Statistical Machine Learning Seminar

Hosted by Department of Mathematical Sciences

- Date: Tuesday, October 18, 2016
- Time: 12:00-1:00
- Room: WH-100E
- Speaker: Yang Feng (Columbia University)
- Title: Community detection with nodal information

Abstract

Discovering community structure is one of the fundamental issues in the study of networked data. Most existing community detection approaches take merely edge information as inputs, and deliver suboptimal results for networks with nodal covariates available. Regarding those networks, it is desirable to leverage covariates information for the improvement of detection accuracy. Towards this goal, we propose a flexible network model incorporating nodal signals, and develop likelihood-based inference methods. We will present a systematic study from both theoretical and practical aspects. Our theoretical analysis demonstrates favorable asymptotic properties of the proposed approach. We then derive practical algorithms for the search of the theoretical estimators. Numerical experiments show the effectiveness of our method in utilizing nodal information across a variety of simulated and real networked datasets.