Seminar

Title：Network Functional Varying Coefficient Model

Speaker：Prof. Yanyuan Ma（馬彥源教授）

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Time：10:30 AM~12:00 PM, Monday, Feb 13, 2023

Place：Auditorium, B1F, Institute of Statistical Science

Abstract

We consider functional responses with network dependence observed for each individual at irregular time points. To model both the inter-individual dependence as well as within-individual dynamic correlation, we propose a network functional varying coefficient (NFVC) model. The response of each individual is characterized by a linear combination of responses from its connected nodes and its own exogenous covariates. All the model coefficients are allowed to be time dependent. The NFVC model adds to the richness of both the classical network autoregression model and the functional regression models. To overcome the complexity caused by the network inter-dependence, we devise a special nonparametric least squares type estimator, which is feasible when the responses are observed at irregular time points for different individuals. The estimator takes advantage of the sparsity of the network structure to reduce the computational burden. To further conduct the functional principal component analysis, a novel within-individual covariance function estimation method is proposed and studied. Theoretical properties of our estimators are analyzed, which involve techniques related to empirical processes, nonparametrics, functional data analysis and various concentration inequalities. We analyze a social network data to illustrate the powerfulness of the proposed procedure.

※Online live streaming through Cisco Webex will be available.

※ The tea reception will be held at 10:10.