For favour of posting

DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Departmental Seminar

Professor Xiaofeng SHAO

Department of Statistics
University of Illinois
USA

will give a talk
entitled

MARTINGALE DIFFERENCE DIVERGENCE AND ITS APPLICATIONS TO CONTEMPORARY STATISTICS

Abstract

Martingale difference divergence (MDD) is a metric that quantifies the conditional mean dependence of a random vector Y given another random vector X. We shall present applications of martingale difference divergence and its variant to two contemporary statistical problems: high dimensional dependence testing and dimension reduction for multivariate time series. In the first part, we propose a novel test to assess the conditional mean dependence of a response variable on a large number of covariates. Our MDD-based procedure is able to detect certain type of departure from the null hypothesis of conditional mean independence without making any specific model assumptions. We establish the asymptotic normality of the proposed test statistic under suitable assumptions that can be verified for covariates with banded dependence or Gaussian distribution. Power analysis and a wild bootstrap procedure will also be presented along with some simulation results. In the second part, we introduce a new methodology to reduce the number of parameters in multivariate time series modeling. In particular, we seek a contemporaneous linear transformation such that the transformed time series has two parts with one part being conditionally mean independent of the past information. Our dimension reduction procedure is based on eigen-decomposition of the so-called cumulative martingale difference divergence matrix, which encodes the number and form of linear combinations that are conditionally mean independent of the past. We provide a simple way of estimating the number of factors and factor loading space, and obtain some theoretical results about the estimators. The finite sample performance will be illustrated from a real data analysis.

on

Monday, July 23, 2018

(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