

Prof. Guan-Hua Huang / Institute of Statistics

Latent Variable Analysis, Statistical Genetics, Biostatistics, Big Data Analytics

Statistical Methodology and Theory

1. Our primary research focuses on methodological development of latent variable models. We have developed a very flexible latent class model, theory and practical methods for selecting the number of underlying variable categories, an alternative two-stage optimization-based approach to model fitting, and a Bayesian framework to perform the joint estimation of the number of latent classes and model parameters.
2. We also work on genetic analysis studies, including: developing a formal statistical methodology for validating endophenotypes (Figure 1), analysis of gene expression microarray data (Figure 2), genotype imputation with different reference panels, Bayesian clustering approach for detecting gene-gene interactions in high-dimensional genotype data, and detecting copy number variations from next generation sequencing data.

Collaboration and Consultation

1. The Beaver Dam Offspring Study (University of Wisconsin-Madison).
2. Health evaluation for Taiwanese elderly hospitalized patients (National Taiwan University)
3. Patient subgroups of schizophrenia (National Taiwan University Hospital)
4. Components-dependency based process parameters mining for equipment data (Industrial Technology Research Institute) (Figure 3)

