Center for Statistical Science Seminar

Automatic Detection of Significant Areas for Functional Data

Prof. Jian Qing SHI

School of Mathematics, Statistics and Physics, Newcastle University and Turing fellow, Alan Turing Institute, UK

Abstract: To detect differences between mean curves of two samples in longitudinal study or functional data analysis, we usually need to partition the temporal or spatial domain into several pre-determined sub-areas. We applied the idea of large-scale multiple testing to find the significant sub-areas automatically in a general functional data analysis framework. A nonparametric Gaussian process regression model is introduced for two-sided multiple tests. We derive an optimal test which controls directional false discovery rates and propose a procedure by approximating it on a continuum. The proposed procedure controls directional false discovery rates at any specified level asymptotically. In addition, it is computationally inexpensive and able to accommodate different time points for observations across the samples. I will also present numerical examples, including simulation studies and applications to an executive function research in children with Hemiplegic Cerebral Palsy.

Date: *Wednesday, 30 October 2019*

Time: *3:00p.m.-4:00p.m.*

Venue: *Room 5506, Academic Building (near Lifts no.27/28), HKUST*