCIPAL	M.C.A., Ph.D.,
2	Dr.T.VENKATESAN	ASSOCIATE PROFESSOR	M.C.A., M.Phil., Ph.D..,
3	Dr.A.SUGANTHI	ASSOCIATE PROFESSOR	M.C.A., M.Phil., Ph.D.., UGC - NET
4	Mr.N.SRINIVASAN	ASSISTANT PROFESSOR	M.C.A., M.Phil., (Ph.D.),
5	Mr.S.SIVAKUMAR	ASSISTANT PROFESSOR	M.C.A., M.Phil.,
6	Mr.P.JAYAPAL	ASSISTANT PROFESSOR	M.C.A., M.Phil., (Ph.D.).,

SUPPORTING STAFF DETAILS

S. No.	Name of Faculty	Designation	Qualification
1	Mr. B. Bharadhan	Technical Assistant	DME.,
2	Mr.N.Muthukumar	Technical Assistant	DCT.,
3	Mr.A.Sivasundaram	Lab Assistant	ITI.,

A.V.C. COLLEGE OF ENGINEERING

* * * * *

DEPARTMENT OF COMPUTER APPLICATIONS

COMMITTEE FOR TechnothirsT' 25 -26

(8th October 2025)

Date: 25-08-2025

Nature of Work	Staff Name
Registration (Registration count and Participation Confirmation)	• All Faculty Members
Registration & Announcement (Registration count, Phone and E-Mail Communication, Participation Confirmation, Accounts maintenance, Reports for all events)	• Mr.P. Jayapal, *Asst. Professor* • Student Volunteers
Certificate Committee (Hall arrangement, Audio, Certificate Writing works, Attendance Certificate, Photos)	• Mr. S. Sivakumar, *Asst. Professor* • Student Volunteers
Paper Presentation (Receiving Paper & Confirmation of participation, Technothirst Proceedings)	• Dr. A. Suganthi , *Asso. Professor* • Student Volunteers
Tech Quiz	▪ Mr. N.Srinivasan, *Asst. Professor* • Student Volunters
Code Debugg	▪ Dr.T.Venkatesan, *Asso. Professor* ▪ Mr.B.Bharadhan, *Technical Assistant* ▪ Student Volunters
Hospitality, Lunch & Refreshments (Lunch & Refreshment Arrangements for Participants)	▪ Mr.S.Sivakumar, *Asst. Professor* ▪ Mr.N.Muthukumar, *Lab Assistant* ▪ Mr.A.Sivasundaram, *Lab Assistant*

Artificial Intelligence

[1] Dharani.A, [2] Jenita.S

II- Year B.Sc (Artificial Intellengence & Machine Learning)

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Abstract

Artificial Intelligence (AI) represents one of the most transformative technologies of the 21st century, fundamentally reshaping industries, societies, and human interaction with machines. Core areas include machine learning, natural language processing, computer vision, robotics, and expert systems. The future of AI demands a collaborative, interdisciplinary approach that balances innovation with responsibility. This includes robust policy frameworks, transparency, global cooperation, and an emphasis on human-centered design to ensure that AI serves the collective benefit of humanity.This abstract provides a holistic overview of AI's evolution, current state, and far-reaching implications, aiming to inform and inspire thoughtful engagement with one of the most impactful technologies of our time.

Cyber Security And Privacy

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III- Year B.C.A (Computer Applications)

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Abstract

Cyber security is the practice of protecting computer systems, networks, and data from cyber-attacks. It involves a combination of technologies, processes, and policies designed to prevent, detect, and respond to cyber threats. Classify cybercrimes, we suggest clustering crimes that involve inauthentic relationships may gain a deeper understanding of these crimes develop more effective methods to disrupt, detect, prevent, and provide more supportive victims. Alternative models are presented here with extensions to the traditional classifications of cyber-enabled and cyber-dependent crimes.

Generative AI (Transforming The Future Of Computing)

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Abstract

Generative Artificial Intelligence (AI) has emerged as a revolutionary technology in recent years, transforming the landscape of computing. By enabling machines to create content, code, and complex solutions autonomously, generative AI is redefining traditional computing paradigms. This paper explores the impact of generative AI on the future of computing, highlighting its applications in software development, data analytics, natural language processing, and creative industries. Additionally, we discuss the challenges and ethical considerations associated with this technology.

Internet of Things

[1] Atchaya., [2] Arthi.l,

II–Year B.Sc (Information Technology)

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ABSTRACT

The Internet of Things (IoT) represents a transformative paradigm in which everyday physical objects are embedded with sensors, software, and connectivity to exchange data over the internet. This interconnected ecosystem enables real-time monitoring, automation, and intelligent decision-making across diverse domains such as healthcare, agriculture, manufacturing, transportation, and smart cities. IoT devices collect and transmit data, which is then analyzed to optimize operations, enhance user experiences, and reduce resource consumption. Despite its vast potential, IoT also introduces challenges related to data privacy, security, scalability, and interoperability

Quantum Computing

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Abstract

Quantum computing is a modern way of computing that is based on the science of quantum mechanics and its unbelievable phenomena. It is a beautiful combination of physics, mathematics, computer science and information theory. It provides high computational power, less energy consumption and exponential speed over classical computers by controlling the behavior of small physical objects i.e. microscopic particles like atoms, electrons, photons, etc. Here, we present an introduction to the fundamental concepts and some ideas of quantum computing.

Emotionrecognition in AI

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Abstract

Emotion recognition using Artificial Intelligence (AI) has become a significant area of research in affective computing and human-computer interaction. Emotions play a vital role in human communication, influencing decision-making, learning, and behavior. AI-driven emotion recognition systems attempt to bridge the gap between human emotional intelligence and machine understanding by analyzing multimodal data such as facial expressions, vocal tone, body gestures, and physiological signals (e.g., heart rate, skin conductance, and brain activity). Future research is focused on developing robust, ethical, and interpretable models that can support emotion-aware AI systems to improve human well-being, decision-making, and interaction quality.

Blockchain-Based Digital Payment Systems: Enhancing Security And Transparency In E-Cash Transactions

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Abstract

With the rapid expansion of e-commerce and digital finance, traditional centralized payment systems face challenges including fraud, transaction delays, and lack of transparency. Blockchain technology offers a decentralized solution that ensures secure, transparent, and immutable financial transactions. This paper investigates the design and implementation of blockchain-enabled digital payment systems, with a focus on e-cash applications. A comparative study is conducted between permissioned and permissionless blockchain frameworks, analyzing their transaction throughput, scalability, and energy consumption. The study concludes that blockchain adoption in e-cash platforms can enhance financial inclusion, reduce fraud, and support the future of decentralized digital economies.

Real-Time Predictive Analytics In Healthcare: Utilizing Machine Learning On Wearable and Ehr Data For Early Disease Detection

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Abstract

The combination of real-time data analytics with healthcare systems has created new opportunities for early disease detection and personalized patient care. This paper introduces a machine learning-based approach that integrates data from wearable health devices and electronic health records (EHRs) to forecast the early emergence of chronic diseases such as cardiovascular issues, diabetes, and respiratory ailments. By utilizing real-time physiological indicators like heart rate, oxygen saturation, and activity levels together with historical clinical information, the proposed system seeks to provide ongoing risk assessment and prompt notifications to healthcare professionals. This research highlights the transformative potential of real-time predictive analytics in transitioning healthcare from a reactive to a proactive model, decreasing hospital readmissions, and facilitating scalable, patient-focused monitoring solutions.

