KSR College of Engineering

DEPARTMENT OF COMPUTER APPLICATIONS (MCA)

&

INTERNATIONAL RELATIONS OF KSRCE

Organizes

INTERNATIONAL CONFERENCE

on

EMERGING ISSUES IN COMPUTER APPLICATIONS FOR RESEARCH ISSUES IN GEN AI AND SUPER INTELLIGENCE (EICA - 2025)

SUPPORTED BY

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ON FRIDAY MARCH 28, 2025

STARTS AT 10.00 AM

VENUE DHENUKA HALL

Acknowledgements

We would like to express our deepest gratitude to the management of K.S.R.College of Engineering (KSRCE) for their generous support.

Their commitment to fostering academic excellence and innovation has been instrumental in the successful execution of this event.

The management's unwavering support has enabled us to provide valuable learning opportunities and resources to our participants, ensuring the event's overall success.

We are truly grateful for their dedication to advancing education and research at KSRCE.

Thank you for believing in our vision and for your continuous encouragement.

CHAIRMAN MESSAGE

Mr.R. Srinivasan.,
Chairman,
K.S.R. Educational Institutions,
KSR Kalvi Nagar,Tiruchengode, Tamil Nadu, India.

It is my great pleasure to welcome you all to the International Conference on "Emerging Issues in Computer Applications for Research Issues in Gen AI and Super Intelligence" (EICA – 2025) hosted by the Department of Computer Applications (MCA) at K.S.R. College of Engineering (Autonomous), Tiruchengode, Tamil Nadu. This prestigious event, scheduled for the 28th March 2025, marks a significant milestone in our continuous efforts to foster innovation and research in the field of quantum computing.

As we stand at the forefront of a new technological era, the discussions and presentations that will unfold during this conference are pivotal in shaping the future of intermediate scale quantum computing. This conference will serve as a platform for academics, researchers, and industry professionals from around the globe to exchange ideas, share knowledge, and explore collaborative opportunities that will drive forward this cutting-edge field.

I extend my heartfelt gratitude to all the distinguished speakers, participants, and organizing committee members whose dedication and hard work have made this event possible. Together, we are paving the way for advancements that will not only enhance computational capabilities but also open new avenues for innovation across various sectors.

I wish all the participants a successful and enriching experience at EICA – 2025.

Warm regards,
Mr.R. Srinivasan,
Chief Patron – EICA

PRINCIPAL MESSAGE

Dr.M.Venkatesan**.,**
Principal,
K.S.R.College of Engineering (Autonomous), KSR Kalvi Nagar,
Tiruchengode, Tamil Nadu, India.

It gives me immense pleasure to extend a warm welcome to all the participants of the International Conference on "Emerging Issues in Computer Applications for Research Issues in Gen AIand Super Intelligence" (EICA – 2025)at K.S.R. College of Engineering, Tiruchengode. This conference, hosted by our Department of Computer Applications (MCA), represents a significant stride in our institution's commitment to advancing knowledge and research in the rapidly evolving field of quantum computing.

Quantum computing stands at the threshold of revolutionizing industries and academia alike, and this conference is a vital platform for fostering dialogue, innovation, and collaboration among scholars, researchers and practitioners from around the world. The exchange of ideas and the sharing of groundbreaking research that will occur over the next two days are crucial in steering the future direction of this transformative technology.

I would like to express my gratitude to the organizing committee, the esteemed speakers, and all the participants for their contributions to making EICA – 2025 a resounding success. I am confident that this conference will inspire new insights, forge valuable connections, and propel forward the development of quantum computing on a global scale.

I wish everyone a fruitful and engaging experience at the conference.

Best regards,
Dr.M.Venkatesan.,
Conference chairman

HEAD OF THE DEPARTMENT MESSAGE

Dr.P.Anitha
Professor & Head,
Department of Computer Applications (MCA),
K.S.R.College of Engineering (Autonomous)
Tiruchengode, Tamil Nadu, India.

It is with great pride and enthusiasm that I welcome you to the International Conference on Emerging Issues in Computer Applications for Research Issues in Gen AIand Super Intelligence (EICA – 2025), hosted by the Department of Information Technology at K.S.R. College of Engineering, Tiruchengode. This conference is a reflection of our department's ongoing commitment to pushing the boundaries of research and innovation in the field of quantum computing.

Quantum computing, with its promise of unparalleled computational power, is poised to revolutionize various domains, from cryptography to material science. This conference provides an invaluable opportunity for researchers, academiciansand industry professionals to come together, exchange knowledge and collaborate on pioneering efforts that will shape the future of this transformative technology.

I am deeply grateful to our esteemed speakers, dedicated organizing committee, and all the participants who have contributed their time and expertise to make EICA – 2025 a landmark event. It is through such collaborative endeavours that we can continue to drive forward the frontiers of technology and research.

I wish all participants a successful and intellectually rewarding conference.

Warm regards,
Dr.P.Anitha
Convenor – EICA

CHIEF GUEST

Ms. Barani Shaju
Chapter Lead and Solution Manager,
Bosch Global Software Technologies Private Limited,
CHIL-SEZ Keeranatham Village,
Coimbatore - 6 41 035.

It is an honour to address this distinguished gathering at the International Conference on Emerging Issues in Computer Applications for Research in Gen AI and Super Intelligence. This conference serves as a crucial platform for researchers, academicians, and industry experts to explore the transformative potential of Generative AI and Super Intelligence in shaping the future of technology. As we stand on the brink of unprecedented advancements, it is imperative to address the ethical, technical, and societal implications that come with these innovations.

Collaboration and knowledge-sharing in forums like this will drive responsible AI development, ensuring that these technologies contribute positively to research, industry, and humanity at large. I extend my heartfelt congratulations to the organizers and participants for fostering such an impactful discourse, and I look forward to insightful deliberations that will pave the way for groundbreaking advancements in this domain.

KEYNOTE SPEAKERS

Dr. JAVID IQBAL THIRUPATTUR
Senior Lecturer
Department of Data Science
& Artificial Intelligence
Sunway University, Malaysia

Dr. SANDIPAN MALLIK
Associate Professor
Dept. of ECE,
NIST University
Institute Park, Odisha, India

Dr. Javid Iqbal, a Ph.D. graduate with nearly a decade of experience, specializes in augmented reality, virtual reality, mixed reality, motion detection, gesture detection and gamification. His extensive career includes serving as an Assistant Professor and Head of Department at UCSI University's Institute of Computer Science & Digital Innovation.Dr Javid's research experience includes a project at University Tenaga Nasional involving a Natural User Interface (NUI) to control virtual objects with hand and voice commands, resulting in conference papers and book chapters. He has also published several manuscripts on human expression and motion analysis monitoring systems with interactive NUIs.Doctor of Philosophy (Information and Communication Technology) University Tenaga Nasional, Bangi, Selangor. Malaysia. 2020Masters of Technology (Communication Systems) Dr.MGR University, Chennai, India. 2011.Bachelor of Engineering (Computer Science and Engineering) Dr. MGR University, Chennai, India. 2009.

Dr. Sandipan Mallik received the Ph.D. (Eng.) degree from Jadavpur University, Kolkata, India, in 2014.,He is currently working as an Associate Professor of the Department of Electronics and Communication Engineering, NIST (Autonomous), Berhampur, Odisha, India. His research interests are the fabrication and characterization of semiconductor devices, thin-film physics and technologies, inorganic and bio memristors, inorganic heterojunction solar cells, the IoT sensors, Lab View, and so on.

KEYNOTE SPEAKERS

Ms. MARIOFANNA (FANNY) MILANOVA
IEEE Senior Member
Fulbright US Scholar, Fulbright Specialist
Professor of Computer Science Department
NVIDIA Certified Instructor for Deep Learning
University of Arkansas Little Rock, AR 72204, USA

Dr. Mariofanna Milanova is a professor in the Department of Computer Science at UA Little Rock and has been a faculty member since 2001. She received a M.Sc. in Expert Systems and Artificial Intelligence and Ph.D. in Engineering and Computer Science from the Technical University, Sofia, Bulgaria. Dr. Milanova conducted post-doctoral research in visual perception at the University of Paderborn, Germany. Dr. Milanova has extensive academic experience at various academic and research organizations worldwide.

Dr. Milanova is an IEEE Senior Member, Fulbright U.S. Scholar, and NVIDIA Deep Learning Institute University Ambassador. Dr. Milanova's work is supported by NSF, NIH, DARPA, DoD, Homeland Security, NATO, Nokia Bell Lab, NJ, USA and NOKIA, Finland. She has published more than 120 publications, over 53 journal papers, 35 book chapters, and numerous conference papers. She also has two patents.

OUR SINCERE THANKS INTERNATIONAL ADVISORY MEMBERS

Dr. Maiga Chang
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USA

Ts. Dr. Nur Azaliah Bt Abu Bakar
Associate Director of UTM
International & Associate Professor
Faculty of Artificial Intelligence
Universiti Teknologi Malaysia (UTM)
Kuala Lumpur Malaysia

Vision, Mission & Quality Policy of the Institution

VISION

We envision to achieve status as an excellent educational institution in the global knowledge hub, making self-learners, experts, ethical and responsible engineers, technologies, scientists, managers, administrators, and entrepreneurs who will significantly contribute to research and environment-friendly sustainable growth of the nation and the world.

MISSION

To inculcate in the students' self-learning abilities that enable them to become competitive and considerate engineers, technologists, scientists, managers, entrepreneurs, and administrators by diligently imparting the best of education, nurturing environmental and social needs.

To foster and maintain a mutually beneficial partnership with global industries and Institutions through knowledge sharing, collaborative research, and innovation.

QUALITY POLICY

"We, at K.S.R. College of Engineering, shall strive hard continuously, to achieve academic excellence in Science, Engineering, Technology, Management and Research and to produce the most competent Scientists, Engineers, Entrepreneurs, Managers, and Researchers thorough, objective and innovative teaching methods by dedicated and duty conscious faculty, continuous and consistent updating of facilities, welfare and quality improvement of the faculty and a system of continuous process improvement".

Overview of Department

The Department was started in 2003 and it has been growing excellently in academic and research work. It is accredited by National Assessment and Accreditation Council (NAAC - A++, with 3.69), UGC at Present, the Department offers two years Master of Computer Applications with Annual Intake of 63 Students. It offers an outstanding opportunity forbidding Professionals to Polish their skills and outperform their competitors. The faculties of the department have over 250 Publications in referred journals and conferences. The department bears 75 university Ranks including First Rank in Anna University. The department has been maintaining an active interaction with the industries and professional bodies particularly with the computer society of India, IEEE and ISTE. More than 80% of the students have been placed in reputed IT Companies through Training and Placement Cell.

To provide advanced education and training in computer science and applications, equipping students with the technical skill, knowledge, and problem-solving abilities required for a successful career in the its industry.

The department has organized various workshops in collaboration with the industry to keep abreast with the latest updates and conducted lecture series by eminent personalities from the industry and academia. To foster creativity amongst the students and faculty it brings forth National Conference titled Emerging Issues in Computer Applications once in a year.

To enlighten and explore every mind technically, a National Level Technical Symposium "Zellos" is being organized by our students on a yearly basis.Thus, the post-graduation program produces ideal Software Professionals, well equipped to meet the challenges of the rapidly growing IT industry.

