Call for Papers
SS12 – Interplay Between Communications and Computations in Industrial Cyber-Physical Systems

Organized and Chaired by

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FOCUS. This call for papers invites submissions focusing on the cutting-edge developments in data-driven wireless connectivity, poised to transform monitoring, control, and efficiency within cyber-physical systems (CPS). Papers should offer innovative, interdisciplinary strategies utilizing data to enhance sensing, control, and resource allocation across interconnected systems. Papers should present original research that tackles the evolving demands of contemporary industrial CPS, emphasizing reliability, sustainability, and resilience against disruptions, thus paving the way for further technological breakthroughs in this domain.

TOPICS
❖ Resilient learning methods to deal with communication failures and incomplete data streams, including, but not limited to
   ○ Resilience against system failures such as transmission failures, channel distortion, or asynchronization
   ○ Security against malicious actors, for example, malicious data injection, deliberate signal distortion, etc.
❖ Novel edge computing solutions to enable scalable interactions between distributed industrial cyber-physical systems, including
   ○ Architectures for specific applications and purposes, e.g., energy-aware industrial manufacturing
   ○ Machine Learning frameworks for efficient and scalable computations
   ○ Latency, data and network availability, and resource allocation in the case of heterogeneous computation/storage capabilities
   ○ Privacy and security of processes and systems for resource allocation in industrial cyber-physical systems
❖ Data-driven control techniques for interconnected industrial cyber-physical systems
   ○ Scalable data-driven techniques for efficient computations and control of well-defined tasks
   ○ Learning algorithms and methods deploying cutting-edge communication protocols like 5G, LPWAN, or satellite IoT for collaborative tasks
   ○ New data processing methods for imputation, aggregation, or fusion for decision-making support or autonomous operation for monitoring and control.
❖ Real-world applications of energy-aware collaborative industrial cyber-physical systems
   ○ Practical demonstrations of collaborative industrial cyber-physical systems that achieve high renewable energy usage
   ○ Energy-aware industrial cyber-physical systems, including challenges and opportunities
❖ New semantic approaches to (wireless) communications in industrial cyber-physical systems
   ○ Semantic communication techniques for industrial process control
   ○ Age, Relevance and Value of information for process monitoring and environment awareness
❖ Surveys and review papers on synergies between communications and computations in cyber physical systems

AIM
This session endeavours to delve into the collaborative potential between communication technologies and computational methods to enhance the performance of industrial cyber-physical systems (CPS). It seeks to showcase pioneering cross-disciplinary methodologies that amalgamate data-driven techniques with communication systems to enable precise state variable estimation, network control, and resource allocation. By tackling critical requirements such as reliability, sustainability, and resilience, the objective is to propel advancements in this technological arena beyond existing boundaries.

SOLICITED PAPERS
♦ Original Research (Regular) ♦ Surveys ♦ Industry practice ♦ Work-in-progress
The working language of the conference is English, For submission rules, please refer to the Author's Instruction on the conference website.

PAPER ACCEPTANCE
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AUTHOR'S SCHEDULE 2024

❖Regular and special sessions papers
Submission deadline ……………………………….….. **April 28th**
Acceptance notification ………………………………… May 31st
Deadline for final manuscripts ………………………… July 1st

❖ Work-in-progress/ Industry practice papers
Submission deadline ………………………………………**May 26th**
Acceptance notification ……………………………….....June 17th
Deadline for final manuscripts …………………………July 1st

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