IEEE Transactions on Systems, Man, and Cybernetics: Systems

Special Issue on

Attack Detection and Security Control for Advanced Cyber-Physical Systems and Its Applications

Cyber-Physical Systems (CPS), as synergistic integration of multidimensional complex intelligent systems with advanced control, sensing, and computer science and technologies, play an important role in the real world. For example, the power and energy system is a class of typical CPSs, and its research has important economic significance. Due to the openness of the network environment, the plant is vulnerable to stealth attacks. Much research interest has been attracted to advanced CPSs for their promising application insights in power and energy systems, and so on. CPSs, which cooperate with or substitute human operators to perform a growing variety of tasks, are getting increasingly complex to achieve difficult operations with comprehensive utilization of sensors, computation modules, actuators, controllers, etc., and the intelligent algorithms with learning ability running behind. On the other hand, the attack detection and security control methods have shown their vitality on perception, recognition, situation understanding, communication and trajectory planning, etc. with a great amount of proved successful applications in all cross disciplines. Therefore, it is expected that CPSs could be greatly improved with full integration of attack detection and security control techniques, and the challenges brought by various real applications could also push the development of more powerful attack detection and security control methods.

The purpose of this special issue is to create a forum for scientists, engineers and practitioners throughout the world to present the latest theoretical and technological achievements in attack detection and security control for advanced CPSs and its applications. Papers presenting newly emerging fields and applications are especially welcome. Topics to be covered in this special issue include, but not limited to, the following:

- Security control for advanced CPSs and its applications;
- Security control for power and energy systems with stealth attacks;
- Data-driven control for power and energy systems with stealth attacks;
- Attack detection and security control for advanced CPSs with stealth attacks;
- Security based modelling, identification, optimization, and control for advanced CPSs;
- Artificial intelligence applications for CPSs;
- Deep learning control for CPSs;
- Reinforcement learning control for CPSs;
- Self-organized communication for CPSs;
- Intelligent computation on health monitoring and supervision of advanced CPSs;
- Learning based cooperative control of multiple CPSs.

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Manuscript Preparation and Submission:

Papers must contain original contributions and be prepared in accordance with IEEE Transactions on Systems, Man, and Cybernetics: Systems standards. Instructions for authors are available online at: https://www.ieeesmc.org/publications/transactions-on-smc-systems/information-for-authors. Manuscripts should be submitted through the online submission service available at: https://mc.manuscriptcentral.com/systems. All manuscripts will be subjected to peer review process.

Important Dates:

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