

2022년 제 14회 통계세미나

고려대학교 통계연구소와 BK21 통계학교육연구팀, 그리고 DS+가 다음과 같이 공동으로 세미나를 개최하오니 많은 참여 바랍니다.

일시 : 2022년 11월 4일(금) 오전 10시 40분

장소 : 고려대학교 정경관 508호

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Probabilistic Graphical Models for Multiomics

<Abstract>

Integrative network modeling of data arising from multiple genomic platforms provides insight into the holistic picture of the interactive system, as well as the flow of information across many disease domains including cancer. The basic data structure consists of a sequence of hierarchically ordered datasets for each individual subject, which facilitates integration of diverse inputs, such as genomic, transcriptomic, and proteomic data. A primary analytical task in such contexts is to model the layered architecture of networks where the vertices can be naturally partitioned into ordered layers, dictated by multiple platforms, and exhibit both undirected and directed relationships.

The holistic characterization of the dependencies in the multi-layered data has been performed via chain graph model framework that includes both undirected networks within-layer and directed network across layers. In the talk, I will give a brief introduction of probabilistic models for undirected and directed graphs. Moving to the multilayered data, I will introduce the concept of multilayered Gaussian graphical models (mlGGMs) that are chain graph models under the Gaussian assumption, and our recently proposed method, Bayesian node-wise selection (BANS) framework that coherently accounts for the multiple types of dependencies in mlGGM in a neighborhood selection framework.

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