

Session proposal: Applications of Artificial Intelligence Methods in Production Planning and Control Tasks – Experiences from Case-studies, Laboratory Experiments, Simulation Experiments

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Abstract: This session aims at exploring practical applications of AI based methods and technologies for the automation or augmentation of production planning and control tasks. The session shall provide inspirational and critical reflections from case studies from real-world applications, experiments both in laboratory settings and from simulations. Exploring the whole spectrum of different AI approaches is expected to motivate vivid academic discussions, provide valuable practical insights and bridge disciplinary boundaries from different streams of applied AI research.

Keywords: Engineering Applications, Artificial Intelligence; Intelligent Predictive Control; Real-time Artificial Intelligence

1. SESSION MOTIVATION

While foundational theories and concepts of Artificial Intelligence have been around for a while, their wide spread practical application in the manufacturing industry is still challenging. This is due to ...

- **technical** barriers, e.g. missing data management, lack of data quality, missing vertical integration of different planning and control layers, missing basic ICT infrastructure on the shop floor,
- **organizational** barriers, e.g. missing knowledge and skills regarding AI prerequisites and implementation, and
- **ethical** barriers, e.g. missing transparency, traceability, responsibility.

2. SESSION GOALS

This session aims at providing experiences from practical applications of AI based methods and technologies for the automation or augmentation of production planning and control tasks. AI based methods and technologies of interest mirror whole spectrum of AI (e.g. symbolic AI, supervised, unsupervised Machine Learning). Production planning and control tasks comprise the following typical tasks but are not necessarily limited to these: long- and mid-term forecasting, master production scheduling, lot sizing, capacity planning and loading, material requirements planning, min/max stock determination, job scheduling and control, routing, load control, workplace assistance and control.

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3. PROPOSING COMMITTEE

- Dr. Selim EROL, University of Applied Sciences Wiener Neustadt, Institute of Industrial Engineering and Management, AT
- Professor Dr. Ing. Ján Pitel', Faculty of Manufacturing Technologies, Technical University of Kosice, SK (confirmed)
- Assistant Professor, Dr. Jakub Arm, TU Brno, Department of Control and Instrumentation, CZ (confirmed)
- Assistant Professor, Dr. Vaclav Kaczmarczyk, TU Brno, Department of Control and Instrumentation, CZ (confirmed)
- Prof. Dr. Thomas Felberbauer, University of Applied Sciences St. Pölten, Dept. of Media and Digital Technologies, AT (confirmed)

4. PAPER SUBMISSION

Please submit papers via the conference website located at <https://www.incom2024.org/cfp/>. Papers submitted to this session are Invited papers. Please chose the respective button and indicate the invited session identification code **8vcx7**. Author guidelines and templates can be found at <https://www.ifac-control.org/conferences/author-guide>

Full paper deadline: 31.01.2024, Final paper deadline: 15.04.2024 (see also <https://www.incom2024.org/cfp/>)