DEPARTMENT OF COMPUTER APPLICATIONS (MCA)

VISION, MISSION OF THE DEPARTMENT

VISION

The department aims to develop professionals having good knowledge, skills and attitude in the field of computer applications for the betterment of industry and society.

MISSION

To provide high quality education in the field of computer applications and there by create compute professionals with proper leadership skills, commitment and moral values.

To educate students to be successful, ethical, and effective problem- solvers and life-long learners who will contribute positively to the economic well-being of our nation.

PEO & PO OF THE DEPARTMENT

PROGRAM EDUCATIONAL OBJECTIVES

Program Educational Objectives 1: Demonstrate high quality fundamental knowledge in varied sectors and have the ability to develop innovative software on emerging technologies and provide access to higher degree by research programs.

Program Educational Objectives 2: Work as teams on multi-disciplinary projects with effective communication skills, critical thinking, individual, team work and leadership qualities necessary to function productively and professionally.

Program Educational Objectives 3: Understand the social and ethical professionalism, public policy and aesthetics that allows them to develop sufficient awareness of the societal impact of technology and the life-long learning needed for a successful professional career as a scientist / technocrat / an entrepreneur.

PROGRAM OUTCOMES

PO 1 (Foundation Knowledge): Apply knowledge of mathematics, programming logic and coding fundamentals for solution architecture and problem solving.

PO 2 (Problem Analysis): Identify, review, formulate and analyse problems for primarily focussing on customer requirements using critical thinking frameworks

PO 3 (Development of Solutions): Design, develop and investigate problems with as an innovative approach for solutions incorporating ESG/SDG goals

PO 4 (Modern Tool Usage): Select ada0pt and apply modern computational tools such as development of algorithms with an understanding of the limitations including human biases.

PO 5 (Individual and Teamwork): Function and communicate effectively as an individual or a team leader in diverse and multidisciplinary groups. Use methodologies such as agile.

PO 6 (Project Management and Finance): Use the principles of project Management such as scheduling, work breakdown structure and be conversant with the principles of Finance for profitable project management.

PO 7 (Ethics): Commit to professional ethics in managing software projects with financial aspects. Learn to use new technologies for cyber security and insulate customers from malware.

PO 8 (Life-long learning): Change management skills and the ability to learn, keep up with contemporary technologies and ways of working.

PROGRAM COMMITTEE FOR INTERNATIONAL CONFERENCE

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Dr. P. Anitha
Professor& Head
Department of Computer Applications (MCA)
K.S.R. College of Engineering

Co-Convenor

Dr. J. K. Kanimozhi
Assistant Professor
Department of Computer Applications (MCA)

K.S.R. College of Engineering

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K.S.R COLLEGE OF ENGINEERING, TIRUCHENGODE – 637215
(An Autonomous Institution, Approved by AICTE, Accredited by NAAC with 'A++'
& Affiliated to Anna University)
Department of Computer Applications (MCA)

International Conference on "Emerging Issues in Computer Applications for Research Issues in Gen AI and Super Intelligence" (EICA – 2025)

28th March 2025 (Friday)

Invitation

"The Principal, Director, Heads of Department, faculty, staffs and students are warmly invited to join us for the Inaugural Ceremony."

Date: Friday, 28th March 2025

Time: 9.30 AM – 10.30 AM

Venue: DHENUKA Hall, K.S.R. College of Engineering (Autonomous), Tiruchengode – 637 215

Time	Event	Person
09:30 am – 09:35 am	Prayer Song	Performed by MCA Students
09:35 am – 09:40 am	Lighting of the Lamp	Led by All Dignitaries
09:40 am – 09:50 am	Welcome Address and Overview of the Conference	Dr. P. Anitha, Prof. & Head/MCA
09:50 am – 09:55 am	Opening Remarks	Mr.R. Srinivasan., Chairman, K.S.R. Educational Institutions.
09:55 am – 10:00 am	Message of the Best Wishes	AV Presentation
10:00 am – 10:15 am	Presidential Address	Dr. M. Venkatesan., Principal, K.S.R. College of Engineering.
10:15 am – 10:20 am	Honouring the Chief Guest & Keynote Speakers	Chief Guest:Ms. Barani Shaju Chapter Lead and Solution ManagerHonour by Mr.R. Srinivasan, Chairman, KSREI & Dr. M. Venkatesan, Principal, KSRCE.
10:20 am – 10:25 am	Address by the Chief Guest	Ms. Barani Shaju Chapter Lead and Solution Manager, Bosch Global Software Technologies Private Limited, CHIL-SEZ Keeranatham Village, Coimbatore 641 035.
10:25 am – 10:30 am	Vote of Thanks	Dr. J. K. Kanimozhi, AP/MCA, KSRCE.

10:30 AM – 10:45 AM: Tea/Coffee Break

10:45 AM –11:15 AM: Keynote Address

- **Topic:** "Generative AI in Material Science: A New Era for Material Research"
- **Speaker:** Dr. Javid Iqbal

11:15 AM – 11:45 AM: Keynote Address

- **Topic:** "Human Centered AI: Designing for Well - being"
- **Speaker:** Dr. Sandipan Mallik

11:45 AM – 12:15 PM: Keynote Address

- **Topic:** "The Art of Possibility: Blending Human Augmentation and Generative AI for Creative Mastery"
- **Speaker:** Dr. Mariofanna Milanova

12:15 PM – 01:15 PM: Lunch Break

01:15 PM – 03:30PM: Technical Session 1 - Parallel Session – Online / Offline Mode

- **Session Chair:** Dr. P. Meenakshi Devi
- **Faculty Incharge:** Dr. P. Anitha
- **Venue:**Dhenuka Hall (C Block)

01:15 PM – 03:30 PM: Technical Session 2 - Parallel Session – Online / Offline Mode

- **Session Chair:** Dr. G. Singaravel
- **Faculty Incharge:** Dr. J.K. Kanimozhi
- **Venue:** MCA Lab (C Block)

01:15 PM – 03:30 PM: Technical Session 3 - Parallel Session – Online / Offline Mode

- **Session Chair:** Dr. R. Geetha
- **Faculty Incharge:** Dr. E. Loganathan
- **Venue:** MCA Lab (C Block)

03:30PM – 04:30 PM

Certificate Distribution

K.S.R COLLEGE OF ENGINEERING, TIRUCHENGODE – 637215
(An Autonomous Institution, Approved by AICTE, Accredited by NAAC with 'A++'
& Affiliated to Anna University)
Department of Computer Applications (MCA)

International Conference on "Emerging Issues in Computer Applications for Research Issues in Gen AI and Super Intelligence" (EICA – 2025)

28thMarch 2025 (Friday)

Technical Session 1: (Parallel Session – Online / Offline Mode)

- **Session Chair: Dr. P. Meenakshi Devi**
- **Faculty Incharge: Dr. P. Anitha**
- **Venue: Dhenuka Hall (C Block)**

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03	EICA2025 – 003	Deep Learning-Based Emotion Recognition Using Attention Residual Networks And Texture Analysis **Presenter:** MazounIssa, Haya Salim, Hiya Khalid, Alyazi Said, Shaji K.A. Teodore	University of Technology and Applied Sciences, Mussanah	30
04	EICA2025 – 004	Design Tracking System Using IoT to Determine the Animal Location in Oman **Presenter:**ShifaAlmukhini, TasneemAlmairy, FatemaAlghafri, HafsaAlshekaili, Intisar Almatroshi,	University of Technology and Applied Sciences – AL Musannah Mus sanah, Oman	31
05	EICA2025 – 005	Smart AI Chatbot for Government Schemes **Presenter:** Dinesh Kumar. P, Dhanush Kumar. S, Suriya. S, Perumal. T, Dhanush. R	Excel Engineering College, Namakkal	32

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07	EICA2025 – 007	Online Home Groceries Management System **Presenter:** Mouna. S, Abirami. B, Mohammed Siddiq. M.S, Nithin Kumar. K, Pradeepasir. C.S,	Excel Engineering College, Namakkal	34
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10	EICA2025 – 010	Advanced Detection of Helmet Usage and Number Plates in Riders **Presenter:** Jayadharshini. P, Santhiya. S, Rakshitaa.J, Abama. N, Kannan. N	Kongu Engineering College, Perundurai	37
11	EICA2025 – 011	Comparative Analysis of Deep Learning Models for Enhanced Colorectal Cancer Image Classification **Presenter:** Keerthika. S, Abinaya.N, Santhiya. S, Nithika. K, Dhanush. T, Arvind. C.B	Kongu Engineering College, Perundurai	38
12	EICA2025 – 012	AI Powered Music Recommendation Using Facial Recognition **Presenter:** Dr.KanimozhiSelvi. C.S, Kalavani. K.S, Srigha. S, Hariesh Ramesh, KalkiKartik. S.L,	Kongu Engineering College, Perundurai	39
13	EICA2025 – 013	5G Enabled Wireless Sensors Networks for Ultra Reliable Low Latency Applications **Presenter:** C.A.Kandasamy, Dr.D.Maheswari	KPR College of Arts Science and Research Coimbatore	40
14	EICA2025 – 014	Integration of Internet of Things (IoT) in Industrial Robotics for Enhanced Automation and Efficiency **Presenter:** Senthilkumar. A, Kalpana. C, Dhivya. M.E, Sathyaraj. N, Santhipriya. S, Dr.Kanimozhi. J.K,	Sengunthar Engineering College K.S.R. College of Engineering Tiruchengode	41

15	EICA2025 – 015	Thyroid Disease Prediction and Classification: Harnessing Machine Learning for Early Diagnosis **Presenter:** Dr.S.Tamilselvi,Monikka.A, Nitharshana.M, Sivadharshini.S,	Kongu Engineering College, Perundurai	42
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- **Session Chair: Dr.G. Singaravel**
- **Faculty Incharge: Dr. J. K. Kanimozhi**
- **Venue: MCA Lab (C Block)**

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23	EICA2025 – 023	Cooperative Mining System to Improve Bitcoin Scalability **Presenter:** Dr.Sivaprakasam. C, Dhanujasri. S,Dhivyadharshini. K,Deepana. S,Chandhika. K	Muthayammal Engineering College Rasipuram	50
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25	EICA2025 – 025	Hybrid Deep Learning Models for Enhanced Fabric Defect Detection in Industrial Settings **Presenter:** Mrs.Nithyakala. E, Balaji. R, Bhavatharani. M, BarathVignesh	K.S.R. College of Engineering Tiruchengode	52
26	EICA2025 – 026	Identification of Bird Species Using Deep Learning **Presenter:** Mr.N.Prakash, Rubika A, Sakthi G, SakthiAravind P, Sanjaikumar S	K.S.R. College of Engineering Tiruchengode	53
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28	EICA2025 – 028	Hybrid Plants Classification and Monitoring using YoloV6 **Presenter:** Mr.A. Yoganathan, G. Gopika, Dhayalan, Dheena	K.S.R. College of Engineering Tiruchengode	55
29	EICA2025 – 029	Fabric Defect Recognition (Voice) for Visually Impaired People **Presenter:** Mr.N.Prakash, S.S. Rakshana, S.Ramya, M. Renua Devi, M.Ritika	K.S.R. College of Engineering Tiruchengode	56
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35	EICA2025 – 035	Deep Neural Networks for Protein Structure Prediction: A Novel Approach **Presenter:** Dr.E.Loganathan, M.Monisha, K.Navanitha, P.Pavithra	K.S.R. College of Engineering Tiruchengode	62
36	EICA2025 – 036	Soil Erosion in Agricultural Landscapes: An Integrated Approach to Prevention and Management-Text Mining Approach **Presenter:** Dr.E.Loganathan, V.Pavithra, B.Pradeepa, A.Priyadharshini, V.Ragul	K.S.R. College of Engineering Tiruchengode	63

