

报告人: Quanyan Zhu (New York University)

题 目: A Game-Theoretic Approach for Resilient, Robust and Secure
Control of Cyber-Physical Systems

时 间: 6月12日(周四)14:00

地 点: 电院群楼 2-410

邀请人: 李少远教授

Abstract:

With its rich set of conceptual, analytical and algorithmic tools, game theory has emerged as providing a versatile and effective framework for addressing issues of robustness, resilience, and security (RRS) in modern critical infrastructures. Such systems are composed of many interacting human, cyber and physical components at multiple layers. Addressing issues of RRS will require a divide-and-conquer approach, and at the same time a holistic system viewpoint. The talk will first introduce game- and control-theoretic approaches for modeling multi-layer and multi-agent interactions in cyber-physical systems. It will then present the recently developed resilient control theory for efficient cyber and physical system integrations for achieving cyber security against attackers and robustness of physical system against noise and disturbances. The talk will also discuss the games-in-games principle and multi-resolution game theory to address strategic decision-making residing at multiple layers of the cyber-physical system. Specific examples will be drawn from communication networks and smart energy systems for illustration of these concepts.

Biography:

Quanyan Zhu (S'04-M'12) is an assistant professor in the Department of Electrical and Computer Engineering at New York University. He received the B. Eng. in Honors Electrical Engineering with distinction from McGill University in 2006, the M.A.Sc. from University of Toronto in 2008, and the Ph.D. from the University of Illinois at Urbana-Champaign (UIUC) in 2013. From 2013-2014, he was a postdoctoral research associate at the Department of Electrical Engineering, Princeton University. He is a recipient of many awards including NSERC Canada Graduate Scholarship (CGS), Mavis Future Faculty Fellowships, and NSERC Postdoctoral Fellowship (PDF). He spearheaded the INFOCOM workshop on Communications and Control on Smart Energy Systems (CCSES), and the Midwest Workshop on Control and Game Theory (WCGT). His current research interests include optimal control, game theory, reinforcement learning, network security and privacy, resilient control systems, and cyber-physical systems.