

Joint
Seminar

ISOM/MATH/CSE/CSS
The Hong Kong University of Science and Technology

Subsampling Large Graphs and Invariance in Networks

by

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Date: November 10, 2015 (Tuesday)

Time: 4:30 p.m. – 5:30 p.m.

Venue: LTF (Academic Building, Lift 25)

Abstract

Consider a very large graph---say, the link graph of a large social network. Now invent a randomized algorithm that extracts a smaller subgraph. If we use the subgraph as sample data and perform statistical analysis on this sample, what can we learn about the underlying network?

Clearly, that should depend on the subsampling algorithm. I will show how the choice of algorithm defines a notion of distributional invariance. There is an algorithm for which this invariance is precisely exchangeability; in this case, the appropriate statistical models are so-called W -random graphs, or graphon, models. However, the invariance changes drastically when seemingly minor modifications are made to the subsampler; I will give a concrete example. I will also discuss the problem of estimating properties of a distribution on large graphs from a single large graph, and how it relates to subsampling.

All interested are welcome!

For details, please contact ISOM Department.
