The Hong Kong University of Science and Technology

Department of Mathematics

Seminar on Data Science and Statistics

IDENTIFICATION OF HETEROGENOUS FEATURES IN VOXEL-BASED NEUROIMAGE ANALYSIS

by

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Abstract

In voxel-based neuroimage analysis, lesion features have been the main focus in disease prediction due to their interpretability with respect to the related diseases. However, we observe that there exist another type of features introduced during the preprocessing steps and we call them "**Procedural Bias**". Besides, such bias can be leveraged to improve classification accuracy. A novel dual-task algorithm, namely *GSplit LBI* will be introduced. It has been shown in the empirical experiment on Alzheimer's Disease that such an algorithm can improve the prediction result by leveraging the procedural bias. However, such multivariate models may suffer multi-collinearity problem when dimension increases. To handle this problem, the speaker will also introduce an empirical bayesian model, which can select heterogenous features with low False-discovery-rate. It can be solved by EM algorithm and simplified with M-step replaced with Linearized Bregman Iteration (gradient accent followed by soft-thresholding).

Date: **Saturday, 10 November 2018**
Time: **10:30a.m. – 11:30a.m.**
Venue: **Room 3472 (lift 25, 26),**
Academic Building, HKUST

All are welcome!