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38	EICA2025 – 038	AI in Mental Health Diagnosis and Therapy **Presenter:** Mrs.E.Nithyakala, R.D.Abisheck, D.Aravind, S.Abhisheck, V.ArulGanam	K.S.R. College of Engineering Tiruchengode	65
39	EICA2025 – 039	Intelligent Confined Space Health and Safety System **Presenter:** Dr. VigneshPalanivelu, BharathKatamuthu, HariharanMohandass, Veeramani Narayanan, Syed ashikahmedh Syed Ghous	K.S.R. College of Engineering Tiruchengode	66
40	EICA2025 – 040	Hybrid Quantum and Classical Routing Protocols for D2D Communication in 5G Networks **Presenter:** Mr.A.Yoganathan, Dr.P.S.Periasamy, Dr.P.Anitha	K.S.R. College of Engineering Tiruchengode	67

Technical Session 3: (Parallel Session – Online / Offline Mode)

- **Session Chair: Dr.R. Geetha**
- **Faculty Incharge: Dr. E. Loganathan**
- **Venue: MCA Smart Class Room (C Block)**

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43	EICA2025 – 043	Deepfake Detection through AI: A Systematic Overview and Impact Evaluation **Presenter:** Mr.C.A.Kandasamy, G.Jegan, G.K.Kabilan,B.Jayasurya	K.S.R. College of Engineering Tiruchengode	70
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45	EICA2025 – 045	End-To-End Stroke Imaging Analysis Using Effective Connectivity and Interpretable Artificial Intelligence **Presenter:** Mrs.C.Radha, M.MohammedAlthaf, M.Madheswaran, C.Mani, R.Midunkumar, S.Muralibabu, B.Mohanraj	Muthayammal Engineering College Rasipuram	72
46	EICA2025 – 046	Retinal Disease Detection Using Convolutional Neural Networks **Presenter:** Mrs.R.Mohana, E.Shanmugam, M.Sathish Kumar, S.Sowmiya, E.Sathiyamoorthi, V.Sanjaikumar	Muthayammal Engineering College Rasipuram	73
47	EICA2025 – 047	The Future of Work: How Generative AI Could Foster the Emergence of Super intelligent Systems **Presenter:** U.Sriaishwarya, B.Yogabrindha, M.Devika	Gnanamani College of Technology Namakkal	74
48	EICA2025 – 048	IoT - Enabled Air Quality Monitoring System **Presenter:** Dr.J.K.Kanimozhi, N.Keerthnan, S.Logeetha, J.Kungumapriya	K.S.R. College of Engineering Tiruchengode	75
49	EICA2025 – 049	AI - Powered Predictive Maintenance System for Industrial Internet of Things (IIoT) **Presenter:** Dr.R.Geetha, V.Sasikumar, N.Sarvajith, K.Saranya, V.Srikanth	K.S.R. College of Engineering Tiruchengode	76
50	EICA2025 – 050	AI Cloud Based on Real Time Skin Cancer Prediction using Mobile App **Presenter:** Dr.J.K.Kanimozhi, Mr.A.Senthilkumar, Ms.NivaashiniSenthilkumar, Dr.E.Loganathan, Mrs.E.Nithyakala	K.S.R. College of Engineering Tiruchengode	77

51	EICA2025 – 051	Predictive Analytics in Research : The Role of General AI Tools **Presenter:** Mrs.G.Krishnaveni,Ms.R.Kiruthikadevi,Ms.R.Kowsalya	Gnanamani College of Technology Namakkal	78
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54	EICA2025 – 054	Virtual Reality Exposure Therapy for Phobias (VRET) **Presenter:** Mrs.Sasikala, Deepika.G, Gokulapriya. D. G	R.P. Sarathy Institute of Technology, Salem	81
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57	EICA2025 – 057	The Role of General AI In Advancing Interdisciplinary Research **Presenter:** Mrs.U.Sriaishwarya,B.Yogabrindha, M.Devika	Gnanamani College of Technology Namakkal	84
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K.S.R COLLEGE OF ENGINEERING, TIRUCHENGODE – 637215
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Department of Computer Applications (MCA)

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28thMarch 2025 (Friday)

ABSTRACT

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 001

AI-Powered VR Laboratory Learning: Revolutionizing School Education

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With advancements in technology, Virtual Reality (VR) and Artificial Intelligence (AI) are transforming education. This paper explores the integration of AI-driven VR headsets into school laboratory lessons to enhance student engagement and understanding. The proposed system enables real-time AI assistance within VR environments, helping students identify mistakes and providing guided solutions to improve their comprehension.

This innovation aims to bridge the gap between theoretical knowledge and practical application, making laboratory learning more interactive, immersive, and efficient.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 002

AI-Driven Educational Management System for Enhanced Student Monitoring and Support

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In the present developing educational context, it is possible to apply Artificial Intelligence (AI) to supervise and assist students, which can potentially improve academic performance. This project aims at developing an AI-based system that could be utilized for real-time assessment of students' performance across various colleges, schools, and similar institutions.

As such, the system assists the students by providing them with individualized interventions, extra materials, extracurricular activities, and so on to help them achieve as much as they can.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 003

Deep Learning-Based Emotion Recognition Using Attention Residual Networks And Texture Analysis

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This paper proposes a DL based emotion recognition method that combines attention residual networks and texture analysis to improve the accuracy and effectiveness of identifying facial expressions. The process begins with preprocessing, where input images are converted to grayscale and enhanced using Adaptive Contrast Limited Histogram Equalization (CLAHE), which improves the visual quality of facial features.

For feature extraction, the Local Binary Pattern (LBP) technique is used to capture texture-based characteristics, which are critical for detecting subtle variations in facial expressions. LBP efficiently highlights local patterns within the image, making it suitable for distinguishing finegrained emotional cues. The extracted features are then classified using an Attention Residual Network (Attention ResNet), which integrates the strengths of attention mechanisms and residual learning.

The attention mechanism focuses on key areas of the facial image, enhancing the model's ability to identify emotional expressions by weighting important features. Additionally, residual connections help alleviate the vanishing gradient problem, facilitating the training of deep networks and leading to more accurate classification.

The integration of these advanced techniques results in improved performance in emotion recognition, allowing the model to detect and classify facial expressions with higher precision, even under challenging conditions. This work is implemented by using Python language with the simulation results of accuracy of 93% and the efficiency of 90%.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 004

Design Tracking System Using IoT to Determine the Animal Location in Oman

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The Internet of Things (IoT) has evolved beyond household gadgets to tackle broader social issues, such as preventing animal straying. In Oman, stray camels pose significant risks, often leading to accidents and environmental damage. In 2021, the Dhofar Governorate recorded the highest number of camel-related incidents, resulting in 11 deaths and 20 injuries. Without effective solutions, these numbers are expected to rise in the future.

This project introduces an IoT-based system to track and monitor camels, aiming to reduce accidents and enhance animal welfare. The proposed system comprises two devices: the first is a laser sensor installed at the gate of the camel barn, which alerts the owner when a camel exits the premises. The second device, attached to the camel's neck, includes GPS and connects via Wi-Fi, enabling real-time tracking of the animal's location.

The system also allows the owner to set a designated zone, triggering alerts if the camel exceeds a specified distance (e.g., 2 km from home). The main objectives of this project are to improve safety, provide camel owners with precise location data, and contribute to a safer environment by minimizing camel-related accidents. This innovative solution leverages IoT technology to protect both people and animal assets, ultimately fostering a healthier and cleaner environment.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 005

Smart AI Chatbot for Government Schemes

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This chatbot is web-based platform developed using Python Django, designed to facilitate seamless interaction between users and a chatbot system for retrieving information about Indian Government Schemes.These details serve as the backbone of the chatbot's responses to user in quiries.

The website ensures a user-friendly experience with a secure registration system, where users provide their name, email, mobile number, and address to create an account and access the system.The chatbot is programmed to understand and process the user's request, retrieving the relevant scheme information from the database and displaying it in a conversaional format.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 006   **Smart Electricity Shutdown System for Explosion Area's**

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Explosion-prone areas present significant safety risks due to the potential for electrical sparks to ignite flammable materials. This paper presents a smart electricity shutdown system designed to mitigate these risks. The system utilizes a network of gas and temperature sensors to continuously monitor the environment. Upon detecting hazardous conditions, a central control unit automatically triggers an electrical shutdown, preventing potential explosions.

The system incorporates predictive algorithms to anticipate potential hazards and integrates with existing fire suppression systems for enhanced safety. Preliminary testing demonstrates a significant reduction in response time compared to traditional manual shutdown procedures, highlighting the system's potential to improve safety in hazardous environments.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 007   Online Home Groceries Management System

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In today's fast-paced world, where time is of the essence and convenience is paramount, the demand for efficient and seamless solutions for everyday tasks like grocery shopping has never been higher. The Online Home Groceries Management System is a digital platform designed to streamline the process of purchasing, organizing, and managing groceries for households.

The system enables users to browse, select, and purchase groceries from an online store, eliminating the need for physical shopping trips. It provides features such as product categorization, real-time stock updates, and secure payment integration.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 008

Medical Supply Management System

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Pharmacy Supply Management in healthcare systems is evaluated with a particular focus on the distribution of medicines from a wholesaler to clinics. Currently, there are issues with service levels to clinics that need addressing. The value of the paper arises from providing a detailed analysis of a healthcare supply chain in the developing world and diagnosis the parameters involved in inventory.

Pharmaceutical practices have evolved over time to become fully encompassed in all aspects of pharmacy itself. Such practices include: dispensing of drugs, consultation, drug regulation, and the sale of these drugs. Creating an Online Pharmaceutical Management System would help in pharmaceutical practices for all parties involved.

It is eminent that the system provides a safe, secure and verified platform for all parties which help to bridge the communication gap and provide legitimate drugs. Therefore, if all recommendations are strictly adhered to, there will be strict monitoring and regulation of how drugs are circulated and a decrease in the spread of fake drugs.

EICA2025 – 009

Real - Time Network Data Mining Technologies for Big Data Analytics: A Survey

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With the exponential growth of digital data, applications for real time network data mining to extract meaningful insights, while maintaining security and scalability, are needed. In this survey, big data analytics' contemporary real time data mining technologies are studied with emphasis on their architectures, computational models and overall efficiency of handling large and fast flowing data.

Finally, the paper discusses real time analysis on distributed computing platforms like cloud and edge computing and how they integrate with scalable learning algorithms. Furthermore, it also presents the most relevant frameworks, namely Apache Spark, Flink and Storm, that allow low latency processing of structured, and unstructured data.

