Systems and Control Seminar

Fujita Laboratory, Tokyo Institute of Technology

Human-Robot Interaction in Networked Control Systems

Date: 14:00-15:00 Aug. 22 (Mon.), 2016

Room: S5-207

Prof. Yen-Chen Liu

Department of Mechanical Engineering,
National Cheng Kung University

Abstract:Many researchers in robotics have foreseen that most robots in the future will be endowed with human intelligence. In order to achieve such advanced robotic systems, several control frameworks and algorithms have been proposed recently. In this talk, the latest results in teleoperation for robotic control systems will be introduced. Teleoperated robots have emerged as a useful tool to accomplish tasks in remote or hazardous environments, as was witnessed during the recent natural disaster. To ensure the safety, enhance the efficiency, and increase the flexibility of complex robotic systems operating in cluttered environment over network, the study of bilateral teleoperation for heterogeneous master and slave robots will be addressed. A semi-autonomous control framework for bilateral teleoperation will be discussed for non-identical robots with dynamic uncertainties and asymmetric communication delays. An extension of the proposed semi-autonomous teleoperation that a human operator can simultaneously interact with a group of swarm robots in a remote environment will be introduced subsequently. Moreover, flexible formation control and coverage control in the human-swarm system will also be presented. This talk will conclude with some directions for future research about human-robot interaction in networked control systems.