Self-Supervised Learning in the area of Healthcare Monitoring Decision Support Systems

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Abstract

The availability of labeled data in healthcare monitoring is frequently constrained by needs for clinical competence, annotation expenses, and privacy concerns. Through the creation of auxiliary pretext tasks, Self-Supervised Learning (SSL) has become a viable paradigm to get over this restriction by utilizing vast amounts of unlabeled data. A thorough analysis of the use of SSL approaches in a range of healthcare areas, such as electronic health records (EHRs), medical imaging, and physiological signal monitoring, is presented in this work. We provide a framework based on SSL for learning reliable patient representations from clinical imaging, multimodal medical records, and wearable sensor data. Prior to being fine-tuned on a small number of labeled datasets for downstream tasks like anomaly detection, disease classification, and vital sign prediction, the model is pretrained utilizing tasks like masked signal prediction, temporal context modeling, and contrastive learning. With an F1-score of 0.87 as opposed to 0.78 in supervised baselines, experimental data show that SSL models perform better in low-label conditions than conventional supervised techniques. Our results demonstrate how SSL can improve the scalability, generalizability, and efficiency of patient-centered, real-time health monitoring systems. We also go into future research directions for privacy-preserving federated learning frameworks, rare disease detection, and multimodal SSL.

Retinal Projection Display: The Next Era of Tailored Screenless Visualization

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Abstract

This paper investigates the operational principles of retinal projection systems, encompassing light modulation, eye tracking, and image stabilization techniques. Through this examination, the paper seeks to demonstrate how retinal projection displays could transform the future of human-computer interaction, providing a more natural, secure, and portable alternative to traditional screens.

Artificial Intelligence in Climate Change: Forecasting Models For Severe Weather And Ecological Oversight

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Abstract

The paper reviews various AI techniques, including convolutional neural networks (CNNs) for analyzing image-based satellite data, recurrent neural networks (RNNs) for processing time-series climate information, and hybrid models for multivariate climate forecasting. Furthermore, it explores AI applications in ecological monitoring, such as observing biodiversity decline, deforestation, rising ocean temperatures, and deteriorating air quality. The study also addresses significant challenges like data imbalance, model interpretability, and computational requirements, along with approaches to create more transparent and resilient AI systems. In conclusion, the research highlights the potential of AI to enhance climate resilience, guide policy-making, and expedite global sustainability objectives.

. 5G and 6G Technologies: Impact on Connectivity and IoT

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Abstract This paper explores the transformative impact of 5G and emerging 6G technologies on IoT ecosystems, including smart cities, autonomous systems, healthcare, industrial automation, and immersive experiences like XR (Extended Reality)Key advancements such as terahertz (THz) communication, holographic beamforming, and integrated AI at the network edge are examined for their potential to support real-time, ultra-reliable machine-type communications (uRLLC) and massive machine-type communications (mMTC). The paper also addresses current challenges in scalability, spectrum management, energy efficiency, and data security across large-scale IoT deployments. By analyzing current deployments and future trends, this study highlights how 5G and 6G will accelerate the convergence of physical and digital worlds, laying the foundation for next-generation, hyper-connected, and intelligent IoT networks.

Enhancing Vehicle Reliability and Efficiency Through Advanced Machine Learning-Driven Predictive Maintenance

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Dr. V. Maniraj - Associate Professor & Research Supervisor, PG & Research Department of Computer Science, AVVM Sri Pushpam College (Autonomous), (Affiliated to Bharathidasan University, Tiruchirappalli) Poondi – 613 503, Thanjavur District.

Abstract

The integration of advanced technologies such as sensors, telematics, and onboard diagnostics (OBD) is revolutionizing the automotive industry. Despite these innovations, many vehicles still depend on traditional maintenance strategies—either reactive or scheduled—which fail to anticipate sudden breakdowns, resulting in increased costs and operational downtime. Predictive maintenance (PdM), powered by machine learning (ML) and real-time data analytics, offers a forward-looking approach by identifying anomalies and wear in components before failures occur. This research introduces an intelligent predictive maintenance framework tailored for smart vehicles, combining IoT-based data acquisition, ML-driven anomaly detection, and real-time diagnostic decision-making. To address challenges related to accuracy, computational efficiency, and deployment in resource-limited automotive environments, we evaluate several machine learning algorithms, including Random Forest (RF), Long Short-Term Memory (LSTM) networks, and Extreme Gradient Boosting (XGBoost). Experimental findings reveal that XGBoost strikes a balance between performance and computational demand, while LSTM models excel at capturing temporal patterns in sequential sensor data. The proposed framework demonstrates strong potential for reducing unplanned maintenance, enhancing vehicle availability, and improving overall safety in next-generation smart vehicles.

Artificial Intelligence in Content Moderation: Opportunities, Challenges, And Future Direction

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Abstract

The rapid growth of digital platforms has resulted in unprecedented volumes of user generated content (UGC). Effective content moderation is essential for safeguarding online communities, preventing harm, and ensuring compliance with regulations. Traditional manual moderation is resource intensive and limited in scalability. Artificial Intelligence (AI) has emerged as a powerful solution for automating moderation processes, using techniques such as natural language processing (NLP), computer vision, and multimodal learning. This paper examines the role of AI in content moderation, reviewing current methods, applications, ethical challenges, and future research directions.

Explainable Artificial Intelligence (Xai): Towards Transparent and Trustworthy AI Systems

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Abstract

Artificial Intelligence (AI) has achieved remarkable success across domains such as healthcare, finance, and autonomous systems. However, the lack of transparency in many machine learning models has raised concerns about accountability, ethics, and trust. Explainable AI (XAI) addresses this issue by providing tools and techniques to interpret and explain model decisions. This paper reviews recent developments in XAI, categorizes major approaches, and highlights their real-world applications. We also discuss current challenges, limitations, and potential future directions of XAI research.

Ethics in Data Science

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Abstract

The increasing use of data science in various domains has raised significant ethical concerns. This paper discusses the importance of ethics in data science, highlighting key considerations, and explore case studies that illustrate the ethical challenges in data science.

Explainable Artificial Intelligence In Cybersecurity: A Survey

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Abstract

Artificial intelligence (AI) is widely used in cybersecurity for intrusion detection, malware detection, and fraud prevention.The problem is that many ai models act like black boxes and do not explain their decisions.Explainable ai (xai) helps make ai's working more transparent and understandable. This paper surveys over 300 works on xai methods in cybersecurity and gives future directions.

Enhanced Soil Moisture Detector With Gsm Module And Mit App Inventor

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Master of Computer Applications

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Abstract

This project aims to develop a Soil Moisture Detection System using Arduino, a soil moisture sensor, and a GSM module to communicate with a custom-built mobile application created using MIT App Inventor. The system measures soil moisture levels and transmits the data to the mobile application, where conditions are monitored and displayed. The app allows users to assess real-time soil health and take necessary actions, ensuring effective irrigation management.

