Title of the Session: eXplainable Artificial Intelligence (XAI) for Cyber-Physical Systems

Rationale of the need and objective of the session:

Cyber-physical systems seamlessly integrate sensors, computation, control, and networking into physical infrastructure, connecting them to the internet and each other. This technological advancement holds the potential to revolutionize the world, introducing more responsive, precise, reliable, and efficient systems that empower smart devices and networks, ranging from smart cars to grids. Collectively, these innovations contribute to the emergence of smart cities. Artificial Intelligence (AI) plays a pivotal role in enhancing the effectiveness and efficiency of Cyber-Physical Systems (CPS) by integrating advanced decision-making, adaptive control, and improved system performance. However, the integration of AI with CPS poses various challenges that require careful consideration. Some of these challenges include safety and security concerns, interpretability, explainability, transparency, and high computational demands.

Explainable Artificial Intelligence (XAI) is a crucial aspect, referring to the development of AI systems that provide understandable and transparent information to programmers regarding their decisions and actions. The primary objective of XAI is to enhance the transparency, accountability, and trustworthiness of AI models, especially in scenarios where the decisions made by these models have significant real-world consequences. In the context of CPS, XAI plays a vital role in enhancing performance, safety, reliability, human-machine interaction, compliance and regulations, user acceptance, and more. XAI finds application in various domains, including safety-critical systems, autonomous vehicles, healthcare monitoring systems, smart grids, industrial automation, smart buildings, supply chain management, disaster response systems, agricultural CPS, smart cities, and beyond. The special session welcomes high-quality research papers on these applications, emphasizing their significance and potential impact.

Special Session Organizer

1. Dr. Ramanujam E., Assistant Professor, Department of Computer Science and Engineering, National Institute of Technology Silchar, Assam, India - 788010. Mail : ramanujam@cse.nits.ac.in Mobile : +91 97881 53765
2. Dr. Abirami A M., Associate Professor, Department of Information Technology, Thiagarajar College of Engineering, Madurai, Tamil Nadu, India - 625015. Mail : abiramiam@tce.edu Mobile : 9080524596

Subject Areas & Keywords:

1. Computer Vision
2. Image Processing

3. Explainable AI
4. Natural Language Processing
5. Computer Networking
6. Machine Learning
7. Deep Learning
8. Internet of Things
9. Data Acquisition methods and techniques
10. Data Security and Privacy
11. Smart Systems for Healthcare / Agriculture / Transport / Buildings / any other applications

Expected Number of Submissions: 20 Papers (Minimum)

Short Biography of the Session Chair:

Dr. Ramanujam E is an active and senior member of IEEE working in the research field of activity recognition for ambient intelligence especially, the fall detection, student monitoring during online examination, Smart Agriculture, Rooftop farming, etc. He received a B.E. degree in Computer Science and Engineering, an M.E degree in Computer Science and Engineering from Anna University, Chennai, Tamil Nadu, India, and a Ph.D. degree from Information and Communication Engineering, Centre for Research, Anna University, Chennai, Tamil Nadu, India. Currently, He is working as an Assistant Professor in the Department of Computer Science and Engineering, National Institute of Technology (NIT), Silchar, Assam, India, since 14/07/2022. He has published more than 35 research articles in various international and national journals and conferences to date. His h-index is 5 with 400+ citations in Scopus. He is an Invited reviewer of many journals, including IEEE, ACM, Springer and Elsevier, etc. He has organized various conferences/ seminars/ workshops funded by the Department of Science and Technology.

Dr. A.M.Abirami, presently working as Associate Professor in the Department of Information Technology, Thiagarajar College of Engineering, Madurai, India, since 2010. She is a Professional Member of ACM Professional Society (Association of Computing and Machinery), and IET Professional Society. She serves as a mentor and guide for different in-house web applications, data analytics projects and hackathons. Her Research Interest includes Data Analytics, Text Analytics, Programming, Semantic Web Technologies, and Education Technology. She has nearly 25 national/international conference publications, 10 national/international journal publications and 5 book chapters in the area of text analytics and engineering education. She is a Computer Science Engineer from Bharathiyar University, Coimbatore, where she was awarded the B.E. degree with first class distinction in 1999. She then served as a Software Engineer in Tata Consultancy Services Ltd. from 1999 – 2006 where she worked as a QA member. She did her M.E. degree from Anna University Tirunelveli with first class distinction in the year 2010. She

received her PhD Degree in the area of Text Analytics and Semantic Web from Anna University Chennai in 2018. She is interested in improving Teaching Learning methodologies of Engineering Education. She has earned "Cambridge International Certificate for Teachers and Trainers", trained by Wipro's Mission10x programme. She is a recognized Supervisor/Guide for PhD Scholars, Anna University Chennai. She is a trained auditor for ISO 9001:2015 by TUV SUD South Asia Ltd. Chennai. She is a Member of Internal Quality Assurance Cell (IQAC) of TCE.

Suggested Reviewers

1. Dr. B. Sureindran, Associate Professor, Department of Computer Science and Engineering, National Institute of Technology Puducherry - surendiran@nitpy.ac.in
2. Dr. Thinagaran Perumal, Associate Professor, Department of Computer Science and Information Technology, Universiti of Putra, Malaysia. thinagaran@upm.edu.my
3. Dr. Vignesh Sivaraman, Assistant Professor, IIT (BHU) Varanasi, vignesh.cse@iitbhu.ac.in
4. Dr.S.Sumitra, Associate Professor, Department of Mathematics, Indian Institute of Science and Technology Trivandrum, sumitra@iist.ac.in
5. Dr.E.Sivasankar, Associate Professor, Department of Computer Science and Engineering, National Institute of Technology Trichy, sivasankar@nit.edu
6. Dr. Prabhu Mohandas, Associate Professor, Department of Computer Science and Engineering, National Institute of Technology Calicut, prabum@nitc.ac.in
7. Dr. Anand Kumar, Associate Professor, Department of Information Technology, NIT Surathkal, Karnataka, m_anandkumar@nitk.edu.in
8. Dr. S. Sreejith, Assistant Professor, Department of Electrical Engineering, National Institute of Technology Silchar, Assam. sreejith@ee.nits.ac.in
9. Dr. K. Shankar, Assistant Professor, Department of Electronics and Instrumentation Engineering, National Institute of Technology Silchar, Assam. Shankar@ei.nits.ac.in
10. Dr. R. Murugan, Assistant Professor, Department of Electronics and Communication Engineering, National Institute of Technology Silchar, Assam. murugan.rmn@ece.nits.ac.in
11. Dr. Jayakumar Loganathan, Assistant Professor, Department of Computer Science and Engineering, National Institute of Technology Agartala, jayakumar@nita.ac.in .
12. Dr. S. Suresh, Assistant Professor, Department of Computer Applications, National Institute of Technology Kurushetra, suresh.selvem@nitkkr.ac.in
13. Dr. Jitendra Kumar, Assistant Professor, Department of Computer Applications, National Institute of Technology Tiruchirappalli, jitendra@nitt.edu