BIOSTATISTICS SEMINAR

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Network Functional Varying Coecient Model

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 coecient (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 coecients 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 dierent 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.

October 28, 2021 **133 Rosenau Hall** **3:30-4:30 PM**

Zoom Link:
https://unc.zoom.us/j/93545206596?pwd=N1lKeVZjSFhuM2lhSDJCWjN3c21BUT09
Meeting ID: 935 4520 6596 Passcode: 823321

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