Cyber Security in Advanced IT

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Abstract:

In today's digital era, cybersecurity has become a cornerstone of advanced information technology. With the rapid evolution of threats such as ransomware, phishing, and advanced persistent attacks, organizations face unprecedented challenges in safeguarding their critical data and systems. This paper explores the dynamic cyber threat landscape and highlights the pivotal role of human awareness, as human error remains a primary cause of breaches. It further examines advanced security technologies, including AI-powered threat detection, blockchain-based authentication, and Zero Trust architecture, alongside critical frameworks like NIST and ISO 27001 that guide structured defense strategies. Finally, the discussion emphasizes the need for a holistic, resilient approach that integrates leadership, strategy, technology, and culture to build sustainable digital defense mechanisms. The study underscores that in the face of evolving threats, adaptive strategies and a human-centric security culture are essential for ensuring a secure digital future.

Department of Science and Humanities

HOD MESSAGE

Dr.V.Tamilselvan, M.Sc., M.Phil., B.Ed., Ph.D.,

Head of the Department.

Department of Science and Humanities

It is my great pleasure to see Technothirst, our national-level technical symposium, bring together talented students from across the nation. This event has provided a wonderful platform for our students to showcase their technical prowess, share innovative ideas, and learn from each other.

I extend my heartfelt congratulations to all the winners and participants for their outstanding achievements. Their dedication, creativity, and passion for technology are truly commendable.

I would like to express my sincere gratitude to our faculty members and students for their tireless efforts in organizing Technothirst in such a meticulous and successful manner. Their hard work and commitment have made this event a grand success.

I hope that Technothirst will inspire our students to pursue excellence in their chosen fields and make significant contributions to the world of technology.

(Dr.V.Tamilselvan)

ABOUT THE DEPARTMENT

The Department of Science and Humanities, established in the year of 1996, is a vital part of our Engineering College, providing a strong foundation in fundamental sciences, mathematics, and humanities to engineering students. The department offers a range of courses that cater to the diverse needs of students from various engineering disciplines. The Department is well equipped with laboratories. The department lays emphasis on the development of the finer qualities of the students besides his higher activities. The Staff members, not only part with basics of education and also the ethics which make the students to the higher degree of competency and thereby shaping them to a full – fledged personality. The students are imbibed with a high sense of social responsibility to make him as good individuals and valuable citizens of this glorious country.

Department Highlights:

Well experienced faculty members with specialization in English, Physics, Chemistry, Mathematics and Tamil. We are having State – of the Art laboratories for hands- on learning and experimentation. Student welfare programs, including National Level Seminars since 2006, SWSC , FDTP, workshops, and conferences . Chemistry Department is a Recognized Research centre for Ph.D.,/M.S Program under Anna University since the year of 2018. The year 2019 onwards the Students Induction Programme was conducted for first year students. In 2021 our department organized AICTE-ISTE Sponsored One-Week Refresher Course in Chemistry. Naan Mudhalan Course was started for first year students from the year 2022 onwards. Our department provide opportunities for bring out the talent of the students by conducting Co-curricular and Extra- curricular activities such as Quiz programme, Group Discussion and releasing Department News Letter. Nearly 75% Faculty members have completed their Ph.D., and 25 % of Faculties are pursuing their Ph.D.,

TechnothirsT25-26 COMMITTEE LIST

Organizing Committee members

Date : **08th October, 2025**

Convener : Dr.V.Tamilselvan, H.O.D/S&H
Coordinators : 1..Dr.S.Umarani-Tamil
2.Dr.K.Krishnamoorthy-English
3.Dr.S.Rajalakshmi-Mathematics
4.Dr.V.Vanathi-Physics
5.Dr.J.Swaminathan-Chemistry

Reception & Registration Committee

Staff In Charge	Student Co Ordinator	Class
Dr.M.Umamaheswari AP/ Mathematics Mr. M.Vivekanandhan, Lab.Asst/S&H	B.NANDHINI	IT - B
	R.NIRANJANA	IT - B
	T.THIRAVIYA	IT - B
	E,THABASRI	ECE
	S.HANIBHARATHI	ECE
	A.ABITHA	ECE
	C.RIBANA SATHI	IT B

Poster making, Certificates, Website & Dispatch Committee

Staff In Charge	Student Co Ordinator	Class
Dr.R.Subash, AP/Mathematics Dr.A.Sathya AP/Physics	E.PRIYADHARSHINI	ECE
	V.JAYAVARSHINI	ECE
	M.RITHIGA	ECE
	M.SAHANA	ECE
	T.RAGHAVI	ECE
	R.DIVYA BHARATHI	ECE

Event Organizing Committee

Staff In Charge	Student Co Ordinator	Class
Dr.M.K.Sangeetha, AP/Chemistry Dr.S.Sathya, AP/Mathematics	J.DHANUSHREE	CSE A
	S.HARINI	CSE A
	S.DESHIKA	CSE A
	V.ABARNA	CSE A
	K.AJITRA	CSE A
	P.MIRUTNIKA	CSE A
	K.SAABIGHA	AIDS
	S.SARANYA	AIDS
	JAYASRI	AIDS
	HEMACHANDRAN	CSE A
	ISRATH ALI	CSE A

	D. SATHIYA PRIYA	CSE B
	B.SWATHI	CSE B
	T.RENUGADEVI	CSE B
	B.PRIYADHARSHINI	CSE B

Souvenir Committee

Staff In Charge	Student Co Ordinator	Class
Dr.S.Uma, AP/Mathematics Dr.G.Geethalakshmi, AP/Mathematics	V.SANJEEVI	AIDS
	B.NITHISH	AIDS

Decoration, Seating & Audio arrangements

Staff In Charge	Student Co Ordinator	Class
Dr.M.Joice Malini, AP/Chemistry Mr.K.Ramasamy, Lab.Asst/S&H	S.Vinith	MECH
	K.E.Aakash	ECE
	S.Adhithiyan	ECE
	P.M..Nedumaran	IT - B
	M.Varsha	IT - B
	S.Sujeetha	IT -B
	R.Subasri	IT _ B

Catering, accommodation & Hospitality

Staff In Charge	Student Co Ordinator	Class
Dr.K.Rajaraman, AP/Mathematics Mrs.B.Anusuya, AP/English Mr.U.Arul Prakash/ Lab.Asst/S&H	M.VETRIVEL	ECE
	S.PRAVEENKUMAR	ECE
	NAVIDHUL FARUESH	ECE
	S.BHARATHI	CSE A
	M.MATHESH	AIDS
	S.SRIRAM	AIDS

Student Discipline

Staff In Charge	Student Co Ordinator	Class
Dr.G.Rajeswari, AP/Physics Mrs.S.Muthulakshmi, AP/English	T.KAVIYA	CSE - A
	S.NAZHIHA	CSE - B
	S.MANIBHARATHI	ECE
	S.SAKTHIVASAN	EEE
	S.GUHAN	CIVIL
	N.UDHAYASRI	MECH
	M.SRIMATHI	ICE
	S.SANJAYRAM	IT B
	G.HARINARAYANAN	AIDS

