

Invited Session Proposal “Monitoring, Control and Intelligent Learning for Networked Systems”

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Organizers:

Yan Song, Professor, University of Shanghai for Science and Technology

Email: sonya@usst.edu.cn

Leijun Xiang, Lecturer, Huaqiao University

Email: ljxiang@hqu.edu.cn

Networked systems are systems with spatially distributed components, such as sensors, actuators, and controllers, connected through an open communication network. Recent advances in the network technique have fueled the proliferation of networked systems, and many applications can be found in power systems, traffic systems, and industrial systems. Those applications, in turn, have raised many fundamentally new problems and promoted further studies in networked systems with complexity.

The last two decades have witnessed a rapid development of networked systems with many kinds of complexities. With the increase of devices, software, and intelligent sensors in networked systems, many problems of networked systems such as monitoring, control, and intelligent learning have gained a special focus in both academic and application fields. Monitoring is to measure the real-time output of systems to take necessary acts to guarantee system performance and security. Control is a strategy to guarantee system stability. Intelligent learning is a technique to help people make decisions by virtue of intelligent knowledge. It is, however, noted that there are still many new challenges and opportunities to algorithm design, theoretical analysis, and system implementation for the particular characteristics of complex undesirable behaviors and high-security risks of networked systems.

This invited session aims to highlight the most significant recent developments

on the topic of “monitoring, control and intelligent learning for networked systems”. Topics include, but are not limited to, 1) advanced optimization methods in control theory, 2) networked monitoring, 3) state estimation, 4) intelligent learning, and 5) other related works in networked systems.