ACM Transactions on Cyber-Physical Systems (TCPS)

Special Issue on Fault-Resilient Cyber-Physical Systems

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Cyber-Physical Systems (CPS) are increasingly pervasive in modern society due to their growing use in many complex applications of our everyday life, such as autonomous delivery drones and medical robotics. These systems, interacting with the environment, are often mission- or safety-critical systems and must therefore satisfy strict dependability requirements. Such requirements include reliability, maintainability, and availability goals, but also specific constraints, including performance, power, energy, or timing.

It is arguably crucial for safety-critical CPS to provide dependability against faults incurred by mobile and dynamic physical environments, which is very challenging, especially if the fault tolerance is provided at the cost of time and computation from the software level. The employment of emerging technologies, like non-volatile memory, also imposes various novel reliability threats. Therefore, designing and developing CPS with dependability and safety guarantees requires novel techniques, solutions, algorithms, and tools to tackle the many challenges to overcome.

This special issue welcomes high-quality submissions dealing with dependability aspects in CPS, including novel theory, methods, analyses, experimental evaluations, tools, and experience reports. Fault-resilient techniques allow limited errors while preserving timeliness are especially welcome.

Topics
The topics of this special issue include, but are not limited to, the following:
- Vulnerability and reliability analyses for CPS
- Software-based fault detection, recovery, and isolation mechanisms
- Noise and fault monitoring and analyses
- Techniques and solutions for providing safety guarantees under faults
- Fault-resilient and trusted controller synthesis
- Cooperative CPS on lossy and faulty communication
- Design of CPS under the Mixed-Criticality context
- Fault-resilient real-time computing in industrial CPS
- Tools and frameworks to design fault-resilient systems
- Case studies and best practices in the presence of faults

Important Dates
- Open for Submissions: December 1, 2022
- Submissions deadline: March 1, 2023
- First-round review decisions: June 15, 2023
- Deadline for revision submissions: August 1, 2023
- Notification of final decisions: October 15, 2023

- Tentative publication: December 15, 2023

Submission Information

The submitted papers must not be under review or published elsewhere. Duplicate submissions of manuscripts are forbidden. Please submit your papers through the submission system and select the "Special Issue on Fault-Resilient Cyber-Physical Systems" option for the paper-type, which should also be indicated in the cover letter.

If a submission extends from a previously published workshop/conference paper, it must contain significant additional contributions (including at least 25% new material), compared to the original material. It is imperative that a brief description of the differences, as well as the conference version(s), be attached to this submission for reviewers to identify the new technical materials considered for publication in TCPS. The appropriate designation must be selected for the files during the submission process. Authors should also refer to the author guidelines at https://dl.acm.org/journal/tcps/author-guidelines for more details.

For questions and further information, please contact **Kuan-Hsun Chen @ TCPS-FaultResilientCPS-Editors@acm.org**.