Special Colloquium

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Identifiability of Restricted Latent Class Models with Binary Responses

Abstract:
Statistical latent class models are widely used in social and psychological researches, yet it is often difficult to establish the identifiability of the model parameters. This talk will focus on a class of restricted latent class models with binary responses. This class of models have recently gained great interests in psychological and educational measurement, psychiatry and many other research areas, where a classification-based decision needs to be made about an individuals latent traits, based on his or her observed responses. The model parameters are usually restricted via a pre-specified matrix to reflect the diagnostic assumptions on the latent traits. In this talk, I will first give an introduction to such restricted latent class models, followed by discussions on key issues and challenges. I will then present some fundamental identifiability results and specify which types of the restriction matrices would ensure the estimability of the model parameters. These identifiability conditions not only lead to the consistency and asymptotic normality of the maximum likelihood estimators, but also provide a guideline for the related experimental design, whereas in the current applications the design is usually experience based and identifiability may not be guaranteed.

Host: Lily Xu

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