V. Tamilselvan

HOD
Dr.V.Tamilselvan

தமிழ் காணும் பொறியியல் நுட்பங்கள்

R.Abinash, A.Karthi

Annai college of Engineering

சுருக்கம்: தமிழ் காணும் பொறியியல் நுட்பங்கள் என்பது தமிழ் மொழி தொடர்பான தகவல் தொழில்நுட்ப அம்சங்களை உருவாக்கி மேம்படுத்தும் ஒரு துறையாகும். இதில் இயற்கை மொழி செயலாக்கம், குரல் அடையாளம் காணுதல், உரைத் தேடல், மெஷின் மொழிபெயர்ப்பு, செயற்கை நுண்ணறிவு அடிப்படையிலான பேச்சு முறைகள் போன்ற பல நவீன தொழில்நுட்பங்கள் அடங்கும். இத்துறை, தமிழ் மொழி தகவல் பரிமாற்றத்தை எளிதாக்குவதோடு, கல்வி, ஆராய்ச்சி, மின்னணு தொடர்பாடல் மற்றும் சமூக வலைத்தளங்களில் தமிழ் பயன்பாட்டை விரிவாக்க உதவுகிறது.

தமிழ் காணும் பொறியியல் நுட்பங்கள்

Sivagandhimadhi.R, Elakiya.B

Annai college of Engineering

சுருக்கம்: தமிழ் காணும் பொறியியல் நுட்பங்கள் என்பது தமிழ் மொழி தொடர்பான தகவல் தொழில்நுட்ப அம்சங்களை உருவாக்கி மேம்படுத்தும் ஒரு துறையாகும். இதில் இயற்கை மொழி செயலாக்கம், குரல் அடையாளம் காணுதல், உரைத் தேடல், மெஷின் மொழிபெயர்ப்பு, செயற்கை நுண்ணறிவு அடிப்படையிலான பேச்சு முறைகள் போன்ற பல நவீன தொழில்நுட்பங்கள் அடங்கும்.

தமிழ்காணும் தபாறியியல் நுட்பங்கள்

S. ஹரி ஸ்ருதி
ஆரிப்பா கல்லூரி

சுருக்கம்: இன்ரறய அறிவியல் மற்றும் ததாழில் நுட்ப உலகில் பல்லாயிைக்கனக்கான கண்டுபிடிப்புகள் வருவரத நாம் காண்கிறறாம். அதுறபால தமிழின்தபாறியியல் நுட்பங்கரை நாம்அறிந்து தகாள்வது ஒருமுக்கியமான பங்காகும். இதன்மூலம்நம் தமிழ் தமாழியின் வைர்ச்சி அதிகரிக்கும். இது நம் பாைம்பரிய தமிழசங்கத்தின் ஒரு கரலயாகும். நம்முன்றனார்ைகின் கரல மற்றும் காட்டுமான முரறயிரனநம்மால் ததரிந்துதகாள் முடியும்.

தமிழ் காணும் பொறியியல் நுட்பங்கள்

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AVC COLLEGE OF ENGINEERING

கட்டுரை சுருக்கம்: தமிழர் தொன்மை நாகரிகம் அறிவியல் மற்றும் பொறியியலில் சிறந்தது. இயற்கையோடு இணைந்து வாழும் நுண்ணறிவு தமிழருக்கு இருந்தது. கட்டிடம், பாசனம், உலோகம், கணிதம் போன்ற துறைகளில் முன்னேற்றம் கண்டனர். தமிழின் அறிவும் தொழில்நுட்பமும் ஒன்றிணைந்து வளர்ந்தது.

தமிழ் காணும் பொறியியல் நுட்பங்கள்

R.Ravithra, M.Abinayasri
AVC COLLEGE OF ENGINEERING

சுருக்கவுரை: தமிழ் மொழி மற்றும் பொறியியல் நுட்பங்களின் சங்கமம் என்பது தற்காலத்தின் முக்கிய ஆய்வுப் புலங்களில் ஒன்றாகும். பழமையான தமிழ் மொழியில் பொதிந்துள்ள இலக்கியம், இலக்கணம் மற்றும் மருத்துவ முறைகள் முதல் நவீன கணினி அறிவியல், இயந்திர கற்றல் மற்றும் தகவல் தொடர்பு தொழில்நுட்பங்கள் வரை தமிழ் எவ்வாறு ஒரு கருவியாகவும், சவாலாகவும், தீர்வுக்கான களமாகவும் உள்ளது என்பதை இந்தச் சுருக்கவுரை ஆராய்கிறது.

தமிழ் காணும் பொறியியல் நுட்பங்கள்

S.Anu, K.Sakthi priya
AVC COLLEGE OF ENGINEERING

சுருக்கவுரை: தமிழர்கள் சங்க காலம் தொட்டே வேளாண்மை கட்டுமானம் உலோகக்கலை மருத்துவம் கப்பல் கட்டுமானம் வானியல் மற்றும் கணிதவியல் போன்ற பல்வேறுதுறைகளில் சிறந்து விளங்கியுள்ளனர் நவீனகாலத்தில் தமிழ் மொழியின் வளரச்சிக்கும் கணின மற்றும் தகவல் தொழில்நுட்ப வளர்ச்சிக்கும் பல பங்களிப்புகள் செய்யப்பட்டுள்ளன.

தமிழ் பொறியியல் தொழில் நுட்பம்

K.Sivarshini, I.Sandhiya
AVC COLLEGE OF ENGINEERING

தமிழ் பொறியியல் தொழில் நுட்பம் நம் வாழ்க்கையில் தொழில் வளர்ச்சிக்கு அடிப்படை ஆகும். இது இயந்திரங்கள், மின் சாதனங்கள் மற்றும் கணினி துறைகளில் பயன்படுகிறது. அறிவியல் அறிவை தொழில்நுட்பமாக மாற்றுவது இதன் முக்கிய நோக்கம். தமிழ் வழியில் தொழில்நுட்பக் கல்வி மாணவர்களுக்கு புரிதலை எளிதாக்குகிறது. நவீன உலகில் தொழில்நுட்பம் தமிழ் மொழியுடன் இணையும் புதிய யுகத்தை உருவாக்குகிறது.

தமிழ் காணும் சபாறியியல் நுட்பங்கள்

R.Taraneeshwari, A.Atchaya
AVC COLLEGE OF ENGINEERING

தமிழ் சமாழி பழரமயான மற்றும் செழுரமயான சமாழிகளில் ஒன்றாகும். உலகம் முழுவதும் ககாடிக்கணக்கான மக்கள் தமிழ் கபசுகின்றனர். இன்று தகவல் சதாழில்நுட்பம் கவகமாக வளர்ந்து வரும் நிரலயில், தமிழுக்கும் அதனுடன் இரணந்து வளர்ச்ெி சபறுவது மிகவும் முக்கியம்.

