Call for Papers - Special Session on

Applications and Challenges of Multi-Agent Systems on the Realization of Industrial Cyber-Physical Systems in the context of Industry 4.0

Organized and co-chaired by:

José Barbosa	Polytechnic Institute of Bragança, Portugal
Bilal Ahmad	University of Warwick, UK
Massimiliano Pirani	Pegaso University, Italy

Technical Outline of the Session and Topics:

This special session aims to explore the role of multi-agent systems (MAS) in driving the implementation of industrial cyber-physical systems (CPS). Multi-agent systems have emerged as a promising approach to address the challenges of designing and implementing complex CPS. This session will provide a platform for researchers and practitioners to share their latest research findings, exchange ideas, and discuss future directions in this area. The motivation behind this special session is to highlight the importance of MAS and the latest advances in driving the implementation of industrial CPS. MAS is considered to be highly effective in addressing various challenges associated with the design and implementation of complex CPS, such as scalability, adaptability, and fault tolerance. This special session will provide a unique opportunity to exchange ideas, share experiences, and discuss future directions in this area by bringing together researchers and practitioners from academia, industry, and government.

Topics:
- Implementation of Industrial ICPS using MAS as a technology
- MAS in education
- Application of multi-agent system in digital twins
- Role of Ethics in MAS development
- Algorithms for MAS cooperation/collaboration
- Multi-Agent Systems development platforms
- Integration of MAS with Artificial Intelligence algorithms
- MAS applications in Edge, Fog, and Cloud computing
- Simulation using multi-agent systems
- Complex modelling
- Distributed control using MAS
- MAS for system optimization and sustainability
- Modeling and conceptualization of agent-based ICPS
- Cybersecurity on MAS

Author's schedule: *Same as the ICPS Conference*
IES Technical Committees supporting the special session: Industrial Agents

All the instructions for paper submission are included on the conference website: icps2025.ieee-ies.org