



THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering

Seminar

**Sequential change-point detection:
multi-sensor, kernel, and sketching**

by

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Date : 19 June, 2015 (Friday)
Time : 11:30am – 12:30pm
Venue : Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

Abstract

Detecting change-points from high-dimensional streaming data is a fundamental problem that arises in many big-data applications such as video and speech processing, sensor networks, social networks, and genomic signal processing. Challenges herein include developing algorithms that have low computational complexity and good statistical power, that can exploit structures to detecting weak signals, and that can provide reliable results over larger classes of data distributions. I will present three aspects of our recent work that tackle these challenges: (1) utilizing signal sparsity to achieve quicker detection of abrupt or gradual changes; (2) developing kernel-based methods based on nonparametric statistics; and (3) using sketching of high-dimensional data vectors to reduce data dimensionality. We also provide theoretical performance bounds and demonstrate the performance of the algorithms using simulated and real data.

Biography

Yao Xie joined Georgia Institute of Technology as an Assistant Professor in the H. Milton Stewart School of Industrial & Systems Engineering in 2013. Prior to that, she worked as a Research Scientist at Duke University in the Department of Electrical and Computer Engineering, after receiving her Ph.D. in Electrical Engineering (minor in Mathematics) from Stanford University in 2011. She is interested in signal processing, sequential analysis (e.g. change-point detection), compressed sensing, and machine learning, and have been working on applications in sensor networks, social networks, video processing, seismic signal processing, and wireless communications. More information can be found at <http://www2.isye.gatech.edu/~yxie77/>

**** ALL ARE WELCOME ****