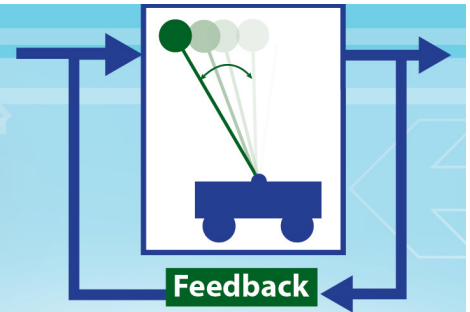


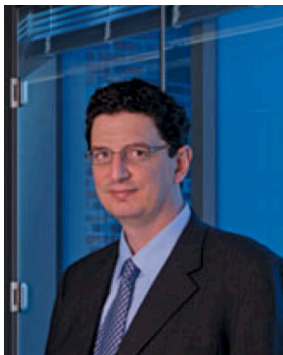
COLLEGE OF ENGINEERING

Control Seminar



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Internet of Things: A control theory perspective



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Department of Electrical and Systems Engineering

Friday, November 11, 2016

3:30 – 4:30 pm • 1500 EECS

ABSTRACT: There has been much discussion recently regarding the "Internet of Things" (IoT). The IoT is the phenomenon of physical things, embedded with sensors and actuators, coming online and interfacing with Internet-capable devices such as smartphones and cloud computing services. IoT technology has been embraced by Silicon Valley as well as many prominent companies; for example, General Electric has launched the Industrial Internet, Intel has an IoT group, and Cisco calls it "Fog Computing." The National Science Foundation has prioritized this development under their Cyber-Physical Systems (CPS) programs across the Computer & Information Science & Engineering (CISE) Directorate. Even large software companies like Google, Facebook and Amazon are starting to invest heavily in hardware again. During this lecture, I will present the broad IoT vision and then focus on some of the research challenges upon which my group is currently focusing. From a control theory perspective, some of these challenges include the development of a control theory that is communication- and energy-aware, controlling large numbers of devices or robots for active information gathering, designing attack-resilient controllers in the presence of cyber-attacks, as well as ensuring privacy of cloud-based estimation and control systems.

BIO: George J. Pappas is the Joseph Moore Professor and Chair of the Department of Electrical and Systems Engineering in the School of Engineering and Applied Science at the University of Pennsylvania. He holds secondary appointments with the Departments of Computer and Information Science and Mechanical Engineering and Applied Mechanics. Pappas is a member of Penn's General Robotics, Automation, Sensing and Perception (GRASP) Lab and the Penn Research in Embedded Computing and Integrated Systems Engineering (PRECISE) Center. Prior to becoming a Department Chair, he served as the Deputy Dean for Research of the School of Engineering and Applied Science. Pappas earned a Ph.D. in Electrical Engineering and Computer Sciences in 1998 from the University of California, Berkeley, for which he received the Eliahu Jury Award for Excellence in Systems Research for his doctoral research.