香港中文大學統計學系
Department of Statistics
THE CHINESE UNIVERSITY OF HONG KONG

SEMINAR

DEPARTMENT OF STATISTICS
THE CHINESE UNIVERSITY OF HONG KONG

Individual-centered partial information networks: from local views to global structure

INVITED SPEAKER

Dr. Rachel Wang
Associate Professor
the School of Mathematics and Statistics
the University of Sydney

TIME

Feb 25th, 2025 (Tue) · 2:30 pm - 3:30 pm

VENUE

LSB LT1 (1/F) · Lady Shaw Building LT1 · CUHK

ABSTRACT

In statistical network analysis, we often assume either the full network is available or multiple subgraphs can be sampled to estimate various global properties of the network. However, in a real social network, individuals frequently make decisions based on their local view of the network alone. Here, we consider a partial information framework that characterizes a local network centered on a given individual by path length L. We focus on the problem of inferring the latent community memberships or positions in the global network using only one of these local networks. First, under the stochastic block model and its degree-corrected variant, we propose new spectral-based community detection algorithms with consistency guarantees. Next, moving onto a more general latent space model with covariate features, we develop an algorithm based on projected gradient descent for estimating the latent positions with rates of convergence. In both cases, the theoretical analysis and numerical results enable us to gain insights into how the structure of each local network affects the individual's viewpoint of the global network.