Big data mining perplexes with security and privacy problems such as access control, encryption and anomaly detection, and this is discussed with discussions on emerging solutions such as use of blockchain and federated learning. In addition, the study also considers performance trade-offs between centralized and decentralized data mining approaches, their effects on the decision-making process.

In this survey, this analytical work gives a coherent and detailed view of the ways in which data mining architectures may be configured to optimize real time analytics, to be robust, efficient, and retain privacy. The findings form the basis for building scalable, secure and high-performance real-time data mining systems to enable big data enabled applications across various industries.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 010

Advanced Detection of Helmet Usage and Number Plates in Riders

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Effective enforcement of road safety laws and reduction in the number of fatalities in traffic accidents are critically dependent on effective helmet wear detection and number plate identification of motorcycle riders. Conventional methods that mostly depend on human observation are laborious, prone to failure, and highly errorprone in challenging scenarios, such as bad lighting or harsh weather conditions. In this paper, a novel automated framework that combines advanced object detection models, namely, You Only Look Once, Nano version, (YOLOv8n) and Faster R-CNN, along with EasyOCR for optical character recognition, has been presented that overcomes such limitations. The YOLOv8n model is celebrated in the literature for achieving an excellent tradeoff between accuracy and speed. An extensive dataset of images of riders with and without helmets and of various number plates was used for training the YOLOv8n model, ensuring the model is robustly trained. The integration of EasyOCR further strengthens the framework in extracting text information from detected number plates in real time, and this boosts the overall effectiveness of the system.

The findings show that the integration of YOLOv8n and EasyOCR achieves accurate real-time detection, hence providing a solution to enhance adherence to helmet laws and quickly identifying traffic violations. The performance measures for YOLOv8n achieved an excellent precision of 96.4%, recall of 90.1%, mean Average Precision (mAP) of 0.89, and IoU score of 0.87, while Faster R-CNN demonstrated high precision, particularly in the more challenging detection tasks. This integrated system represents a significant stride in road safety technology, hence providing a scalable and efficient solution for real-time monitoring of the usage of helmets and identification of vehicles, finally helping to reduce traffic accidents and save lives.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 011

Comparative Analysis of Deep Learning Models for Enhanced Colorectal Cancer Image Classification

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Colorectal cancer (CRC) is a serious global health concern for which early detection is critical to improving survival rates. Advances in neural networks and image processing have made it possible to create more accurate and efficient diagnostic systems. This study compares multiple cutting-edge deep learning algorithms for the categorization of colorectal cancer using images of the disease that are tiny. The Super-Resolution Convolutional Neural Network (SRCNN) is a preprocessing procedure that raises the quality of input data by enhancing visual clarity and resolution.

Subsequently, we employ Gabor filters to extract features from the tissue samples, enabling us to capture significant textural patterns. The first dataset is then used to train and evaluate a range of state-of-the-art deep learning architectures, such as U-Net, Xception, NASNet, SE-ResNet, VGG-19, EfficientNet-B4, and DenseNet.

Critical performance criteria, such as accuracy, precision, recall, and F1-score, are used in a comprehensive evaluation to determine which model is more successful in separating CRC from the upgraded photos. Adding SRCNN for picture enhancement significantly improves feature extraction and model performance. EfficientNet continuously outperformed itself and attained an exceptional accuracy of 95.3% based on all evaluation metrics.

Based on these findings, it appears that the best-performing architecture is EfficientNet. It is shown that EfficientNet is robust in classifying colorectal cancer, with an average accuracy of 94.6% across all folds. These findings demonstrate the importance of superior image preprocessing for improving diagnostic outcomes and demonstrate how EfficientNet may be applied to raise CRC detection accuracy.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 012   **AI Powered Music Recommendation Using Facial Recognition**

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A person's emotions are a direct expression of their unique behaviors, which can vary significantly across different contexts. Understanding and recognizing these emotions allows us to interpret a person's distinct behavioral state, enabling more personalized interactions. The focus of this research is to identify facial features, detect emotions, and seamlessly generate music that aligns with the user's emotional state. Our system introduces a novel approach to automating music selection through real-time facial expression analysis.

Unlike traditional methods that depend on userdriven inputs, wearable devices, or classification of audio features, our method uses advanced facial detection techniques to automate the process. Leveraging a Convolutional Neural Network (CNN) for emotion detection, our approach achieves a notable increase in accuracy while also reducing both costs and computational time. The system is trained and tested using datasets like FER2013, FER Plus, and Affect Net, ensuring a robust emotion detection model. Additionally, the NRC Emotion Lexicon is integrated to analyses song lyrics, creating a more immersive and personalized music experience.

By connecting with the Spotify API, the system dynamically curates' playlists in real-time based on the user's emotions, offering a unique and engaging interaction that significantly enhances user satisfaction. The system's ability to adapt to a user's emotional state in real-time adds depth and responsiveness to music recommendations, providing not only entertainment but also a therapeutic experience. This novel solution presents new opportunities for enhancing emotional intelligence in technology, creating a seamless blend between mood recognition and music curation. Through continuous improvement, the system could be expanded to support more diverse datasets, further improving its performance across varied cultural and demographic context.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 013   **5G Enabled Wireless Sensors Networks for Ultra Reliable Low Latency Applications**

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This study aims to evaluate the effectiveness of a 5G-based routing algorithm in comparison to traditional routing methods for reducing latency in wireless sensor networks (WSNs). Materials and Methods: Two groups were analyzed: Group 1 used a 5G-enabled routing algorithm to optimize speed, minimize delays, and enhance reliability under varying traffic conditions, while Group 2 implemented a traditional routing algorithm on the same dataset of 50 real-time network scenarios.

Key parameters included node density, interference, and congestion. Performance was evaluated using latency, packet delivery ratio (PDR), and throughput, with a statistical threshold of 0.05% significance, a 95% confidence interval, and 80% G Power.

The 5G-based routing algorithm significantly reduced latency compared to the traditional routing algorithm. The latter achieved an average latency of 120ms, whereas the 5G-enabled system reduced it to 35ms ($p < 0.05$).

Conclusion: The study demonstrates that the adoption of a 5G-based routing algorithm enhances network performance by reducing latency, increasing data transmission speed, and ensuring ultra-reliable communication.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 014	**Integration of Internet of Things (IoT) in Industrial Robotics for Enhanced Automation and Efficiency**

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The integration of the Internet of Things (IoT) in industrial robotics has significantly transformed manufacturing by enabling robots to become more intelligent, efficient, and adaptable. IoT technology allows industrial robots to collect real-time data, communicate with other machines and systems, and make autonomous decisions based on this data. This report explores how IoT enhances robotic systems by enabling real-time performance monitoring, predictive maintenance, and process optimization.

By embedding IoT sensors in robotic arms and using advanced analytics, manufacturers can gain insights into robot health, anticipate failures, and optimize workflows, leading to reduced downtime and increased productivity. Additionally, IoT-enabled robots can improve safety by collaborating with human workers through real-time environmental awareness and task adjustments.

Despite the benefits, challenges such as cybersecurity concerns, data overload, and high initial investment exist. However, the future of IoT in industrial robotics looks promising with advancements in 5G connectivity, edge computing, and autonomous robotic systems. These developments will further improve the flexibility, efficiency, and intelligence of robots, making them integral to the future of smart manufacturing. Overall, IoT integration in industrial robotics is driving a new era of automation, offering substantial improvements in operational efficiency, cost reduction and production quality.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 015	Thyroid Disease Prediction and Classification: Harnessing Machine Learning for Early Diagnosis

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Thyroid is said to be the one of the major human organs is the ductless gland. It is a vascular gland. It looks like a butterfly shaped gland. Akhira and Antara are two Thai disorders. Two hormones are produced by this gland that facilitates the regulation of metabolism. The number of thyroid per blood adult is called thyroid. These hormone producing glands, when augmented cause an abnormality in the body metabolism.

A blunt and noisy thyroid test using blood is commonly utilize to diagnose the disease however the accuracy are likely to be reduced due to blurriness and artifacts. In order to evaluate the risk in patients, cleaning and preparation of data without clear errors is conducted in order to facilitate analysis. To predict the progression of a disease, Machine Learning is critical. By forecasting the risk in thyroid disease, We implemented methods involving SVM, logistic regression, decision tree models, KNN, neural networks, and ensemble algorithm.

Our dataset will first preprocessed before cleaning, normalization, and feature selection. Algorithms are trained with features which include the average levels of other hormones, sex of the patient and age among others. These models are put on metrics of performance such as accuracy, precision, recall and F1-score. The results can be comparative.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

Eica2025 – 016   **Innovating Strategies for Combining Spatial and Temporal Dependencies in Pattern Recognition**

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The study seeks to compare the effectiveness of the DFS-MINE algorithm with that of using spatiotemporal correlations to analyse and enhance trip time prediction effectiveness. The general objective of this project is to apply real-time traffic data in improved prediction accuracy and effectiveness.

Materials and Procedures: The two groups under study are labelled as follows. The 250 sample Integrating Spatio-temporal Correlations model has been labelled Group 1 while the 200 sample DFS-MINE model has been labelled Group 2. The cut-off is 0.05% confidence level 95% and the G Power value is 80%.

Result: The Integrating Spatio-temporal Correlations model is much more efficient and predictive than the DFS-MINE approach. The prediction accuracy of DFS-MINE ranged from 72% to 81%, whereas the prediction accuracy of integrating spatiotemporal correlations ranged from 85% to 94%.

Output frequency of the Integrating Spatio-temporal Correlations model for optimal efficiency has a significance level of around 0.00065. Conclusion: The study shows that the Integrating Spatio-temporal Correlations model is a superior method for optimizing trip time predictions since it is far more efficient than the DFS-MINE algorithm.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 017 **Dynamic and Advanced Beam Anchor in Industrial and Construction Application**

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This study aims to evaluate the performance of an innovative beam anchor system compared to existing methods in improving worker safety, ease of use, and load-bearing capacity in height-related industries. Materials and Methods: The experiment was conducted in the Occupational Health and First Aid Lab using load-testing equipment. Two groups were tested: Group 1 is the aluminum beam anchor and Group 2 is the dynamic and advanced beam anchor, with 10 samples each. Key parameters analyzed included installation time, load capacity, and failure modes.

Statistical analysis was performed using SPSS to compare performance variations. The proposed beam anchor system significantly outperformed the existing method, with an average load capacity of 27.8 kN compared to 15.2 kN in the existing system. Installation time was reduced from 5.3 minutes to 3.1 minutes. Unlike the existing system, which showed slippage and deformation, the proposed system demonstrated secure attachment with no failure during testing.

Conclusion: The proposed beam anchor system proved to be a safer, more efficient, and reliable alternative, with a 40% reduction in setup time and an 83% increase in load capacity. Its ergonomic, tool-free design and enhanced safety features make it a viable solution for industries requiring height safety measures.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 018

Evaluating Human-AI Collaboration

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The use of artificial intelligence (AI) in collaborative working environments, termed Human-AI Collaboration (HAIC), has become vital across diverse domains, enhancing decision-making, efficiency, creativity, and innovation. Despite its wide potential, evaluating HAIC effectiveness poses significant challenges due to the complex, dynamic, and reciprocal interactions between humans and AI systems. This paper provides a comprehensive analysis of existing HAIC evaluation methods and introduces a novel, domain-agnostic framework for systematically assessing these systems.

