学术报告会

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Control and Estimation with
Limited Data Rate and Packet Loss

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Abstract:

Research on networked control and estimation is an emerging area that brings together the disciplines of systems and control theory, optimization theory, signal processing, principles of wireless communications and information theory. In this talk, we focus on quantifying the effect of communication limitations on stabilization/performance of networked systems from the information, network and graph theoretic approaches, respectively. As analogous to Shannon's coding theorem in information theory, data rate theorem for stabilization of linear systems over loss digital channel is established. Then, the minimum network condition for stability of Kalman filtering with Markovian packet loss is explicitly characterized. Finally, the joint effect of communication network topology and agent dynamics on the cooperative control of multi-agent systems is presented as well.

Biography:

Dr. Keyou You was born in Jiangxi Province, China, in 1985. He received the B.S. degree in statistical science from Sun Yat-sen (Zhongshan) University, Guangzhou, China, in 2007 and the Ph.D. degree in electrical and electronic engineering at Nanyang Technological University, Singapore in 2012. He was with the ARC Center for Complex Dynamic Systems and Control, the University of Newcastle, Australia, as a visiting scholar from May 2010 to July 2010, and with the Sensor Network Lab at Nanyang Technological University as a Research Fellow from June 2011 to June 2012. Since July 2012, he has been with the Department of Automation, Tsinghua University, China as a lecturer. His current research interests include control and estimation of networked systems, distributed control and estimation over complex networks, and sensor network. Dr. You won the Guan Zhaozhi best paper award at the 29th Chinese Control Conference, Beijing, China, in 2010.