



**The Hong Kong Polytechnic University
Department of Applied Mathematics**

Seminar

On

Sensor Scheduling: from Offline to Online Design

by

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Abstract

We consider state estimation over a network subject to limited sensor communications. A sensor needs to decide when to send its local state estimate to a remote estimator in order to minimize the average estimation error at the estimator subject to that the total communication time is no more than a pre-specified value. Two classic approaches to this sensor scheduling problem include offline design methods and online ones. In this talk, with some mild assumptions, we first present an optimal offline sensor schedule. Then, by exploring the online state estimate information, we introduce an event-triggering mechanism, which is implemented on top of the offline sensor schedule. The resulting hybrid (both online and offline) schedule, which can be implemented efficiently, is proven to outform the optimal offline schedule, and hence provides a tradeoff between the two classic approaches in terms of estimation quality and computation complexity.

Biography

Ling Shi received his B.S. degree in Electrical and Electronic Engineering from The Hong Kong University of Science and Technology in June 2002 and Ph.D. degree in Control and Dynamical Systems from The California Institute of Technology in August 2008. He is currently an assistant professor in the Department of Electronic and Computer Engineering at The Hong Kong University of Science and Technology. His research interests include networked control systems, wireless sensor networks, and distributed estimation and control.

Date : March 14, 2012 (Wednesday)

Time : 3:30 p.m. – 4:30 p.m.

Venue : HJ610, The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***