ENGLISH

ENGLISH IN DIGITAL WORLD: CHALLENGES AND SOLUTION

Roshini, Shaarika

AVC COLLEGE OF ENGINEERING

The digital world speaks in many voices — yet one language echoes the loudest: English.It connects us, teaches us, and even programs our technology. But behind this connection lies a quiet challenge — not everyone speaks the same digital English. The slang, speed, and style of online language often leave people behind. Still, technology itself brings the cure. From AI translators to bilingual content, new tools are helping people cross this language wall. The future will not erase local tongues — it will blend them with English to create a more human internet, where understanding matters more than grammar.

ENGLISH IN DIGITAL WORLD: CHALLENGES AND SOLUTION

M.Harini , R.Akanshya

AVC COLLEGE OF ENGINEERING

In this presentation, we would discuss about how English plays a vital role in the digital world.enabling global Communication, educationand access to information . However challenges like digital literacy gaps, misinformation and language barriers remain promoting digital skills, responsible useand cross cultural understanding provides effective solutions for a better digital future.

ENGLISH IN DIGITAL WORLD: CHALLENGES AND SOLUTION

A. Muthu Yegammai

AVC COLLEGE OF ENGINEERING

In today's world, English plays a crucial roles as a global language for communication ,education,and business.however , the rapid advancement of technology presents challenges such as digital divide,language barriers , and lack of digital literacy.this paperexplores these challenges and proposes solutions like improving digital education,promoting multilingual content and encouraging inclusive language policies . addressing these issues can help bridge communication gaps and empower people worldwide to fully participate in digital era .

CHALLENGES AND SOLUTION OF DIGITAL WORLD

S. Dhinesh ,M Hrithiksaran

AVC COLLEGE OF ENGINEERING

The digital age has transformed modern life by connecting people globally, improving education,healthcare, business, and communication. Technology like the internet, artificial intelligence, and smartphones has made tasks faster and more efficient, offering countless opportunities for growth and innovation.

DIGITAL WORLD

V. Harish , K.Balaji

AVC COLLEGE OF ENGINEERING

The digital world has emerged as one of the most transformative phenomena of the 21st century, reshaping the fabric of modern society. Rooted in rapid advancements in information and communication technologies, it isdefined by the integration of digital tools, platforms, and networks into nearly every aspect of daily life.

ECHOES OF ENGLISH IN DIGITAL AGE: STRUGGLES AND SOLUTIONS

V.Amirtha

AVC COLLEGE OF ENGINEERING

In today's digital whirlwind, English has traded its ink for pixels, its libraries for search engines, and its classrooms for casual video sessions. Once bound by geography, the language now travels at the speed of Wi-Fi, uniting billions while simultaneously complicating the way we perceive the words to read, write, and communicate. That's the irony of such growth. This paper examines the dual nature of English in the digital world, delving into the duality of English being a tool for connection and also a source of mystery and confusion. It's all the influence of the burst of technology, from the rise of blatant idioms to the shrinking patience for long texts (a consequence of social media).

ENGLISH IN AGE OF AI: CHALLENGES AND SOLUTIONS OF PROMPT ENGINEERING

Uppili Venkatesh, Harish Jayaraj

ARASU ENGINEERING COLLEGE

Artificial Intelligence (AI), particularly through Large Language Models (LLMs), has transformed the way people interact with technology. Unlike traditional systems, LLMs respond in natural language, making the role of the prompt—theinput provided by the user—central to their performance. This growing dependence on well-crafted prompts has led to the emergence of prompt engineering, a skill that blends linguistic awareness with technical understanding.

ENGLISH IN DIGITAL WORLD: CHALLENGES AND SOLUTION

Abinaya, Shalini

MAM COLLEGE OF ENGINEERING

The phrase digital world is most commonly used in when defining citizenship, digital fluency, and digital literacy. The digital world is the availability and use of digital tools to communicate on the Internet, digital devices, smart devices and other technologies.

MATHEMATICS

APPLICATION OF ORDINARY DIFFERNSIAL EQUATION IN REAL LIFE

N.K.Panimalar

Anjalai Ammal Mahalingam Engineering College, Kovilvenni

Ordinary Differential Equations (ODEs) are a powerful mathematical tool used to model and analyze various real-world phenomena that change over time or space. Where variables evolve based on their rates of change. This presentation explores the diverse applications of ODEs across multiple fields, showcasing their importance in modeling population dynamics, physical motion, electrical circuits, chemical reactions, and even medical processes like drug metabolism. By highlighting key examples and real-life scenarios, Understanding these applications helps not only in solving complex problems but also in advancing technology and scientific research.

APPLICATIONS OF MATHEMATICAL TECHNIQUES IN EMERGING AREAS OF ENGINEERING AND TECHNOLOGY

N. Jayaroshini
Anjalai Ammal Mahalingam Engineering College, Kovilvenni

In mathematical neuroscience a deterministic description of endogenously oscillatory activities, like two-time scale bursting, is done by revealing generic properties of mathematical and realistic models of neurons; the latter are derived through the Hodgkin-Huxley formalism for gating variables. Either bursting model falls into a class of dynamical systems with at least two time scales, known as slow-fast systems

ADVANCEMENTS IN MATHEMATICS FRONTIER

A.Swathi , K.Devayani
K.S.K College of Engineering and Technology

Recent advancements in the mathematics frontiers are marked by both foundational innovation and an expanding role for mathematicians in interdisciplinary practice. Efforts to unity foundational theories-including set theory, category theory, and type theory-demonstrate the ongoing quest to reconcile diverse mathematical frameworks. Simultaneously, provocative inquiries such as the formalization of consciousness and artificial intelligence signal the broadening scope of mathematical inquiry. As mathematical knowledge necessitates new systems of information management and cross-disciplinary approaches.

LINEAR ALGEBRA, STATISTICS, PROBABILITY AND CALCULUS THE CORE COMPONENTS OF MATHEMATICS UNDERPINS THE ESSENCE OF DATA SCIENCE AND ARTIFICIAL INTELLIGENCE.

R.Vijay, P.Murali

K.S.K collage of Engineering and Technology

Data Science and Artificial Intelligence (AI) are deeply rooted in mathematical principles which provide the foundation for developing robust algorithms and models. Key areas of mathematics vital to this domain include linear algebra for manipulating high- dimensional data, probability and statistics for data analysis and calculus for optimizing model performance through techniques like gradient descent. These mathematical tools empower AI systems to learn from data recognize patterns, make predictions and optimize decision-making processes. This presentation explores the critical role of mathematics in advancing data science and AI technologies, highlighting how mathematical concepts enable the design of efficient machine learning algorithms that drive innovation in various real-world applications.

UNLOCKING INSIGHTS:THE IMPACTFULL ROLE OF MATHEMATICS IN DATA SCIENCE AND AI DRIVING SCIENTIFIC INNOVATION TECHNOLOGICAL PROGRESS.

