THE CHINESE UNIVERSITY OF HONG KONG
Institute of Network Coding
and
Department of Information Engineering
Seminar

INC

Simple Models for Information Bottlenecks in Control Systems

by

Dr. Gireeja Ranade
University of California, Berkeley

Date : **23 June 2015 (Tuesday)**
Time : **2:30 - 3:30 pm**
Venue : **Room 833 , Ho Sin Hang Engineering Building**
The Chinese University of Hong Kong

Abstract

The trends set by the Internet of Things (IoT) are pushing us to understand the interactions between communication, computation and control in systems. This talk will discuss simple models that can provide insights on the "informational" limits on control of high-performance systems with uncertain system parameters that are difficult to track.

We will define a novel notion of "control capacity," as the fundamental limit on the ability of a noisy actuator to control a system. Control capacity builds on the traditional notion of communication capacity in information theory. The formulation provides an information-theoretic perspective that allows us to understand the value of side information in the context of control systems.

If time permits, the talk will also touch upon the development of communication protocols for low-latency high-reliability control over wireless, which are necessary for the IoT vision of the future.

Biography

Gireeja Ranade completed her Ph.D. in the EECS department at UC Berkeley. She received an S.B. in EECS from MIT in 2007 and an M.S. in EECS from UC Berkeley in 2009. She has worked on topics in brain-machine interfaces, information theory, control theory, wireless communications and crowdsourcing. She is currently co-instructor and designer for the pilot version of a new lower-division class in EECS at UC Berkeley.

**ALL ARE WELCOME **

Host: Professor Sidharth Jaggi (Tel: 3943-4326, Email: sid@ie.cuhk.edu.hk)
Enquiries: Department of Information Engineering, CUHK (Tel.: 3943-8388)

S:\2015\sem1015_INC_Gireeja Ranade_SID_230615