



IEEE ICPS 2020 - <http://icps2020.fi>

3rd IEEE International Conference on Industrial Cyber-Physical Systems (ICPS)

Special Session on

“Resilience of Cyber-Physical Production Systems”

organized by

Principal Organizer 1: Belgacem Bettayeb

Affiliation: LINEACT/CESI, Lille, France

Email: bbettayeb@cesi.fr

Organizer 2: M’Hammed Sahnoun

Affiliation: LINEACT/CESI, Rouen, France

Email: msahnoun@cesi.fr

Organizer 3: Samir Ouchani

Affiliation: LINEACT/CESI, Aix-en-Provence, France

Email: souchani@cesi.fr

Organizer 3: Sondès Chaabane

Affiliation: LAMIH, Polytechnique University, Valenciennes, France

Email: sondes.chaabane@uphf.fr

Call for Papers

Scope of the Special Session

The development of Cyber-Physical Systems (CPSs) in the industry allows the emergence of Cyber-Physical Production System (CPPS) paradigm as a pillar of the fourth industrial revolution (Industry 4.0). This new generation of production systems is characterized by the integration of several heterogeneous, connected and smart technologies, which allow improving production systems’ performances, while efficiently managing complexity and uncertainty. However, these new technologies also represent several new vulnerabilities and complex interactions of the system with its environment, which can create new sources of internal and external disturbances of different types and magnitudes. To tackle these issues, a CPPS needs to develop several inherent capacities such as reactivity, self-organization, and robustness. This reflects the CPPS's ability to be resilient, by withstanding major disruptions and by quickly auto-recovers from the disrupted state to the normal one. However, there is an incessant need for academia and industry to enhance the resilience of CPPSs, in addition to their reliability and security, in order to ensure their effective implementation according to the goals of Industry 4.0.

This special Session aims to promote new research concepts, approaches, tools and achievements regarding the resilience of CPPSs. This topic is relevant to ICPS because it represents several technological and organizational challenges to be considered in order to optimise the engineering processes of these systems while defining the adapted tools and methods to supervise and control them efficiently and safely.

Topics of interest for this special session include

- Formal methods for CPPS
- Methods for resilient system design and development
- Security in networked CPSs
- Modeling, analysis and detection of cyber physical attacks
- Data mining for cybersecurity in CPPS
- Methods and approaches for self-organization and crisis management
- Dynamic scheduling and production control for resilient CPPS
- Human factors and organizational resilience of CPPS

Submissions Procedure: All the instructions for paper submission are included in the conference website <https://events.tuni.fi/icps2020/authors/>

Deadlines: The same as the general [conference deadlines](#)

CVs of the proposers

[Belgacem Bettayeb](#) is currently a researcher in digital and industrial engineering at LINEACT laboratory. His research interests include problems related to the supervision and control of production processes to cope with uncertainty at different decision-making levels, while optimizing the performances of their operational processes in an integrated manner or separately.

[M'hammed Sahnoun](#) is currently a researcher in digital and industrial engineering at LINEACT laboratory. His research work contributes to the design and control problems of complex production systems based on simulation and mono- and multi-objective optimization. He developed several approaches in different application areas such as renewable energy production systems, internal logistics of flexible production plants and computer-integrated manufacturing in the context of industry 4.0.

[Samir Ouchani](#) is associate professor at the Engineering School of Computer Science eXia CESI, Aix-en-Provence, France. His research interests include social online systems, social technical systems, cyber-physical systems, Internet of objects, formal methods, security, and data mining.

[Sondès Chaabane](#) is currently a researcher in integrated optimization and simulation in production and service systems at LAMIH laboratory. Within this field, she proposed several approaches to cope with disturbances and uncertainty in the supervision and control of complex production systems such as the automotive industry and hospital emergency departments.