ETFA 2023

28th INTERNATIONAL CONFERENCE ON EMERGING TECHNOLOGIES AND FACTORY AUTOMATION

SINAIA, ROMANIA
SEPTEMBER, 12th-15th, 2023

Call for Papers
2nd Workshop on Digital twins, components and systems for smart mechatronic applications

Organized and Co-Chaired by

Martin Cech[1], Manuel Beschi[2], Cristi Irimia[3], Calin Husar[3]
[1] University of West Bohemia, Czech Republic
[2] University of Brescia, Italy
[3] Siemens Industry Software, Romania

❖ **FOCUS**. The workshop will focus on applying digital twin, monitoring and AI aspects in smart production technologies, robots and mechatronic devices. Components and systems have to be modelled with different approach based on specific toolchains platforms that allow to model components and integrate them into bigger units using standardized interfaces. Motion speed, precision, adaptability, self-diagnostic, secure connectivity or new human-cognitive features requirements are relevant and presented during the workshop in sectors like semiconductor production, industrial robotics, health care robotics, packaging machines, CNC machines, etc.

❖ **TOPICS**

❖ Modelling and simulation of complex multi-axis system, FMI/FMU, Reduce Order Models
❖ Secure Dataset management, storage and processing tools
❖ Augmented and virtual reality through digital twins
❖ AI methods for monitoring and predictive maintenance
❖ xIL and digital twins tools for the development of motion control systems
❖ Intelligent motion control algorithms and software for edge platforms
❖ Smart wireless sensors and high-performance servo-drives
❖ Self-commissioning, performance monitoring and condition monitoring of machines
❖ Industrial communication protocols and cyber-security tools for motion control apps
❖ Motion planning, path planning, collision avoidance
❖ Identification of complex robots and machines
❖ Predictive maintenance of robots and machines
❖ General digital twin technologies
❖ Digital twin creation process
❖ Digital twin verification and validation
❖ Digital twin as a service, machine design as a service
❖ Optimization of robots and machines
❖ Case studies, applications and demonstrators

❖ **AIM**. Research on digital twin technologies is affecting all of engineering domains. Specifically, one can see huge interest of applying digital twin technologies in smart production technologies, robots and mechatronic devices. However, lots of components and systems must be modelled, each with a bit different approach. The proposed workshop should focus on specific systems (SW, HW, sensors, actuators) that are necessary to run machines in optimal way. Next, workshop will focus on specific toolchains and modelling platforms that allow to model those components and integrate partial models into bigger units using standardized interfaces.

❖ **WORKSHOP FORMAT**. Half-day workshop based on solicited research papers

❖ **AUTHOR'S SCHEDULE (2023)**

❖Regular and special sessions papers
Submission deadline .... June 16
Acceptance notification .... July 7
Deadline for final manuscripts .... July 21

Workshop Program Committee

- ❖ **Martin Goubej, University of West Bohemia, Czech Republic**
- ❖ **Antonio Visioli, University of Brescia, Italy**
- ❖ **Raluca Raia, Siemens Industry Software & Technical University of Cluj Napoca, Romania**
- ❖ **Alexandra Baicoianu, Siemens Industry Software & Transilvania University of Brasov, Romania**
- ❖ **Davide Colombo, WEG, Italy**
- ❖ **Luca Pulina, Università degli Studi di Sassari, Italy**
- ❖ **Mikel Armendia, Fundación Tekniker, Spain**
- ❖ **Mircea Ruba, Technical University of Cluj Napoca, Romania**
- ❖ **Petr Blaha, Brno University of Technology, Czech Republic**
- ❖ **Roberts Kadikis, EDI Institute of Electronics and Computer Science, of Technology, Latvia**
- ❖ **Sajid Mohamed, ITEC, Netherlands**
- ❖ **Dip Goswami, Eindhoven Univ. of Technology Netherlands**
- ❖ **Miroslav Flidr, University of West Bohemia, Czech Republic**