Biostatistics Unit – Scientific Seminar

Bayesian Finite Mixture of Regression Analysis for Cancer Based on Histopathological Imaging-Environment Interactions

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Zoom:
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Abstract
Cancer is a heterogeneous disease. Finite mixture of regression (FMR)—as an important heterogeneity analysis technique when an outcome variable is present—has been extensively employed in cancer research, revealing important differences in the associations between a cancer outcome/phenotype and covariates. Cancer FMR analysis has been based on clinical, demographic, and omics variables. A relatively recent and alternative source of data comes from histopathological images. Motivated by the significance of cancer FMR analysis and a still strong demand for more effective methods, this talk explores the natural next step of conducting cancer FMR analysis based on models that incorporate low-dimensional clinical/demographic/environmental variables, high-dimensional imaging features, as well as their interactions. Complementary to many of the existing studies, a Bayesian approach for accommodating high dimensionality, screening out noises, identifying signals, and respecting the “main effects, interactions” variable selection hierarchy will be presented.