

## Call for Papers - SS 02

# Cyber-Physical Integration and Orchestration of Autonomous Transport and Intralogistics Systems in Factory Automation

### Organized and Chaired by

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**FOCUS** This Special Session addresses intralogistics as an integral cyber-physical subsystem of factory automation, spanning both the robot level and the system level. It focuses on the integration of Automated Guided Vehicles (AGVs) and Autonomous Mobile Robots (AMRs) as cyber-physical entities embedded in production and intralogistics systems, enabled by digital twins, distributed control systems, and/or agent-based architectures. Contributions are expected to address robot-level functionalities, behaviors, and coordination mechanisms, as well as system-level commissioning, orchestration, and lifecycle engineering. Particular emphasis is placed on interoperability, reconfigurability, monitoring, and trustworthy, coordinated decision-making across production and intralogistics domains rather than on isolated fleet-centric solutions.

### TOPICS (but not limited to)

- ❖ Cyber-physical integration of intralogistics into factory automation systems
  - ❖ Integration from shopfloor and intralogistics to MES and IT systems
  - ❖ Digital twins for AMRs and intralogistics systems
  - ❖ Machine learning on the edge for AMRs
  - ❖ Practical applications of autonomous transportation systems
  - ❖ Simulation-based AI development and applications for AGVs and AMRs
  - ❖ Commissioning, configuration, and reconfiguration of autonomous transport systems in modular factories
  - ❖ Lifecycle engineering, evolution, and maintenance of intralogistics automation systems
  - ❖ Orchestration and coordination of AMRs fleet management systems
  - ❖ Distributed and multi-agent coordination across production and intralogistics domains
  - ❖ System-of-systems architectures for factory-wide orchestration and control
  - ❖ Robot-level functionalities, behaviors, and abstractions of AMRs within cyber-physical factory automation systems
  - ❖ Trustworthiness, safety, and risk reasoning in autonomous intralogistics environments
  - ❖ Monitoring – situation assessment in intralogistics
- ❖ **AIM** This Special Session aims at bringing together professionals from industry and academia to share cutting-edge concepts, recent developments, research results, and practical achievements in advanced technologies for autonomous intralogistics and factory automation, including mobile robotics (AGVs/AMRs).
- ❖ **CONFERENCE FORMAT**. The conference will comprise multi-track sessions for regular papers, to present significant and novel research results with a prospect for a tangible impact on the research area and potential implementations.

### ❖ AUTHOR'S SCHEDULE (2026)

#### ❖ Regular and special sessions papers

Submission deadline ..... April 19  
 Acceptance notification ..... May 25  
 Deadline for final manuscripts ..... July 4

#### ❖ Work-in-progress/Industry practice papers

Submission deadline ..... May 31  
 Acceptance notification ..... June 19  
 Deadline for final manuscripts ..... July 4

### SS Program Committee

- Prof. Divanilson Rodrigo Campelo, Federal University of Pernambuco (UFPE)
- Sven Franke, TU Dortmund
- Prof. Dr.-Ing. habil. Björn Hein, Karlsruhe University of Applied Sciences
- Dr. Fabien Geyer, Airbus Central Research & Technology
- Prof. Libor Preucil, Czech Technical University
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- Dr. Gereon Weiß, Fraunhofer Institute for Cognitive Systems (IKS)
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- Dr. Kunal Suri, CEA Laboratory for Integration of Systems and Technology (LIST)
- Nikolaos Stathoulopoulos, Luleå University of Technology
- Dr. David Alain do Nascimento, Federal Institute of Pernambuco (IFPE)
- Dr. Nikolaos Nikolakis, University of Patras