To support structured assessment, our framework incorporates a decision-tree-based approach that helps select relevant metrics tailored to distinct HAIC modes (AI-Centric, Human-Centric, and Symbiotic). By integrating both quantitative and qualitative evaluation criteria, the framework aims to address key gaps in HAIC assessment methodologies.

We highlight the unique challenges posed by evaluating creative and linguistic AI applications, such as large language models and generative AI in the arts, underscoring the need for tailored evaluation approaches in these emerging areas. This work lays the foundation for future research and empirical validation, offering a structured methodology to enhance the evaluation of HAIC systems.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 019	Fake Job Requirements Identification Through Deep Learning Models

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The rise of online job portals has made it easier for job seekers to find employment opportunities. However, it has also led to an increase in fraudulent job postings, which can result in financial losses, identity theft, and other risks for job seekers. To address this issue, we propose an automated tool that uses machine learning and deep learning techniques to identify fake job postings.

The study compares the effectiveness of different single and ensemble classifiers, with Random Forest achieving the best performance. Experimental results demonstrate that ensemble classifiers outperform single classifiers, with an accuracy of 95%.

This tool aims to guide job seekers in identifying legitimate job opportunities, thereby reducing the risk of employment scams.

Parallel Session – 1
Session Chair: Dr. P. Meenakshi Devi, Dr.P.Anitha

EICA2025 – 020	Cross - Domain Knowledge Transfer Techniques for Predicting Residential Energy Usage

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For the improvement of domestic energyforecasting accuracy and efficiency, in this study, a GraphNeural Network (GNN) model with transfer learning capacity is intended to be adopted. Group 1 utilizes the designed GraphNeural Network (GNN) model, and Group 2 utilizes theTemporal Fusion Transformer (TFT) model. Both models use a sample size of 20 datasets and analyze various time periodsand trends in energy usage.

The predictive accuracy, trainingtime, computational complexity, and flexibility of both modelsare compared. With a 2.7% increase in prediction accuracy,35% decrease in training time, 20% decrease in computationalcost, and improved generalization across many home energydata sets, the outcome revealed that the GNN model is superiorto the TFT model.

The results indicate that, as it isincorporated with transfer learning, the suggested TFT modelprovides a more efficient and scalable residential energyforecasting method compared to the GNN model with bettercomputing efficiency and flexibility.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 021   **Artificial Intelligence in Healthcare - An Overview**

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Artificial Intelligence (AI) is a field that enables devices to handle functions that may require cognitive human activity. This aspect of technology is revolutionizing industries by increasing productivity, automating tasks, and improving the quality of decisions making.

AI are used in many areas such as finance, healthcare etc., In healthcare, AI aids in diagnostics, drug discovery, hospital management, and robotic surgery. This paper explores an overview of AI in healthcare: applications of AI in health care, benefits and challenges of AI in healthcare services.

This paper also provides how to improve disease detection, personalized treatments, and operational efficiency.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 022	**Mitigating Worm Hole Attacks in Wireless Senor Networks**

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Wireless Sensor Networks (WSNs) have become an essential part of various applications, including military surveillance, healthcare monitoring, and environmental sensing.A wormhole attack occurs when two or more malicious nodes create a low-latency tunnel to relay packets between distant locations in the network, making it appear as if the nodes are closer than they actually are.

This misleads routing protocols, disrupts communication, and can lead to serious security breaches, such as selective forwarding, data tampering, and denial-of-service (DoS) attacks.Detecting wormhole attacks is challenging because the attackers do not generate new packets or modify existing ones.

Instead, they exploit the routing protocols by creating a shortcut in the network topology. Several detection techniques have been proposed, including time-based analysis, distance-based methods, cryptographic approaches, and machine learning-based anomaly detection. Each method has its strengths and limitations depending on factors like network density, node mobility, and energy constraints.

This paper explores the different types of wormhole attacks, their impact on WSN performance, and existing detection mechanisms. We also compare various detection techniques and propose recommendations for improving security against wormhole attacks in WSNs. Finally, we highlight ongoing research challenges and future directions for securing WSNs from sophisticated cyber threats.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

Eica2025 – 023	**Cooperative Mining System to Improve Bitcoin Scalability**

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Blockchain is a Distributed Ledger Technology (DLT) that allows users to exchange values directly without a need for trusted third parties. Bitcoin is one of the most popular digital cryptocurrencies that is based on blockchain technology. However, it faces scalability problems including transaction throughput, latency, and starvation. Bitcoin transaction throughput is very low compared to traditional payment methods. Additionally, many Bitcoin transactions suffer from delays and starvation as miners prefer transactions with higher fees. More of the current research focuses on how to enhance Bitcoin scalability by improving the performance of consensus techniques, dividing the network into smaller ones with different parts of the blockchain, or completely changing the blockchain data structure.

Unfortunately, engaging in this problem usually affects either decentralization or security; this is called the blockchaintrilemma. This paper proposes the Cooperative Mining System (CMS), which depends on enhanced proof of work consensus algorithm. This proposed system increases transaction throughput and eliminates transaction latency and starvation without affecting decentralization and security.

In CMS for each epoch, miners cooperated to create one super-block that contains more transactions than the traditional Bitcoin block. Whereas miners create their traditional blocks simultaneously, broadcast them, wait to receive other miners' blocks, and lastly create a super-block that contains all the transactions of the gathered blocks. The Simulation results of the CMS and Bitcoin system using different case scenarios show a significant improvement in CMS compared to the current Bitcoin system. The CMS greatly increases the transaction throughput and eliminates transaction latency and starvation.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 024   **Advanced Machine Learning Techniques for Fake News Detection and Classification**

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In today's world, the internet plays a major role in our daily lives. Every message is transmitted and received instantly, reaching people in every corner of the country. In the past, whether news was real or fake, it took time to spread. Identifying fake news was also a difficult task. Now, with social media, news spreads quickly across the world. If the information is true, it is beneficial, but if it is fake, it can cause harm. Therefore, detecting fake news has become essential. Machine learning algorithms help identify fake news.

To do this, details like websites, publishers, and other sources are collected as a dataset. By analyzing this dataset, untrusted sources that repeatedly spread fake news can be detected. The first step in this process is **preprocessing,** where irrelevant data is removed, and only useful information is kept. This helps save time and ensures accuracy. Finally, a machine learning algorithm called **Passive Aggressive Classifier** is used to classify whether the news is real or fake. By training the system with this method, it can accurately detect fake news compared to other ML algorithms.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 025 **Hybrid Deep Learning Models for Enhanced Fabric Defect Detection in Industrial Settings**

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The aim of this research is to develop a Hybrid Deep Learning Model for enhanced fabric defect detection in industrial settings, utilizing Convolutional Neural Networks (CNN) for improved accuracy and efficiency. The study compares the performance of the hybrid CNN model with a traditional method using the Generalized Support Vector Machine (GSVM) algorithm. Materials and Methods: In this study, two methods were evaluated: Group 1, which applies the Hybrid CNN Deep Learning Model combining multiple layers of neural networks for defect detection, and Group 2, which uses the traditional GSVM algorithm for classifying fabric defects. A dataset of 5,000 fabric images, containing various types of defects, was used for training and testing. The models were evaluated using accuracy, precision, and recall metrics, with a 95% confidence level for statistical significance.

Results: Group 1, which employed the Hybrid CNN model, significantly outperformed Group 2, which used the GSVM algorithm, achieving an accuracy of 96.5%. The performance difference between the two methods was statistically significant ($p < 0.05$), indicating that the Hybrid CNN model was more effective in detecting fabric defects in industrial settings. Additionally, the CNN model demonstrated superior precision and recall rates compared to the GSVM method.

The Hybrid CNN Deep Learning Model provided enhanced fabric defect detection capabilities in industrial environments, outperforming the traditional GSVM approach in terms of accuracy, precision, and recall. This approach offers a promising solution for automated defect detection in textile manufacturing, improving efficiency and reducing errors in production.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 026   Identification of Bird Species Using Deep Learning

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Bird species conservation monitoring frequently uses deep learning in conjunction with bird sound recognition. Deploying bird sound recognition devices requires a complex network structure, which leads to issues like low efficiency and lengthy inference times. With AlexNet serving as the foundational model, we examine the ability of SIAlex, a shallow and simple model that lacks sophisticated connection strategies or attention processes, to identify and categorize 20 bird sound datasets. These models are concurrently verified on the 10-class UrbanSound8k dataset. By reducing the number of model layers, increasing computational efficiency, and drastically cutting down on inference time, the structural re-parameterization method achieves a decoupling of training and inference time inside the structure.

A cascaded technique is used to increase the number of activation functions in order to increase the model's nonlinearity, which greatly enhances the model's generalization performance. Convolutional layers concurrently replace the original fully connected layers in the classifier portion, decreasing inference time and improving feature the model's capacity for extraction, increasing precision and successfully identifying bird speech. On the Birdsdata dataset, the experimental results demonstrate that the SIAlex network increases accuracy to 93.66% and infers a piece of data in just 2.466 ms.

The UrbanSound8k dataset has an accuracy of 96.04% and an inference time of 3.031 ms per data point. Numerous experimental comparisons have demonstrated that the approach put forth in this study produces positive outcomes in terms of cutting down on the model's inference time, leading to advancements in the use of shallow, basic models.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

| EICA2025 – 027 | **Smart Cities and Infrastructure: Smart Traffic Monitoring with Sensor Networks** |

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The aim of this research is to develop Smart Traffic 4.0, an AI-powered smart traffic monitoring system that leverages sensor networks and predictive analytics to optimize traffic flow, reduce congestion, and enhance infrastructure efficiency. Materials and Methods: Two approaches were evaluated: Group 1 applied a heuristic algorithm with preset traffic management rules, while Group 2 employed a predictive analytics model using real-time traffic data, machine learning-based feature scaling, and cross-validation. A dataset of 2,500 traffic flow instances from multiple urban intersections was analyzed with a 93% confidence level to determine statistical significance.

Group 2, which used the predictive analytics model, outperformed Group 1, which applied the heuristic algorithm, achieving an accuracy of 91.85% in optimizing traffic signals and predicting congestion patterns. The performance difference was statistically significant ($p < 0.05$), indicating that the predictive model was more effective in traffic management. Conclusion: The predictive analytics model proved to be a more reliable and adaptive approach to smart traffic monitoring, particularly in highly congested urban environments. Integrating AI-driven analytics with sensor networks enhances mobility, improves infrastructure efficiency, and supports the development of sustainable smart cities.

EICA2025 – 028   Hybrid Plants Classification and Monitoring using YoloV6

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This study aims to compare the effectiveness of the YOLOv6 algorithm against traditional Machine Learning methods, particularly Convolutional Neural Networks (CNN), in hybrid plant classification and monitoring to improve accuracy. Materials and Methods: Two groups were tested in this investigation. Two groups were tested: Group 1 used a YOLOv6-based hybrid plant classification model, while Group 2 employed a CNN-based model.

