

学术报告会

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Secure Information Fusion in Cyber-Physical Systems

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Abstract:

The concept of Cyber-Physical System (CPS) refers to the embedding of sensing, communication, control and computation into the physical spaces. Today, CPSs can be found in areas as diverse as aerospace, automotive, chemical process control, civil infrastructure, energy, health-care, manufacturing and transportation, most of which are safety critical. Any successful attack to such kind of systems can cause major disruptions, leading to great economic losses and may even endanger human lives. The first-ever CPS malware (called Stuxnet) was found in July 2010 and has raised significant concerns about CPS security. The tight coupling between information and communication technologies and physical systems in CPS introduces new security concerns, requiring a rethinking and re-examining of the commonly used objectives and methods. In this talk, we consider the problem of information fusion in CPS under the assumption that some components inside the CPS may be malicious. We provide several fundamental limits on the performance of the information fusion for various attack scenarios and design algorithms which achieve the limits.

Biography:

Yilin Mo is an Assistant Professor in the School of Electrical and Electronic Engineering at Nanyang Technological University. He received his Ph.D. in Electrical and Computer Engineering from Carnegie Mellon University in 2012 and his Bachelor of Engineering degree from Department of Automation, Tsinghua University in 2007. Prior to his current position, he was a postdoctoral scholar at Carnegie Mellon University in 2013 and California Institute of Technology from 2013 to 2015. His research interests include secure control systems and networked control systems, with applications in sensor networks and power grids.