P.Murali, M.Jeevan
K.S.K College of Engineering and Technology

Mathematics is the universal language of science and technology, shaping innovation and driving human progress. From ancient counting systems and geometry to modern developments in algebra, calculus, and abstract theories, mathematics has continually evolved alongside human civilization. The fundamental concepts like number theory and topology, applied mathematics addresses real-world challenges in physics, economics and engineering.In the digital age, mathematics powers advancements in artificial intelligence, data science, and machine learning, enabling automation, intelligent decision-making and complex problem-solving. Technology amplifies its impact, allowing for large -scale simulations and enhanced learning tools. Despite challenges such as ethical concerns and unequal access to advanced tools. Mathematics remains central to innovation, cybersecurity and future technologies like quantum computing.

MATRICES ARE OF FUNDAMENTAL IMPORTANCE IN 3D MATH

S.J. Shurthibala
ARJ College of Engineering

Matrices are of fundamental importance in 3D math, where they are primarily used to describe the relationship between two coordinate spaces. They do this by defining a computation to transform vectors from one coordinate space to another. A novel approach which incorporates the salient features of message sharing (Called coding theory) is presented and also extended to the messages of higher length. The proposed method is very simple in its principle and has great potential to be applied to other situations where the exchange of messages is done confidentially.

FUNCTIONS OF A COMPLEX VARIABLE AS MAPPINGS

R. Maheswari, S. Prabha
ARJ College of Engineering

A brief outline is given of some of the main historical developments in the theory and practice of conformal mappings. Originating with the science and cartography, conformal mapping has given rise to many highly sophisticated methods. We emphasize the principle of mathematical discovery involved in the development of numerical methods, through several examples. "The human activity of graphically translating one's preception world is now generally recognized as a universally acquired skill and one that predates virtually all other forms of written communication details in terms of mathematical expressions

OVERVIEW OF APPLICATION OF MATRICES IN ENGINEERING SCIENCE

K. Harish Kannan, P. Lavanya

ARJ College of Engineering

Engineering Mathematics is applied in our daily life. Applied Mathematics is future classified as vector algebra, differential calculus, integration, discrete Mathematics, Matrices& determinant etc. Matrices have a long history of application in solving linear equations. In between 300BC & 200Ad, Mathematics says the first example of the use of matrix methods to solve simultaneous equations, including the concept of determinants. In this paper we will study overview of application of matrices in engineering science.

ADVANCEMENT IN MATHEMATICS FORNTIERS

Mooshika , Dharshini

A.V.C College of Engineering

Mathematics has always been the cornerstone of scientific and technological progress. In recent years, rapid advancements in various fields have pushed the boundaries of mathematics beyond traditional theories into new and dynamic frontiers. This paper explores how modern mathematics is driving innovations in artificial intelligence, data science, quantum computing, cryptography, and biological modeling. Through the integration of technology and mathematical logic, researchers are solving complex real-world problems with greater accuracy and efficiency. The study highlights the importance of interdisciplinary applications, where mathematics serves as the bridge connecting theory to practical innovation. As we move into a data-driven and computational era, the advancements in mathematical frontiers continue to redefine the possibilities of science, technology, and human understanding.

REAL LIFE APPLICATION OF MATRIX

N.Safrin, R.Sathana

A.V.C College of Engineering

The term 'matrix' was first introduced by Sylvester in 1850. He defined as matrix to be an arrangement of terms knowledge of matrix is very useful and important as it has a wider application in almost every field of mathematics. The matrices may represent transformations of coordinate spaces or system of simultaneous linear equations.

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

R.Manoj, A.Diwakara
A.V.C College of Engineering

Artificial Intelligence (AI) and Machine Learning (ML) represent some of the most transformative advancements in the modern technological world. These fields aim to create systems capable of performing tasks that typically require human intelligence — such as reasoning, learning, perception, and decision-making. Mathematics plays a vital role in the foundation of AI and ML, as it provides the theoretical framework and problem-solving tools necessary for designing algorithms and analyzing data. The integration of mathematical principles such as linear algebra, calculus, probability, and statistics allows machines to learn from data, make predictions, and continuously improve their performance.

FRACTIONAL CALCULUS

K.Jagadheeshwari ,V.Jensi Belsiya
A.V.C College of Engineering

This presentation contains deals with the introduction of fractional calculus ,mathematical background ,real life application ,fractional derivatives and integrals ,fractional differential equations ,application of fractional calculus ,computational and numerical methods.

DEVELOP AN AI MODEL THAT USES MATHEMATICAL OPTIMIZATION AND LINEAR ALGEBRA TO IMPROVE REAL-TIME OBJECT DETECTION ACCURACY IN AUTONOMOUS VEHICLES.

G. Mathuri , M.Hauna
A.V.C College of Engineering

Mathematics plays a critical role in AI by providing the foundation for algorithms, particularly in areas like linear algebra, probability, and calculus. This project applies mathematical models to enhance object detection, ensuring faster and more accurate decision-making in self-driving cars.

THE GOLDEN RATIO

S.Vairashree, S.Sunmithra

A.V.C College of Engineering

Mathematics plays a critical role in AI by providing the foundation for algorithms, particularly in areas like linear algebra, probability, and calculus also known as the golden number, golden proportion or the divine proportion is a ratio between two numbers that equals approximately 1.618.We are going see.

ADVANCEMENTS IN MATHEMATICS FRONTIERS

K.Akshaya , K.S.Logamithra

A.V.C College of Engineering

Advancements in mathematics have expanded its frontiers, with matrix theory playing a vital role in both theory and application. Matrices now serve as fundamental tools in data science, quantum computing, and artificial intelligence. Developments in matrix decomposition, eigenvalue analysis, and random matrix theory have enhanced computational efficiency and problem-solving across disciplines. From cryptography to image processing, matrix-based methods drive innovation and bridge abstract mathematics with real-world technology. This paper highlights the growing impact of matrices in advancing mathematical research and shaping the future of computational and applied sciences.

PHYSICS

NANOTECHNOLOGY IN FOOD SCIENCE

Karthika M

PKIET PUDUCHERRY Technological University

Nanotechnology is the science, engineering, and application of materials and devices at the nanometre scale (1-100 nanometres), where unique physical, chemical, and biological properties emerge that differ from those of the same material at larger scales.

ADVANCED MATERIALS AND NANO TECHNOLOGY

K.Nandhini, I B.Tech(IT)

PKIET PUDUCHERRY Technological University

In now a days Nanotechnology is helping to considerable improve, many technology and industry sectors: information technology, energy, environment science, medicine, security, food safety and transportation. Among many others. Advanced materials and nanotechnology have gained significant traction due to their ability to engineer matter at the nano scale (1-100nm), creating materials with enhance properties like improved mechanical strength, electrical conductivity. Materials in nano scale showed remarkable and superb properties that are completely different from those when the material in the bulk condition. This makes a nanotechnology to hold a great promise in effecting profound scientific, medical, economic and even cultural change on society. Almost all countries are place long and short term strategic plan as to obtain more experience. Consequently, research indicators on this technology indicate that some developing countries compete with the world's largest countries in the control of this technology.

ADVANCED MATERIALS AND NANO TECHNOLOGY

V.Jeyeshwari, N.Jeevaswetha,

Sir Issac Newton Engineering College of Engineering, Nagapattinam

Advance materials are materials that exhibit superior properties or functionalities compared to conventional materials. Nanotechnology is the science and engineering involved in designing, producing, and using structures, devices, and systems by manipulating matter at the nanoscale. These two fields play a major role in modern technologies like aerospace, electronics, biomedical engineering, and environmental science.

