THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON STATISTICS AND DATA SCIENCE

Knockoffs with Side Information

By

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Abstract

We consider the problem of assessing the importance of multiple variables or factors from a dataset when side information is available. In principle, using side information can allow the statistician to pay attention to variables with a greater potential, which in turn, may lead to more discoveries. We introduce an adaptive knockoff filter, which generalizes the knockoff procedure (Barber and Candès, 2015; Candès et al., 2018) in that it uses both the data at hand and side information to adaptively order the variables under study and focus on those that are most promising. Adaptive knockoffs controls the finite-sample false discovery rate (FDR) and we demonstrate its power by comparing it with other structured multiple testing methods. We also apply our methodology to real genetic data in order to find associations between genetic variants and various phenotypes such as Crohn's disease and lipid levels. Here, adaptive knockoffs makes more discoveries than reported in previous studies on the same datasets.

Biography: *Zhimei Ren is currently a 4th year PhD student in the Statistics Department at Stanford University advised by Prof. Emmanuel Candès.*

Date   : **26 March, 2020 (Thursday)**
Time   : **10:30am – 11:30am**
Zoom Meeting : **https://hkust.zoom.com.cn/j/5616960008**

All are Welcome!