Both were trained and evaluated on 30 hybrid plant images, considering lighting variations, occlusions, and orientations. Pre-processing techniques like contrast enhancement and edge sharpening were applied to Group 1. Feature extraction in Group 2 was performed using convolutional layers. Accuracy, precision, recall, and F1-score were used for evaluation.

A significance threshold of 0.05% and a 95% confidence interval with 80% G Power were set for statistical analysis. Result: The YOLOv6 model outperformed the CNN-based approach, achieving 97.00% accuracy with a 0.55s inference time, while the CNN model reached 88.00% accuracy in 2.50s ($p < 0.05$).

Statistical analysis confirmed YOLOv6's robustness for real-time hybrid plant classification.YOLOv6's efficiency and fast inference make it superior to CNN for real-time hybrid plant classification. Its implementation in precision agriculture enhances monitoring accuracy, enables early disease detection, and boosts productivity.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 029   **Fabric Defect Recognition (Voice) for Visually Impaired People**

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It might be difficult for visually impaired people to recognize fabric flaws, which affects their independence when it comes to choosing clothes and taking care of themselves. This abstract suggests fabric fault recognition with voice feedback as a cutting-edge assistive technology solution. By using an accessible interface to provide audio descriptions of fabric faults, this device seeks to empower visually challenged users.

The support vector machine algorithm can categorize this. The support vector machine classifies the photos according to their categories after recognizing the features. For those who are blind or visually challenged, this approach can be a useful tool as it allows them to independently recognize patterns and their corresponding colors.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 030	**Holographic Telepresence for Remote Collaboration**

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This study explores the effectiveness of holographic telepresence technology in enhancing remote collaboration by providing immersive, realtime 3D communication.Materials and Methods: Two groups were examined: Group 1 involved 20 remote collaboration sessions using traditional video conferencing tools, while Group 2 used holographic telepresence systems for virtual interaction. Performance metrics assessed included communication effectiveness, engagement level, collaboration efficiency, latency, and user satisfaction. A statistical significance threshold of ($p < 0.05$) was applied with a 95% confidence level to validate the results.

Holographic telepresence demonstrated significantly higher engagementlevels (88.5%–92.7%) compared to traditional video conferencing (70.3%–75.8%). Collaboration efficiency was improved by 35%, and participants reported a more immersive experience. Additionally, latency in holographic sessions was reduced to 30ms compared to 75ms in video conferencing. The study highlights that holographic telepresence offers a more interactive, immersive, and productive alternative to traditional video conferencing, making it an ideal solution for remote collaboration in various sectors.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 031   Securing 5G-Enabled IoT Networks: Strategies for Privacy Protection and Risk Mitigation

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As we move into 2020, the world is experiencing the early deployment of 5G networks, which are set to transform mobile wireless communications by offering higher speeds, ultralow latency, and extensive connectivity for mobile devices. Notably, the Internet of Things (IoT) stands to benefit the most from this technological advancement.

However, the widespread adoption of 5G also raises significant concerns regarding security and privacy, as its always-on, wireless nature increases vulnerabilities in connected devices. This paper provides a comprehensive analysis of the current landscape of security and privacy solutions designed for 5G networks.

Specifically, it explores key requirements such as data integrity, confidentiality, authentication, access control, non-repudiation, trust, privacy, identity and key management, policy enforcement, and intrusion detection.

Additionally, the paper highlights potential future research directions for developing secure and privacy-conscious 5G systems. To this end, it examines the role of emerging technologies, including IoT, fog computing, and blockchain, in enhancing security and privacy within 5G ecosystems.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 032   AI - Powered Fruit Disease Classification Using ARNN

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Fruit disease classification plays a crucial role in modern agriculture and food security, enabling early detection and prevention of crop losses. Traditional disease identification methods rely on manual inspection, which is time-consuming, prone to errors, and requires expert knowledge. To address these challenges, Artificial Recurrent Neural Networks (ARNN) have emerged as a powerful deep learning-based solution for automated fruit disease classification. ARNNs excel in processing sequential data, making them well-suited for analyzing complex patterns in fruit images, including variations in color, texture, and shape caused by diseases.

This study explores the application of ARNNs for efficient and accurate fruit disease classification. The proposed approach involves image preprocessing, feature extraction, and classification using a trained ARNN model. The system utilizes large-scale datasets containing images of various fruit diseases, enabling the model to learn and distinguish between healthy and diseased fruits. Compared to traditional Convolutional Neural Networks (CNNs), ARNNs offer advantages in detecting temporal dependencies and subtle variations in fruit disease symptoms.

Experimental results demonstrate that ARNN-based classifiers achieve high accuracy, outperforming conventional machine learning techniques. The research further discusses challenges in dataset quality, model optimization, and real-time deployment in agricultural settings. Integrating ARNN-based fruit disease classification into smart farming and precision agriculture can significantly enhance productivity, reduce losses, and minimize the need for chemical treatments. Future research aims to optimize ARNN architectures, improve model interpretability, and explore real-time implementation through edge computing and IoT-enabled solutions. This work contributes to advancing AI-driven agricultural technology for sustainable and efficient farming practices.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 033   **Animal Health Care Monitoring System Using Zigbee**

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The objective of this research is to develop an AI-powered animal health care monitoring system that utilizes Zigbee-based wireless sensor networks (WSNs) for real-time health tracking and disease detection. The system applies Support Vector Machine (SVM) and compares its performance with Artificial Neural Networks (ANN) in identifying potential health risks. Materials and Methods: The study evaluates two machine learning models: Group 1, which employs SVM for classification, and Group 2, which uses ANN for predictive analysis.

Health parameters such as body temperature, heart rate, respiratory rate, and activity levels are continuously monitored using Zigbee-enabled sensors. Feature selection and cross-validation techniques ensure optimal model accuracy. A dataset of 2,500 animal health records is analyzed with a 93% confidence level to determine statistical significance.

The SVM model outperformed the ANN model, achieving an accuracy of 92.47%, demonstrating higher reliability in classifying potential health anomalies. The performance difference between the models was statistically significant ($p < 0.05$), confirming the superiority of SVM for early disease detection. Conclusion: The proposed Zigbee-based animal health monitoring system improves early disease detection and prevention, particularly in livestock and remote farm environments. The use of SVM enhances accuracy and reliability, making it a viable solution for resource-limited areas where real-time health monitoring is critical.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 034 **Human Health Monitoring System using Zigbee**

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The aim of the research is to develop a Zigbee-Based Human Health Monitoring System, a wireless healthcare solution designed for real-time monitoring of vital health parameters using Zigbee communication technology. This system ensures efficient data transmission with low power consumption, enhancing remote and in-hospital patient monitoring.

Materials and Methods: In this study, two methods were evaluated: Group 1, which utilizes traditional wireless communication technologies such as Wi-Fi and Bluetooth, and Group 2, which implements a Zigbee-based system integrated with advanced algorithms for real-time health monitoring. Various health parameters, including heart rate, body temperature, and oxygen saturation, were measured and analyzed. A 93% confidence level was applied to assess statistical significance.

The Zigbee-based health monitoring system (Group 2) demonstrated superior performance compared to traditional wireless methods (Group 1), achieving higher reliability, lower power consumption, and improved network scalability. The statistical analysis ($p < 0.05$) confirmed the effectiveness of Zigbee technology in real-time health data transmission and monitoring.

The proposed Zigbee-Based Human Health Monitoring System provides an efficient, reliable, and scalable solution for continuous patient monitoring. The system enhances healthcare accessibility, reduces medical response time, and ensures better patient outcomes, particularly in remote and resource-limited environments.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 035

Deep Neural Networks for Protein Structure Prediction: A Novel Approach

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Protein structure prediction (PSP) has been a fundamental area of research in bioinformatics and computational biology, focusing on determining protein structure and function from sequence data. The threedimensional configuration of proteins is crucial for their complex biological functions. With advancements in computational power and the integration of deep learning (DL) techniques—particularly Transformer-based architectures—the PSP domain has entered a new phase of "neuralization."

This review explores the progression of PSP from conventional methods to modern deep learning-driven approaches, highlighting the features of different structural prediction techniques. It underscores the superiority of deep learning-based hybrid models over traditional strategies. Additionally, this study presents an analytical overview of widely utilized bioinformatics databases and the most recent structural prediction frameworks. It also examines deep learning architectures, algorithmic optimizations, and methodologies for model training, validation, and assessment.

Furthermore, a comprehensive discussion is provided on key breakthroughs in deep learning-powered protein structure prediction. The latest update of AlphaFold 3 has further expanded the scope of predictive models, particularly in protein–small molecule interactions. This represents a significant transition toward a more integrative approach in biomolecular structure analysis, aiming to resolve nearly all sequence-to-structure challenges across diverse biological systems.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 036

Soil Erosion in Agricultural Landscapes: An Integrated Approach to Prevention and Management-Text Mining Approach

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This study confirms that the Random Forest algorithm is more effective than the K-Nearest Neighbors algorithm. This study investigates the effectiveness of various soil erosion control methods in agricultural fields.

Group 1 evaluates the impact of cover crops, while Group 2 focuses on the use of mulching techniques. Both methods were tested on agricultural lands prone to erosion, and their efficiency was measured by comparing the rate of soil erosion and improvements in soil quality.

The results indicate that cover crops significantly reduced soil erosion rates compared to mulching, demonstrating a higher effectiveness in preventing soil loss and enhancing soil fertility. These findings suggest that implementing cover crops is a more sustainable and effective strategy for controlling soil erosion in agricultural practices.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 037	**Convolutional Neural Networks Based Atrial Fibrillation Detection**

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Atrial Fibrillation (AF) is the most common form of arrhythmia. AF is referred to as rapid heart-beat. AF is conventionally diagnosed by monitoring Electrocardiogram (ECG) signals. This method of diagnosis is time consuming for Cardiologists.

In order to address this challenge many Machine Learning (ML) models have been proposed. In this method proposed, the ECG signals are taken both as dataset and in real time and are pre-processed. From this pre-processed signal, features of ECG are extracted using Convolutional Neural Network (CNN) algorithm.

The extracted features are trained to the ML models using U- NET model. This trained model helps in detecting the patients if affected by Atrial Fibrillation in real time. Testing this at early stage of AF (Paroxysmal AF) reduces the risk for life threats can be treated early saving lives. This method is aimed to achieve an accuracy of 97% and F1 score of 97%.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 038

AI in Mental Health Diagnosis and Therapy

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The objective of this study is to develop an AI-based mental health diagnosis and therapy model utilizing Machine Learning (ML) techniques and assess its effectiveness against traditional diagnostic and therapeutic methods.The models evaluate psychological, physiological, and behavioral factors such as speech patterns, facial expressions, and physiological biomarkers to improve the accuracy of mental health diagnosis and treatment recommendations.

Materials and Methods: This research is divided into two groups. Group 1 applies traditional clinical diagnostic methods, which include structured interviews and psychological assessments, to classify mental health conditions based on patient responses and observations.[2]Group 2 utilizes an AI-driven model trained with a dataset of 30,000 samples, employing deep learning and natural language processing (NLP) techniques to enhance classification accuracy. The G Power value is set at 80%, with a significance threshold of < 0.05 and a confidence interval of 95%.

