



THE UNIVERSITY OF CHICAGO

Department of Statistics

STATISTICS COLLOQUIUM

JIASHUN JIN

Department of Statistics
Carnegie Mellon University

Community Detection by SCORE with Applications to Coauthorship and Citation Networks for Statisticians

MONDAY, April 6, 2015, at 4:00 PM
Eckhart 133, 5734 S. University Avenue
Refreshments following the seminar in Eckhart 110.

ABSTRACT

The problem of social network community detection has received considerable attention. We propose Spectral Clustering On Ratios-of-Eigenvectors (SCORE) as a new method to community detection. SCORE is a fast and easy-to-implement spectral clustering approach. Compared to other spectral methods, the main innovation is to use the entry-wise ratios between the first few leading eigenvectors of the network adjacency matrix for clustering. We explain why SCORE is the right approach using the recent Degree Corrected Block Model (DCBM).

SCORE is a flexible idea and can be useful in various settings. We have successfully applied SCORE to the Coauthorship and Citation networks for statisticians; the two networks are constructed using the coauthorship and citation relationship among all research papers published in four of the top journals in statistics from 2003-2012. We have identified a handful of meaningful communities, including large-size communities such as “Large-Scale Multiple Testing,” “Variable Selection,” “Spatial Statistics,” as well as small-size communities such as “Dimensional Reduction,” “Objective Bayes,” “Quantile Regression,” and “Theoretical Machine Learning.”

Our study requires delicate analysis. Especially, it requires tight large deviation inequalities on the spectral norm of large random matrices.

For further information and about building access for persons with disabilities, please contact Kirsten Wellman at 773.702.8333 or send email (kwellman@galton.uchicago.edu). If you wish to subscribe to our email list, please visit the following website: <https://lists.uchicago.edu/web/arc/statseminars>.