

For favour of posting



DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

50th Anniversary Seminar Series

Professor Heping ZHANG

Susan Dwight Bliss Professor of Public Health (Biostatistics)
and
Professor in the Child Study Center and of Statistics
Yale School of Public Health
New Haven, USA

will give a talk
entitled

**THE SCREENING AND RANKING ALGORITHM FOR
CHANGE-POINTS DETECTION IN MULTIPLE SAMPLES**

Abstract

The chromosome copy number variation (CNV) is the deviation of genomic regions from their normal copy number states, which may associate with many human diseases. Current genetic studies usually collect hundreds to thousands of samples to study the association between CNV and diseases. CNVs can be called by detecting the change-points in mean for sequences of array-based intensity measurements. Although multiple samples are of interest, the majority of the available CNV calling methods are single sample based. Only a few multiple sample methods have been proposed using scan statistics that are computationally intensive and designed toward either common or rare change-points detection. In this paper, we propose a novel multiple sample method by adaptively combining the scan statistic of the screening and ranking algorithm (SaRa), which is computationally efficient and is able to detect both common and rare change-points. We prove that asymptotically this method can find the true change-points with almost certainty and show in theory that multiple sample methods are superior to single sample methods when shared change-points are of interest. Additionally, we report extensive simulation studies to examine the performance of our proposed method. Finally, using our proposed method as well as two competing approaches, we attempt to detect CNVs in the data from the Primary Open-Angle Glaucoma Genes and Environment study, and conclude that our method is faster and requires less information while our ability to detect the CNVs is comparable or better. This is a joint work with Chi Song and Xiaoyi Min.

on

Friday, June 16, 2017

(Refreshments will be served from 10:45 a.m. outside Room 301 Run Run Shaw Building)

11:00 a.m. – 12:00 noon

at

Room 301, Run Run Shaw Building

Visitors Please Note that the University has limited parking space. If you are driving please call the Department at 3917 2466 for parking arrangement.

ALL INTERESTED ARE WELCOME