The AI model achieved a higher accuracy (88% to 94%) compared to traditional methods (75% to 85%). The precision of the AI model ranged from 0.86 to 0.93, whereas traditional methods showed a precision range of 0.78 to 0.83. The best classification accuracy was noted at 92% for the AI model, with statistical significance $p < 0.05$. The research finds that AI-based models significantly outperform traditional diagnostic methods in mental health assessment, offering improved accuracy, precision, and recall. Future studies may investigate hybrid models integrating AI with clinician oversight and real-time biometric monitoring to further enhance predictive accuracy for mental health care.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 039	Intelligent Confined Space Health and Safety System

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This Study aims to evaluate the performance of a Smart Confined Space Monitoring Rescue System Storage tanks, pipelines, and tunnels are examples of confined spaces that present serious safety risks because of their limited accessibility, hazardous gas concentrations, and restricted ventilation. This research investigates the development of a smart confined space monitoring and rescue system utilizing IoT and multi-sensor technology for enhanced safety in hazardous environments.

The experiment was conducted in a controlled lab setup at KSRCE, using real-time data from confined spaces such as pipelines and underground tanks. The system integrates gas sensors for detecting harmful gases, temperature and humidity sensors for environmental monitoring, and IoT modules for wireless data transmission. Two groups were tested: Group 1 used a conventional gas detection system with 50 readings, and Group 2 tested the proposed IoT-based system with multi-sensor fusion, also with 50 readings.

Key parameters, including gas concentration, temperature, humidity, and response time, were measured. The results indicated that the proposed system achieved a **30% reduction in response time**, a **25% improvement in gas detection accuracy**, and a **40% increase in communication range** compared to conventional methods. Statistical analysis using SPSS revealed a significant improvement ($p < 0.05$) in the system's performance, validating its effectiveness in improving safety and rescue operations in confined spaces.

Parallel Session – 2
Session Chair: Dr. G. Singaravel, Dr. J. K. Kanimozhi

EICA2025 – 040	Hybrid Quantum and Classical Routing Protocols for D2D Communication in 5G Networks

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This study aims to compare the efficiency of hybrid quantum-classical routing protocols against conventional classical routing methods in Device-to-Device (D2D) communication within 5G networks to reduce latency and improve overall network performance. Materials and Methods: The investigation involved two groups.

Group 1 used a hybrid quantum-classical routing protocol with quantum entanglement-assisted path selection, while Group 2 relied on conventional classical routing using shortest-path and congestion-aware algorithms. The study was conducted using 26 same network scenarios, considering variations in network congestion.

The performance evaluation was based on key metrics such as latency, packet delivery ratio (PDR), throughput, and energy efficiency. A confidence interval of 95% and a G Power of 80% were used to ensure statistical significance, with a threshold of 0.05% to validate the results.

The classical routing model demonstrated an average latency of 15.2 ms with a packet delivery ratio of 89.5% ($p < 0.05$). In contrast, the hybrid approach achieved a reduced latency of 7.8 ms and a higher packet delivery ratio of 96.3%, ensuring more efficient and reliable communication. Conclusion: The study demonstrates that the integration of quantum principles in routing significantly improves efficiency, reducing latency and optimizing data transmission in D2D communication for 5G networks.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

| EICA2025 – 041 | ANN for Epileptic Seizure Detection Based on EEG signals |

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Epilepsy is a challenging neurological condition that can be life-threatening and impacts a large number of individuals worldwide. The manual evaluation of EEG brain waves is a laborious and time-consuming task that can overwhelm neurologists and hinder their productivity.

To tackle this problem, a machine learning algorithm called Artificial Neural Network (ANN) has been suggested, which has shown excellent performance when applied to EEG datasets. Three distinct models have been created using optimization techniques and data balancing. The primary goal of these models is to achieve the highest possible accuracy when analyzing the input dataset.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 042   **AI-Based Adaptive Speed Limit Control for Highway Safety**

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The application of artificial intelligence (AI) in transportation safety has gained significant attention, particularly in optimizing speed limit control on highways. With the increasing volume of traffic data, the need for adaptive and intelligent traffic management systems is crucial. This paper presents an AI-driven approach for adaptive speed limit control, aiming to enhance highway safety, reduce congestion, and minimize accident risks.

We propose the use of machine learning (ML) algorithms, such as reinforcement learning, decision trees, and deep neural networks, to analyze real-time traffic data, weather conditions, and historical accident records. The paper also discusses challenges such as data reliability, real-time processing constraints, and the integration of AI models with existing transportation infrastructure. We demonstrate how AI-powered adaptive speed limit systems can dynamically adjust speed regulations, improve traffic flow, and enhance overall road safety.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 043

Deepfake Detection through AI: A Systematic Overview and Impact Evaluation

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Deep learning and artificial intelligence (AI) have facilitated the rise of deepfakes, raising concerns about their societal impact. Despite their apparent advantages, deepfakes have harmful effects across multiple industries. This study investigates advancements in deepfake detection and explores their broader societal implications. We assess the effectiveness of capsule networks in identifying video deepfakes and discuss their architectural implications. This approach minimizes computational complexity while ensuring high accuracy, making it a promising method for combating deepfakes. The societal relevance of deepfakes is emphasized, underscoring the importance of understanding their consequences.

Although face-swapping services are widely used, little is known about the societal ramifications of deepfakes. The exploitation of deepfakes in image-based sexual abuse and the manipulation of public figures, particularly in politics, highlights the urgent need for further research on their social consequences. Leveraging cutting-edge deepfake detection techniques, such as fake face detectors, deepfake identification systems, and comprehensive forgery analysis tools, helps mitigate the damage caused by deepfakes.

This study aims to analyse deepfake detection research and its societal effects. We evaluated various deepfake methodologies, their social consequences due to misuse, and provided an in-depth review of existing machine learning models. By synthesizing research findings, we strive to highlight the potential societal impact of deepfakes and propose effective mitigation strategies.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 044	**Human-AI Collaboration: Enhancing Research Through General AI Tool**

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The collaboration between humans and artificial intelligence (AI) is reshaping the research landscape, enabling faster insights and improved analytical capabilities. General AI tools, driven by machine learning and natural language processing, assist researchers in tasks such as literature review, data analysis, and hypothesis testing.

These tools enhance efficiency by managing large datasets, identifying patterns, and generating new perspectives, complementing human expertise rather than replacing it. However, ethical concerns, data biases, and the necessity of human oversight remain important considerations. This paper explores how AI can support research while emphasizing the importance of responsible integration to maximize innovation and accuracy in scientific discovery.

EICA2025 – 045	**End-To-End Stroke Imaging Analysis Using Effective Connectivity and Interpretable Artificial Intelligence**

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In this paper, we propose are servoir computing-based and directed graph analysis pipeline. The goal of this pipeline is to define an efficient brain representation for connectivity in stroke data derived from magnetic resonance imaging. Ultimately, this representation is used within a directed graph convolutional architecture and investigated with explainable artificial intelligence (AI) tools, Stroke is one of the leading causes of mortality and morbidity worldwide, and it demands precise diagnostic tools for timely intervention and improved patient outcomes. Neuro imaging data, with their rich structural and functional information, provide a fertile ground for biomarker discovery.

However, the complexity and variability of information flow in the brain require advanced analysis, especially if we consider the case of disrupted networks as those given by the brain connect to me of stroke patients. To address the needs given by this complex scenario we proposed an end-to-end pipeline. This pipeline begins with defining the effective connectivity of the brain. This allows directed graph network representations that have not been fully investigated so far by graph convolutional network classifiers. To have a complete overview, the analysis with reservoir computing-based causality is compared to other two effective connectivity approaches: one linear (Granger causality) and one non-linear method (transfer entropy).

Then, the pipeline subsequently incorporates a classification module to categorize the effective connectivity (directed graphs) of brain networks of patients versus matched healthy control. The graph convolutional architecture is also compared to legacy methods such as random forest and support vector machine providing a complete benchmark. While the pipeline includes a classification module for distinguishing between stroke patients and healthy controls, the focus is on the interpretation of these directed graphs, which reveal critical disruptions in connectivity. Indeed, the classification led to an area under the curve of 0.69 by using graph convolutional networks, 0.72 by using local topological profiling random forest, and 0.71 by using support vector machine with the given heterogeneous dataset. More importantly, thanks to explain able tools, an interpretationofdisruptednetworksacrossthebrainnetworkswaspossible.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 046 **Retinal Disease Detection Using Convolutional Neural Networks**

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Retinal diseases such as diabetic retinopathy, glaucoma, and age-related macular degeneration are major causes of blindness and vision impairment worldwide. Early and accurate detection is vital to enable timely treatment and prevent irreversible damage. This study employs Convolutional Neural Networks (CNNs) to analyze high-resolution retinal fundus images and detect subtle pathological features.

The model is trained on a comprehensive dataset of labeled images, representing both healthy and diseased retinas. Multiple preprocessing techniques, including contrast enhancement, noise reduction, and image normalization, are applied to optimize performance. Data augmentation strategies address class imbalance and enhance model generalizability. The CNN architecture enables feature extraction to identify intricate patterns and abnormalities, such as microaneurysms, exudates, and optic nerve anomalies. Classification accuracy, sensitivity, and specificity are evaluated using standard metrics and benchmark datasets.

Experimental results demonstrate that the CNN-based approach achieves high diagnostic accuracy, surpassing traditional machine learning methods and manual evaluation techniques. This research emphasizes the transformative potential of deep learning technologies in ophthalmic diagnostics, providing a scalable, efficient, and cost-effective solution for the early detection of retinal diseases. Incorporating CNN-based systems into clinical workflows could significantly improve patient outcomes and reduce the global burden of vision-related disabilities.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 047

The Future of Work: How Generative AI Could Foster the Emergence of Super intelligent Systems

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The rapid evolution of artificial intelligence (AI) is reshaping industries and work processes across the globe, particularly with the rise of generative AI. This paper explores how generative AI, particularly in the fields of natural language processing, machine learning, and autonomous systems, could catalyze the emergence of super intelligent systems—entities with cognitive capabilities surpassing human intelligence.

By examining current trends, including automation, collaborative AI, and the democratization of AI tools, this work outlines the profound implications for the future workforce. It investigates how AI will not only redefine human labor but also enhance creativity, decision-making, and problem-solving through intelligent system collaboration.

Further, it discusses the ethical and societal challenges that arise with the increasing capabilities of generative AI and its integration into both the workplace and broader societal frameworks. Ultimately, this paper proposes strategies to foster human-AI synergy while mitigating risks associated with the development of super intelligent systems, positioning AI as a transformative force for both economic and societal advancement.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 048   **IoT-Enabled Air Quality Monitoring System**

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Air pollution is a critical environmental issue that significantly impacts public health and contributes to climate change. As urbanization and industrialization continue to rise, the need for effective air quality monitoring has become more urgent. This paper presents an innovative Internet of Things (IoT)-enabled air quality monitoring system that leverages real-time data collection through advanced sensors. The system integrates cloud computing for efficient data storage, processing, and visualization, alongside machine[1] learning algorithms for forecasting air quality trends.

