NYU Stern School of Business
Department of Information, Operations & Management Sciences
STATISTICS RESEARCH SEMINAR

TOPIC: Fused Community Detection
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DATE: Friday, March 7, 2014
TIME: 11:30 AM - 12:30 PM
PLACE: KMC 5-75

Abstract

Community detection is one of the most widely studied problems in network re- search. In an undirected graph, communities are regarded as tightly-knit groups of nodes with comparatively few connections between them. Popular existing techniques, such as spectral clustering and variants thereof, rely heavily on the edges being sufficiently dense and the community structure being relatively obvious. These are often not satisfactory assumptions for large-scale real-world datasets. We therefore propose a new community detection method, called fused community detection (fcd), which is designed particularly for sparse networks and situations where the community struc- ture may be opaque. The spirit of fcd is to take advantage of the edge information, which we exploit by borrowing sparse recovery techniques from regression problems. Our method is supported by both theoretical results and numerical evidence. The algorithms are implemented in the R package fcd, which is available on cran. This is joint work with Dr. Yang Feng (Columbia University) and Prof. Richard Samworth (University of Cambridge).