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Efficient analysis of latent spaces in heterogenous networks.

Wednesday, September 4th, 2024

11:50 AM

110 Frelinghuysen Road, Hill Center, Room 116

Zoom Meeting: Meeting ID: 969 0606 4706

Password: 745339

<https://rutgers.zoom.us/j/96906064706?pwd=ZklvbExpRVBJQ3c5dUhhYTFuR2ZrZz09>

Light refreshments will be served in Hill 452, 11:15am

Abstract: In various scientific endeavors, collections of multiple networks over the same set of vertices have become increasingly prevalent. Aggregating multiple networks has proven to be valuable in unveiling intrinsic structures in multi-modal or dynamic connectivities. Nevertheless, recent studies have revealed that multiple networks can exhibit significant heterogeneity and contain both shared and individual structures simultaneously.

This presentation delves into efficient estimation of latent structures in heterogeneous networks. In particular, this talk considers the framework of latent space models where each vertex has an associated latent embedding. A collection of networks is modeled with a shared latent embedding structure along with distinct individual embedding structures. We develop a procedure that learns both the shared and individual embedding spaces from the data. Efficient estimation is achieved by utilizing parametric efficient influence functions for the latent space parameters. We derive oracle error rates for estimating both the shared and individual latent space parameters simultaneously. The method and theory encompasses a wide range of types of edge weights under general exponential family distributions.

Bio: Dr. Yinqiu He is an assistant professor in the department of statistics at the University of Wisconsin-Madison. Her research interests include high-dimensional and large-scale statistical inference, mediation pathway analysis, network analysis, statistical machine learning, and also applications in statistical genetics and genomics and psychometrics. Dr. He received a Ph.D. in Statistics from the University of Michigan-Ann Arbor.

