Special Issue

Resilient Control and Estimation in Networked Systems

Message from the Guest Editors

Information and communication technologies (ICTs) have been increasingly utilized to support the exchange of data among actuators, sensors, and controllers in networked control systems (NCSs), for which control loops are closed via communication links. Typical examples of NCSs include automatic control systems that monitor and control the operation of critical infrastructures. While the communication infrastructure significantly facilitates the transmission of the vast amount of data over wide geographical areas, it makes NCSs more vulnerable to cyberattacks. This Special Issue aims to seek state-of-the-art solutions to the open challenges in securing NCSs and applications in critical NCSs, topics may be related but not limited to

- Risk analysis of cyberattacks on actuators and sensors of NCSs;
- Distributed estimation of NCSs under cyberattacks;
- Secure wireless sensor and actuator networks;
- Distributed control of NCSs under cyberattacks;
- Resilient actuations of NCSs under cyberattacks;
- Intrusion detection for NCSs;
- Model predictive control for NCSs under cyberattacks;
- Applications and co-simulations of NCSs under cyberattacks.

Guest Editors

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Deadline for manuscript submissions

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About the Journal

Message from the Editorial Board

We are just entering the Next Wave of Technology (NWT) where actuators will play the same role as the computer chip did for computers/social media approximately four decades ago. Just in the U.S., production of $1 trillion year of electromechanical systems (vehicles, orthotics, manufacturing cells, freight trains, aircraft, etc.) will be impacted by the NWT, all driven by actuators. Five key trends can be found for the future perspectives: “Performance to Reliability”, “Hard to Soft”, “Macro to Nano”, “Homo to Hetero” and “Single to Multi functional”. We invite papers that primarily impact these economic sectors; those illustrating basic scientific principles are also welcome.

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