

Call For Papers

Special Session: Design, Modeling, and Analysis of Cyber-Physical Systems

Conference: The 2023 International Conference on Cyber-physical Social Intelligence (ICCSI)

Date: October 20-23, 2023

Meeting mode: In-person

Location: Xi'an, China

Web site: <https://agist.org/iccsi2023>

Recently, the increasing synergy between the computational technologies and physical components can be observed. A Cyber-Physical System (CPS) integrates computation and communication aspects together with control and monitoring techniques. Rapid development of cyber-physical systems results in a huge impact on human life. They are used in a variety of domains, including medical and health-care systems, smart homes and buildings, social networks and gaming, vehicular and transportation systems, power and thermal management systems, electric power grids and energy systems, networking systems or data centers. The modelling and design methodology of such systems includes the joint dynamics of computers, software, networks and physical processes. The control (cyber) part controls the objects and makes decisions, while the physical part refers to the real world and is prone to environmental influences.

Interested topics include (but not limited to):

Design of cyber-physical systems:

- Manufacturing, flexible manufacturing systems, smart factories, Industry 4.0.
- Mobile, wearable, and implantable cyber-physical systems in healthcare.
- Reconfigurable control systems (including distributed and integrated systems).
- Smart grids, power systems, smart cities, transportation, home area networks (HANs).
- Reconfigurable devices in CPS (FPGA, CPLD).
- Microprocessors in cyber-physical systems (DSP, microcontrollers).

Modeling of cyber-physical systems:

- Graphical modelling of the control part of CPS (including Petri nets, UML, SysML, etc.).
- Modeling dynamic behaviors of cyber-physical systems.
- Distributed and networked control of cyber-physical systems.
- Sequential modeling, including finite-state machines.
- Decomposition and synchronization methods of cyber-physical systems.
- Modeling methods of the control part of cyber-physical systems.
- Modeling methods of the physical part of cyber-physical systems.

Analysis, verification and validation methods of cyber-physical systems:

- Verification and validation methods, including formal verification techniques.
- Simulation techniques of cyber-physical systems.
- Performance evaluation.
- Optimization techniques.
- Analysis of the control and physical parts of a CPS.

- Analysis of the deterministic-related aspects in the control part of a CPS.
- Analysis of concurrency and sequentiality relations in cyber-physical systems.
- Security aspects of cyber-physical systems, including cryptographic algorithms.

Important Dates:

March 31, 2023,	Letter of intent for paper contribution
May 15, 2023,	Full paper submission
July 1, 2023,	Acceptance/Rejection notification
August 31, 2023,	Final camera-ready papers due

Special Session Co-chairs:

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All inquiries about the session, including the letter of intent, should be sent to any of the co-chairs above