IEEE Transactions on Industrial Cyber-Physical Systems

Call for Papers for Special Collection on

Learning, Optimization and Coordination of Complex Industrial Cyber-Physical Systems

Theme: Industrial Cyber-Physical Systems (ICPSs) are highly integrated and interactive intelligent systems of computing units and physical objects in the network environment, which realize mutual mapping, timely interaction, and efficient collaboration between physical space and information space, and are the foundation of the basis of Industry 4.0. ICPSs mainly involve internet of things systems, smart grids, intelligent manufacture systems, multirobot systems, and building energy systems, and have become the core technology of modern industry. However, since ICPSs usually involve multiple interacting components and require trade-offs between multiple objectives, it is crucial to investigate the advanced techniques to deal with system complexity and uncertainty to improve the reliability and robustness of ICPSs. Learning, optimization, and coordination can effectively improve the performance of ICPSs, and more specifically, learning enables the system to mine key information from data to better understand and predict system behavior; optimization can determine the optimal control and estimation strategy to achieve specific performance targets; and coordination can improve the operation efficiency and effectiveness of large-scale or distributed systems. Therefore, in this special collection, new achievements regarding both theoretical analyses and technology developments on the learning, optimization, and coordination of complex ICPSs are desired, thereby realizing the advances in industrial technology.

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

- Advanced learning techniques for ICPSs
- Learning-based control and monitoring techniques for ICPSs
- Learning-based cyber security techniques for ICPSs
- Optimal control and resilient control for ICPSs
- Robust and stochastic control for ICPSs
- Game-based optimization and control for ICPSs
- Distributed and cooperative control for ICPSs
- Event triggered coordination for ICPSs
- Application of advanced learning, optimization and coordination for ICPSs

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Timetable:

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