By analyzing real-time pollution data, this system provides valuable insights into the Air Quality Index (AQI), assisting policymakers and environmental agencies in making informed decisions to mitigate the impact of air pollution. The effectiveness of the system is demonstrated through experimental results, where the system showed a high level of accuracy and predictive capability in monitoring and forecasting air quality.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 049

AI - Powered Predictive Maintenance System for Industrial Internet of Things (IIoT)

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This study focuses on the development and evaluation of an AI-powered predictive maintenance system for Industrial Internet of Things (IIoT) applications. The research aims to utilize machine learning techniques, specifically a Random Forest (RF) model, to predict machine failures based on a range of operational and environmental factors such as temperature, vibration, pressure, and system health data.

The performance of the AI model is compared against traditional rule-based maintenance methods, which rely on predefined thresholds for maintenance scheduling. The model is trained using 30 sensor data samples, with performance metrics including accuracy, precision, and recall. Results demonstrate that the Random Forest model outperforms traditional approaches, achieving accuracy levels ranging from 90% to 95%, compared to 70% to 80% for the rule-based model.

The AI model also showed improved precision (0.87–0.93) and statistical significance ($p < 0.05$). These findings suggest that AI-based predictive maintenance can significantly enhance the accuracy of failure predictions, reduce downtime, and improve overall operational efficiency. Future work could explore the integration of hybrid AI models and real-time sensor data for more precise and timely maintenance predictions in industrial systems.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 050   AI Cloud Based on Real Time Skin Cancer Prediction using Mobile App

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Over the past decades, the occurrence of skin cancer has raised at a uncontrollably rate. Melanoma, which is the most risky type of skin cancer, early detection is most important to maximize the possibility of survival of patients and avoids cancer from spreading to other areas of the body. The survival rate for people whose melanoma is detected and treated before it reaches to the lymph nodes is 99%.

So the early finding is very vital. Skin cancer is generally diagnosed visually, beginning with an initial clinical screening and followed potentially by dermoscopic examination, a biopsy and go after by histopathology examination which will take more time. The main problem with melanoma is that, the disease can spread to some other cells. Laboratory sampling may cause the inflammation or even spread of lesion. Thus, there is a necessitate for application that can perform a efficient, quick, and low-cost diagnosis.

Computer based diagnosis can improve skin cancer diagnosis and it will works effectively to the disease symptoms. Our solution will build a mobile application on cloud computing that takes the images of potential skin tumors and classifies it as either Malignant or Benign. The classification would be carried out using a trained Convolution Neural Network model and Transfer learning. Numerous experiments will be done based on Morphology and Color of the tumor to identify ideal parameters.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 051 **Predictive Analytics in Research : The Role of General AI Tools**

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Predictive analytics has emerged as a key component of modern decision-making processes, harnessing historical data to forecast future trends. General Artificial Intelligence (AI) has amplified these capabilities by enabling autonomous data analysis, model adaptation, and real-time predictions. This paper investigates the transformative role of general AI in predictive analytics, emphasizing its contributions to accuracy, scalability, and adaptability.

Key applications in industries such as healthcare, finance, and retail are analyzed. Additionally, the paper explores the challenges of implementing general AI, including ethical concerns, interpretability issues, and computational costs. Through this discussion, we highlight the potential of general AI to reshape predictive analytics, offering insights for researchers and practitioners alike. Predictive analytics is a field that leverages various statistical techniques, data mining, predictive modeling, and machine learning to analyze data and make predictions about future outcomes or events.

Predictive Analytics is the use of mathematical and statistical methods, including artificial intelligence and machine learning, to predict the value or status of something of interest Keywords: humans and artificial intelligence, data analysis, datasets, data biases, integration, scientific discovery. Generative AI holds immense potential in predictive analytics, particularly in forecasting trends and patterns across various domains.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 052	A Comparative Study of Machine Learning Algorithm for Predicting Students Performance

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Advanced machine learning (ML) methods can predict student's performance with key features based on academic, behavioural, and demographic data. Significant works have predicted the student's performance based on the primary and secondary data sets derived from the student's existing data. These works have accurately predicted student's performance but did not provide the metrics as suggestions for improved performance.

Learning coefficients also provide quantified metrics to the students to focus more on their studies and improve their further performance. Before selecting the learning coefficients as the key features for student's performance prediction, their dependency on other key features is calculated through positive Pearson's coefficient correlation.

Further, the paper presents comparative analysis of the performance of regression-based ML models such as decision trees, random forest, support vector regression, linear regression and artificial neural networks on the same dataset. Results show that linear regression obtained the highest accuracy of 97% when compared to other models.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 053

Ensuring Server Stability: Combating Data Scraping Without Disrupting Users

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Nowadays, the growing use of records scraping has created a need to boom the range of scrapers extracting data from websites and apps regularly for enterprise purposes, which include gathering pricing information. While this may appear harmless, scraping can position giant stress loads on servers; it should be slowing down performance, causing excessive API calls, and increasing response instances for actual users. Scrapers generally use more like Python to skip safety features and extract facts, which can negatively have an effect on the consumer's revelry. In this methodology we look at how scrapers perform, how they pass regular security measures, and the outcomes of this behaviour on server performance. To address this trouble, we developed strategies that not only enhance server resilience but also implement stricter security protocols.

By leveraging advanced detection techniques and fostering a collaborative approach with legitimate users, we can mitigate the adverse impacts of scraping while ensuring a smoother experience for all genuine consumers. device is skipped to discover the scraper device and block scraping activities performances based to dected a scraper before the purpose of harm. Our tool identifies numerous scraping strategies, together with recognizing uncommon IP behaviour, controlling classes to save you automation, and coping with endpoints to limit unauthorized access using mystery keys to decode records. We also keep away from third-party cookies and use API controls to manage scraper hobby. With those measures in a identify, we had been capable of lessening server load, reduce an operational fee and holding a continuing user enjoy.

Ultimately, our answer helps businesses shield their facts from unauthorized scraping even as optimizing server overall performance. The outcomes of this look at show that it is possible to mitigate the impact of facts scraping at the same time as preserving security, efficiency, and privacy for websites and apps facing high levels of scraping activity.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 054   **Virtual Reality Exposure Therapy for Phobias (VRET)**

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Virtual Reality Exposure Therapy (VRET) has emerged as an innovative approach to treating phobias by simulating real-life environments and scenarios in a controlled digital setting. This therapeutic method leverages immersive technology to expose patients gradually to their fears, allowing them to confront and process these emotions safely.

Studies have shown that VRET can significantly reduce anxiety and avoidance behaviours' associated with phobias, as patients engage in repeated exposures that help desensitize their fear responses.

By providing a customizable and repeatable experience, VRET enhances the effectiveness of traditional exposure therapy, making it a promising tool for clinicians in the treatment of anxiety disorders.

EICA2025 – 055

Super Intelligence and Its Impact on Human Decision Making Processes

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Generative AI (Gen-AI) is a cloud-based AI capable of generating new content with applications across numerous fields. Software developers have difficulty the rationale and intent behind original developers' design decisions. Code histories aim to provide richer contexts for code changes over time, but can introduce a large amount of information to the already cognitively demanding task of code comprehension. Storytelling has shown benefits in communicating complex, time-dependent information, yet programmers are reluctant to write generative for their code changes.

we propose an integrated methodology that leverages human expertise, AI-based search, and Gen AI to improve the speed, accuracy, and relevance of insights along with enhanced explain ability of Gen AI sumnmaries. Our proposed methodology can augment executives with insights for informed decision-making in their business environment.

Our study found that when using the story-view, participants were 40% more successful at recalling code history information, and had 20% less error when assessing the correctness of their responses. We did find any significant differences in programmer's perceived mental effort or their attitudes towards reuse when using narrative business code stories.

EICA2025 – 056

Annoying and Hearing Frequency Identification to Avoid Animal Accident using YOLO

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In recent years, the increasing incidence of wildlife-vehicle collisions has raised significant concerns for both animal conservation and road safety. This study presents a novel approach to mitigating such accidents through the identification of annoying and hearing frequency ranges that can deter animals from approaching roadways. Utilizing the You Only Look Once (YOLO) object detection framework, we developed a system capable of real-time monitoring and identification of animal presence near high-risk areas.

By integrating auditory stimuli that fall within specific frequency ranges known to be unpleasant to various wildlife species, our system aims to create a proactive deterrent mechanism. The effectiveness of this approach was evaluated through field tests, demonstrating a marked reduction in animal crossings in targeted zones. This research not only highlights the potential of advanced machine learning techniques in wildlife management but alsoemphasizes the importance of innovative solutions in enhancing road safety and preserving biodiversity.

Our findings suggest that the implementation of auditory deterrents, in conjunction with visual detection systems, could significantly reduce the frequency of animal-vehicle collisions, paving the way for safer coexistence between wildlife and human infrastructure.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 057	The Role of General AI In Advancing Interdisciplinary Research

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Generative AI has already transformed various sectors, enhancing creativity, efficiency, and decision-making processes. In fields such as marketing, software development, and customer service, AI-driven tools are streamlining content creation, automating repetitive tasks, and optimizing complex workflows. The capabilities of models like OpenAI's GPT-4 and image-generation platforms illustrate the power of AI to augment human abilities.

However, as these models grow more sophisticated, their potential to evolve into autonomous, self-improving systems increases, paving the way for super intelligence. As AI systems become more autonomous and intelligent, the job market will undergo significant transformations. While some roles may be replaced, new opportunities will arise in AI supervision, ethical governance, and human-AI collaboration. The workforce of the future will require adaptability, emphasizing skills such as critical thinking, creativity, and emotional intelligence.

Moreover, businesses will need to rethink organizational structures, incorporating AI as a co-worker rather than merely a tool. This shift demands continuous learning and an openness to integrating AI into strategic decision-making processes.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 058   **Text Summarization and Keyword Extraction**

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There is a lot of information available on the internet today, but it can be difficult to obtain it quickly and efficiently. It can be difficult to find exactly the information you need to understand a particular topic. The context of the text is useful for extracting the most important information from the various contents of the text. In the age of information overload on the Internet, automatic document summarization is especially important for retrieving important information from many electronic documents.

Text summarization that uses natural language processing to summarize text. There are many ways to describe different methods of explanation: extraction and abstraction from single or mixed data; the purpose of content reduction; features of the manuscript; process from shallow to deep; and the content of the article.

With the increase in internet and smartphone usage, online shopping has also increased. Everyone wants their belongings to be delivered to their home in good condition. But reading these long reviews is not easy for everyone. Therefore, brevity should be able to reduce long words into short sentences with shorter words describing the same subject.

Parallel Session – 3
Session Chair: Dr. R. Geetha, Dr. E. Loganathan

EICA2025 – 059   Efficient Discrete Key Pre-Distribution Scheme for Peer-To-Peer Networks

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A peer-to-peer (P2P) network is a type of decentralized and distributed network architecture in which individual nodes in the network (called "peers") act as both suppliers and consumers of resources, in contrast to the centralized client–server model where client nodes request access to resources provided by central servers. The main objective of this system is to secure interactions between nodes of any network is the ability to establish pair wise secrets between any two nodes which can be used for mutual authentication and for privacy of exchanges between the nodes.

Schemes that facilitate this requirement rely on an entity trusted by all nodes in the network to bootstrap the process of key distribution. The trusted entity in the form of a key distribution center provides secrets to every node; alternately, a trusted certificate authority certifies the public key corresponding to a private key chosen by each node.

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