IEEE Transactions on Cybernetics

CALL FOR PAPERS

for Special Issue on

Monitoring and Control in Cyber-Physical Systems: Security, Resilience, and Privacy

Theme: Cyber-physical systems form the backbone of contemporary safety-critical infrastructures, such as power grids, water supply systems, and intelligent transportation networks. These systems integrate extensive digital and physical components, leading to complex interconnections. However, such intricate interconnectivity renders them vulnerable to a wide range of cyber-attacks observed in a series of concerning events. These attacks not only compromise the functionality of these critical systems but also pose significant risks to public safety and security. Possible catastrophic events due to such cyber-physical attacks can result in substantial economic impact, damage to valuable assets, and even loss of life. In addition to the increasing threat due to cyber-attacks, the occurrence of typical physical faults has also underscored the importance of safety and security in such systems. Hence, it has become increasingly evident that developing cyber-physical systems with high safety and security, as well as high resilience against cyber-physical threats, is highly important. Furthermore, the preservation of privacy is of high importance, especially when these systems possess sensitive and confidential information, requiring suitable schemes to safeguard cyber-physical systems against unauthorized access. As a consequence, issues related to safety, security, resilience, and privacy preservation for cyber-physical systems have attracted considerable attention within the research community.

This special issue seeks to provide a comprehensive overview of the potential challenges and recent advances in the areas of safety, security, resilience, and privacy preservation, and it serves as a platform for researchers to share their recent innovative work addressing these concerns from both theoretical and practical perspectives. The targeted audience includes both academic researchers and industrial practitioners.

This special issue will focus on (but not limited to) the following topics:

The proposed invited session focuses on theoretical and application challenges related to cyber-physical systems, with particular emphasis on the safety, security, reliability, and resilience of such systems (model-based, model-free, and data-driven). The topics that this session covers include, but are not limited to: 1. Security vulnerability and risk assessment in cyber-physical systems; 2. Security risk prevention and mitigation for cyber-physical systems; 3. Threat diagnosis: detection, isolation, identification; 4. Privacy-preservation in control and communication systems; 5. Safety, health monitoring and life prediction; 6. Control/network reconfiguration; 7. Resilience in distributed estimation and control systems; 8. Relevant applications (e.g., smart grids, multi-robot systems, water distribution networks, transportation systems).

Manuscript Preparation and Submission

Follow the guidelines in "Information for Authors" in the IEEE Transaction on Cybernetics https://www.ieeesmc.org/publications/transactions-on-cybernetics. Please submit your manuscript in electronic form through Manuscript Central web site: https://mc.manuscriptcentral.com/cyb-ieee. On the submitting page # 1 in popup menu of manuscript type, select: Security of Cyber-physical Systems. Submissions to this special issue must represent original materials that have been neither submitted to, nor published in, any other journal. The review process for the special issue submissions and the paper length requirement are the same as the regular issue papers.

Note: The approval of recommended papers for the special issue is at the discretion of the Editor-in-Chief, and some papers may be published in a regular issue. Moreover, depending on the number of accepted manuscripts, this special issue could be published as a special section in a regular issue.

Timetable

- Paper submission deadline: 1 July 2024
- First round of review: 1 October 2024
- Final round review: 31 December 2024
- Final acceptance notice: 15 January 2025
- Scheduled Publication: May or June Issue, 2025

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