NANOTECHNOLOGY IN FOOD SCIENCE

M.Karthika , I B.Tech(IT)

PKIET PUDUCHERRY Technological University

Nanotechnology has emerged as a transformative tool in food science, offering innovative solutions to enhance food quality, safety, and sustainability. By manipulating materials at the nano scale, scientists can improve nutrient delivery extend shelf life, and develop smart packaging systems that monitor freshness. Nano encapsulation techniques are being applied to protect sensitive bioactive compounds such as vitamins, antioxidants, and probiotics, ensuring controlled release and improved absorption in the human body. Additionally, nano materials are used to detect pathogens and contaminants rapidly, thus strengthening food safety measures. In Packaging, nano coating and nano composites provide stronger barriers against moisture, oxygen, and microbial invasion, reducing food spoilage. Despite its benefits, nanotechnology in food raises concerns about toxicity, environmental impact, and regulatory challenges that must be carefully addressed. Overall, nanotechnology presents immense potential to revolutionize food processing, preservation, and safety, making it a driver in shaping the future of the global food industry.

ADVANCED MATERIALS AND NANO TECHNOLOGY

K.Srivarshan, G.Sabari,

Sir Issac Newton Engineering College of Engineering, Nagapattinam

A nanometer is 1 billionth of a meter. At this tiny scale, materials behave differently than they do at larger sizes. Nano particles can change color (e.g., gold nano particles look red/purple instead of yellow). Nano materials (like carbon nano tubes, graphene) are much stronger than steel but very light. Many nano materials can conduct electricity and heat very efficiently. Useful for batteries, circuits, and cooling systems.

EMERGING TRENDS IN NANOTECHNOLOGY

S.Jeevadharshini, B. Abishnavi

Advanced Namomatrials: development of smart and multifunctional Namomatrials of medicine, electronics, electric storage. Nanotechnology in health care: use of nanorobots and targeted drug delivery for precise and effective treatment. sustainable nanotech: application in clear energy, water purification. integration with AI and IoT: Combining nanotechnology with artificial intelligence and smart devices.

CONVENTIONAL TECHNOLOGIES FACE LIMITATIONS IN EFFICIENCY, PRECISION, AND SUSTAINABILITY IN FIELDS LIKE MEDICINE, ENERGY, AND ENVIRONMENT.

C.Sandhya, Pooja.R

A.V.C College of Engineering

Nanotechnology provides advanced nanoscale solutions, offering smarter, faster, and more sustainable applications across multiple domains.

NANOTECHNOLOGY IN ADVANCED FRONTIER OF SCIENCE & ENGINEERING

A.Miswana Safrin, S.Arasi

A.V.C College of Engineering

Nanotechnology, often described as the science of the small, is a rapidly growing field that focuses on understanding & manipulating materials at the nanometer scale typically between 1 and 100 nanometers. At this tiny dimension, materials exhibit unique physical, chemical, and biological properties that differ remarkably from their bulk forms.

ADVANCED MATERIALS AND NANO TECHNOLOGY

K.Kaviya , S.Harini

A.V.C College of Engineering

Advanced materials and nano technology are among the fastest-growing fields in science and engineering. Advanced materials are designed with enhanced properties such as high strength, lightweight, durability and superior conductivity. Nanotechnology,on the Other hand,focuses on the manipulation of matter at the nanoscale(1-100nm),where unique properties emerge**.**

ENGLISH IN DIGITAL WORLD

V.Amritha

A.V.C College of Engineering

The digital age has revolutionized our ways of communication and the learning process of English. This presentation addresses the key challenges learners face in the online environment, such as accessibility, the abundance of resources, and the need for motivation. It also presents potential solutions to improve English proficiency, including interactive platforms, language exchange opportunities, and gamification techniques.

CHEMISTRY

THE SCOURGE OF WATER POLLUTION : EFFECTIVE TREATMENTSOLUTION AND PREVENTION

M.Suganya , S.Sepitha

K.S.K College of Engineering and Technology

Water pollution poses a significant threat to global health, ecosystems, and biodiversity.The causes, effects and treatments of water pollution highlighting the global scenario of pollution and impacts on human health and the environment. The conventional and modern treatment methods including primary, secondary, and tertiary treatments as well as innovative technologies like nanotechnology and bioremediation. It also emphasizes the importance of prevention measures, such as treating sewage and reducing plastic waste, and explores future innovations like AI-powered water quality monitoring and smart water recycling.

WATER POLLUTION & ITS TREATMENT

P.Mukilan , S.Sakthi

ARIFA INSTITUTE OF TECHNOLOGY, ESANOOR

Water pollution is a critical global issue that threatens public health, aquatic ecosystems, and sustainable development. This paper examines the major causes of water pollution, including industrial discharge, agricultural runoff, sewage disposal, and plastic waste. It also highlights the environmental and socio-economic effects, ranging from the degradation of aquatic biodiversity to the spread of waterborne diseases. Furthermore, the paper explores sustainable solutions such as wastewater treatment technologies, policy regulations, and community-driven initiatives. By analyzing global case studies.

WATER TECHNOLOGY 2025

Nithya Sri. K

ARASU ENGINEERING COLLEGE, KUMBAKONAM

Water scarcity is rising fast, with two-thirds of the world's population projected to face shortages by 2025. Water Technology 2025 highlights breakthroughs in AI-driven water management, smart irrigation, and advanced purification methods like nanofiltration and aquaporin membranes. Emerging solutions such as solar-thermal desalination, PFAS capture, and modular deep-sea systems are reshaping global water sustainability. Smart water grids with real-time leak detection, predictive maintenance, and strong cybersecurity boost efficiency and resilience. Together these innovations create a roadmap for a secure, sustainable, and universally accessible water future.

DIGITAL TRANSFORMATION IN WATER MANAGEMENT – ROLL OF AI AND CYBER Security

Iniyavarshini. P

ARASU ENGINEERING COLLEGE, KUMBAKONAM.

This study examines the transformative role of emerging technologies in addressing global water scarcity and stress. It explores how digital innovations - such as Artificial Intelligence, IoT sensor networks, and digital twin simulations - enhance efficiency, resilience, and sustainability in water management systems. The research also highlights the importance of cybersecurity, smart agriculture, and integrated urban planning in safeguarding critical infrastructure and optimizing resource allocation. Findings culminate in a strategic framework for leveraging technological advancements to achieve long-term water security and sustainability worldwide.

WATER POLLUTION AND IT'S TREATMENT

Sahana.M, Ragavi.T

AVC COLLEGE OF ENGINEERING

The Eutrophication Of Water Resources Resulting From Nutrient Pollution Leads To Algal Blooms, Oxygen Depletion, And Aquatic Life Fatalities. The process begins when limiting nutrients like phosphorus in freshwater systems or nitrogen in marine environments become abundant through human activities. This nutrient enrichment creates conditions favorable for rapid algal growth, fundamentally altering the ecological balance of aquatic systems.

