

SEMINAR SERIES

Model-free variable selection for high dimensional data

Date: 17 August 2018 (Friday)

Time: 3:00pm to 4:00pm

Venue: P7303, 7/F, Yeung Kin Man Academic Building (YEUNG),
City University of Hong Kong

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Guest Speaker's profile

Dr. Chen Xin got his bachelor degree in Mathematics from Nankai University and his PHD in Statistics from University of Minnesota. He currently works in Dept of Statistics and Applied Probability in National University of Singapore. His research area includes dimension reduction, variable selection, high dimensional analysis and complex data.

Abstract:

In this job talk, I will first introduce my research generally and then I will talk about a recent work from my main research area. In this work, we propose a new sparse sufficient dimension reduction in high dimensional settings utilizing distance covariance. Our method is model-free and does not need any kernel function and bandwidth or slicing selection. Moreover, it can naturally deal with multivariate response scenarios, making it appealing in a modified sequential algorithm that targets the large p small n problems. Compared with feature screening procedures which only use marginal utility, our method can extract more useful information from the data and is capable of determining the size of the selected sub-model automatically while most of screening procedures cannot. Under mild conditions, based on manifold theories and techniques, it can be shown that our method would perform asymptotically as well as if the true irrelevant predictors were known, which is referred to as the oracle property. Extensive simulation studies and two real data examples demonstrate the effectiveness and efficiency of the proposed approach. It is remarkable that the analysis in cardiomyopathy microarray data reveals interesting findings.