

2019 IEEE International Conference on Industrial Informatics (INDIN'19)

Special Session / Organized Session on

“Integration of Software Agents and Low-Level Automation Functions”

organized by

Principal Organizer: Paulo Leitao (pleitao@ipb.pt)
Affiliation: Instituto Politécnico de Braganca, Portugal

Organizer 1: Thomas I. Strasser (thomas.strasser@ait.ac.at)
Affiliation: AIT Austrian Institute of Technology, Austria

Organizer 2: André Rocha (andre.rocha@uninova.pt)
Affiliation: Uninova, Portugal

Call for Papers

Industrial agent-based solutions allow the distribution of intelligence supporting the design of complex large scale Cyber-Physical Systems (CPS) by decentralizing the control system by autonomous and cooperative entities, differing from the conventional approaches due to its inherent capabilities to adapt to emergence without external intervention. These solutions expand the potential application domains of Multi-Agent Systems (MAS) and at the same time adds the required flexibility, robustness and responsiveness to industrial automation systems.

In this CPS context, the deployment of industrial agents, i.e., software agents connected to the physical world, follows the conventional practice that suggests a two-layered approach, where the agents are responsible to provide intelligence and adaptation features, and a low level control layer is responsible to provide the real-time control operation, typically executed in small embedded control devices, e.g., industrial PCs or Programmable Logic Controllers (PLCs). A key aspect in such two-layer architecture is the interaction interface between the software agents and the low-level automation devices. There is no universal and standardized way to interconnect these two layers, and the IEEE P2660.1 Working Group is being

work in defining recommended practices to solve the interface problem when applying industrial agents in the context of CPS.

In this context, the objective of this special session is to provide an open discussion forum where researchers and industrial partners can share their own perspective, visions and experiences on developing interface practices to integrate industrial software agents with low-level automation functions, in the CPS context. Papers (4-6 pages) reporting experiences, demonstrations and best practices are welcome to support the discussion and assess the applicability of these interface practices for fulfilling the above requirements (it is strongly advisable to have a video or live demo for each paper in order to support a posterior discussion and exchange of experience/knowledge).

Topics of interest include, but are not limited to:

- Integration of software agents in industrial low-level automation functions
- Interoperability in industrial agent-based CPS solutions
- Assessment of industrial agent-based CPS solutions
- Evaluation metrics for assessing the integration of software agents in industrial environments
- Performance measurement in industrial agent-based CPS solutions
- Experiences from agent integration in various applications fields like manufacturing, power and energy systems, building automation, etc.

Submissions Procedure Deadlines: All the instructions for paper submission are included in the conference website <https://www.indin2019.org/>