WATER POLLUTION AND ITS TREATMENT

R.B. Arivarasu

AVC COLLEGE OF ENGINEERING

Water pollution has emerged as a major global concern due to its adverse impacts on human health, aquatic life, and the overall environment. It is primarily caused by the introduction of pollutants such as industrial discharges, agricultural runoff, sewage, plastics, and toxic chemicals into water bodies. These contaminants degrade water quality, reduce oxygen levels, disrupt aquatic ecosystems, and lead to serious public health issues like waterborne diseases. Moreover, water pollution contributes to the scarcity of safe drinking water, threatening sustainable development. To mitigate these challenges, several treatment methods are employed. Conventional treatment processes include physical methods like sedimentation and filtration, chemical methods such as chlorination and coagulation, and biological processes like the activated sludge system. While these techniques are effective, they often face limitations when dealing with emerging pollutants.

PREVENTION AND CONTROL OF WATER POLLUTION

P.C. Kavinela , A.Abirami

AVC COLLEGE OF ENGINEERING

This presentation contains deals with water pollution,-contamination of water bodies, its caused-industrial waste, sewage and domestic waste, ,effects- death of aquatic organisms , and measures of control- reverse osmosis, rain water harvesting.

A COMPREHENSIVE REVIEW OF WATER POLLUTION: CAUSES, EFFECTS, TREATMENT, AND PREVENTION STRATEGIES

Abishek.M, Jaasim Mohamed.J

AVC COLLEGE OF ENGINEERING

Water is the fundamental resource for all life and human development. However, the increasing contamination of water bodies by anthropogenic activities poses a severe global threat. This paper presents a systematic review of the critical issue of water pollution, defined as the introduction of harmful substances into aquatic ecosystems. We first delineate the primary sources of pollution, including industrial discharge, domestic sewage, agricultural runoff, and plastic waste. The subsequent impacts on human health, such as the spread of waterborne diseases, and on aquatic ecosystems, including eutrophication and biodiversity loss, are critically examined. Furthermore, the paper provides a comparative analysis of water treatment methodologies, categorizing them into conventional (e.g., sedimentation, chlorination.

WATER POLLUTION AND TREATMENT

G.MADHURI, M.HAUNA
AVC COLLEGE OF ENGINEERING

Water pollution poses a serious threat to human health, aquatic life, and the environment due to the discharge of harmful contaminants into water bodies. This study focuses on identifying the major causes of water pollution and explores various treatment methods such as physical, chemical, and biological processes to restore water quality. Effective pollution control and wastewater treatment are crucial for sustainable water resource management.

WATER POLLUTION AND ITS TREATMENT

P. NETRA , S. MANJARY ,
AVC COLLEGE OF ENGINEERING

The prevalence of contaminated water sources continues to pose a grave threat to human health worldwide, facilitating the rapid spread of waterborne diseases and undermining public health systems, especially in developing regions where water treatment infrastructure is insufficient or absent Objectives To highlight the major causes of water contamination and their health consequences. To examine the role of contaminated water in the transmission of infectious diseases. To analyze the socio-economic impact of waterborne diseases on vulnerable communities

THE BATTLE AGAINST WATER POLLUTION: SCIENTIFIC & SUSTAINABLE INTERVENTIONS

V.Amirtha
AVC COLLEGE OF ENGINNERING

Water, the elixir of life, is facing a silent but relentless threat. Pollution from industrial effluents, agricultural runoff, domestic waste, and emerging micro plastics have turned once pristine rivers, lakes, and groundwater into carriers o disease and ecological imbalance. The consequences ripple beyond human health, disturbing aquatic life, biodiversity, and the delicate equilibrium of our ecosystems. Addressing water pollution is not merely a scientific challenge; it is a societal flaw that needs proper guidance. This paper explores the multifaceted nature of water pollution, examining its major sources, chemical and biological impacts, and the health hazards it poses. It delves into traditional and modern treatment strategies, including sedimentation, filtration, chemical treatments, biological remediation, and innovative techniques like nanotechnology and oxidation processes.

WATER POLLUTION AND ITS TREATMENT

Mohamed Jafran.J, S. Dinesh

AVC COLLEGE OF ENGINEERING

Water pollution is one of the most serious environmental problems faced by the modern world. It occurs when harmful pollutants such as industrial waste, agricultural chemicals, and sewage enter water bodies like rivers, lakes, and oceans. These contaminants degrade water quality and cause adverse effects on human health, aquatic organisms, and the environment. To overcome this issue, several water treatment methods are applied, including physical, chemical, and biological techniques. Common processes such as coagulation, sedimentation, filtration, and disinfection help remove impurities, while advanced methods like reverse osmosis and activated carbon treatment ensure safe and clean water.

WATER POLLUTION AND ITS TREATMENT

G.Madhuri , S.Arunththesal Arumbu

AVC COLLEGE OF ENGINNERING

Water pollution, caused by the discharge of harmful substances into water bodies, poses severe threats to human health, aquatic life, and the environment. This study explores the causes, impacts, and modern treatment methods of water pollution, emphasizing sustainable solutions to restore and protect water quality for future generations.

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| An ISO 9001:2015 Certified Institution |
Mannampandal, Mayiladuthurai District, Tamil Nadu - 609 305.

We cordially invite you for the

INAUGURAL FUNCTION

of

TechnothirsT 25 -26

(A National Level Student's Technical Symposium)

on 08th October 2025, Wednesday @ 9:30 am

in PEKAK Hall

Dr. P.Ragupathy,

Senior Principal Scientist,
Electrochemical Power Sources (EPS),
CSIR - Central Electrochemical Research Institute,
Karaikudi.

has kindly consented to be the Chief Guest and deliver the Inaugural Address.

Your Cordial Presence is kindly solicited!

Dr.S.A.Chitradevi
Assoc.Prof, EEE
Coordinator

Dr.R.Kanimozhi
HoD, AI&DS
Coordinator

Dr.G.Sridevi
HoD, MBA
Coordinator

Dr.S.Selvamuthukumaran
Vice Principal & HoD, CA
Convener

Dr.P.Balasubramanian
Principal

Dr.M.Senthilmurugan
Director

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We cordially invite you for the

VALEDICTORY FUNCTION

of

TechnothirsT 25 -26

(A National Level Student's Technical Symposium)

on 10th October 2025, Friday @ 3:30 pm

in PEKAK Hall

Dr. M.SENTHILMURUGAN, Ph.D.,
Director,
A.V.C. College of Engineering.

will be the Chief Guest, deliver the Valedictory Address & distribute the Prizes and Certificates to the participants.

Dr. P.BALASUBRAMANIAN, Ph.D.,
Principal,
A.V.C. College of Engineering.

will deliver the Felicitation Address.

Your Cordial Presence is kindly solicited!

Dr.S.A.Chitradevi
Assoc.Prof, EEE
Coordinator

Dr.R.Kanimozhi
HoD, AI&DS
Coordinator

Dr.G.Sridevi
HoD, MBA
Coordinator

Dr.S.Selvamuthukumaran
Vice Principal & HoD, CA
Convener

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MECH

CIVIL & S&H

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