



# 17th IFAC Symposium on Information Control Problems in Manufacturing Budapest, Hungary 7-9 June 2021 Budapest

Open Invited Track

The Operator 4.0: Smart Interfaces for Human-Automation Symbiosis

Session Code: XXXXX

Sponsored: This invited session is supported by:

- IFAC TC 5.3 “Integration and Interoperability of Enterprise Systems”.
- IFIP WG 5.7 “Advances in Production Management Systems”.

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**Abstract.** Advances in adaptive control and intelligent automation, sensing and communication systems, and wearable computing are redefining the role and position of humans in Cyber-Physical Production Systems (CPPSs), calling for the study of newfound physical and cognitive relationships between humans and technology that must be studied from a socio-technical perspective towards Human-Centered Cyber-Physical Production Systems. Furthermore, in a Socially Sustainable Manufacturing World, human factors and ergonomics must be naturally involved in the overall design of CPPSs and must interact with other technical systems such as computers, machines, and robots at the shop-floor in various ways and levels so that the social-technical system, the production system, be able to achieve new levels of efficiency and productivity that neither systems can achieve on their own. Thus, newly available Human-Computer, Human-Machine, and Human-Robot Interfaces and Collaborations can provide Operators 4.0 intuitive access to a plethora of information and knowledge in the shop-floor for supporting cognitive activities like decision-making and problem-solving as well as an assistive third-hand in the case of physical activities. Hence, Human-Automation Symbiosis aims to use appropriate, smart interfaces to avoid and correct all drawbacks that technology possesses for the human side and ensure the proper function allocation to and sharing and trading of control between humans and automated components in a production system to maximize all production resources unique capabilities. This invited session intends at collecting the latest research works dealing with the design, engineering, development, implementation, and testing of innovative, smart human-X interfaces in the cognitive and physical domains in CPPSs towards “Human-Automation Symbiosis”. Papers exploring conceptual and ethical issues related to the topic are also welcome.

**This track will focus on (but not limited to):**

- Smart Interfaces considering Intentions, Emotions, Actions and Psychological State of Human Systems in the context of:
  - Human(s)-Computer(s) Interactions and Collaboration (e.g. AI systems)
  - Human(s)-Machine(s) Interactions and Collaboration (e.g. smart machine tools)
  - Human(s)-Robot(s) Interactions and Collaboration (e.g. cobots, AMRs)
- Augmented Human-Computer/Machine/Robot Intelligence
- Ethical Engineering of Human Cyber-Physical Systems (HCPSs)
- Human-in-the-Loop (HITL) / Human-in-the-Mesh (HITM)
- Trading and Sharing of Control Strategies in Human-Computer/Machine/Robot Systems

Submissions shall respect the normal procedure on papercept: <https://ifac.papercept.net/>

The authors have to select « **open invited track paper** » as submission type and use the track code (**XXXXXX**) at the second step of submission.

If the theme of the paper is not suited to the track scope, the paper will be evaluated and considered for a regular session.

Please send an email with your intention to submit a paper to: antonio.padovano(at)unical.it; dromero@tec.mx

**Key dates**

13th November 2020 - Draft manuscript submission

15th December 2020 - Notification to authors

1st February 2021 - Final paper submission deadline