

Editorial

The 2011 Institute of Mathematical Statistics-China (IMS-China) Conference was held in Xi'an, China. Following the success of the first Special Issue published for the 2009 IMS-China Conference, a team of Guest Editors put in effort to collect the papers that were either presented at the conference or closely related to the presented topics. The topics cover a wide range addressing primarily the interface between statistics and substantive sciences. Some articles were invited by the Guest Editors and some were through regular submissions. In both cases, all submissions were rigorously refereed, mostly managed by the Guest Editors. The number of submissions exceeds the size of a regular issue for our journal, and hence the articles will be published in two issues, roughly by the topics. This issue publishes several clusters of the articles on regression analysis of cross-sectional and longitudinal data, clustering analysis, statistical methods for genetic and imaging data, sensitivity in survey design, and graphical models.

Nummi, Pan and Mesue proposed an exact F-test in a semiparametric model to test for the linearity of functional relationship between the response and a covariate. Yu and Liang applied nonlinear mixed-effects models (NLME) to estimate parameters in the Perelson's HIV dynamic model, a system of mechanism-based ordinary differential equations (ODE), in which the model parameters and the baseline cell counts of infected CD4+ are estimated simultaneously. Pan, Nummi and Liu utilized the inverse probability weighted generalized estimating equation (WGEE) method to derive valid statistical estimation and inference in the framework of joint mean-covariance models for longitudinal data with MAR dropouts. Song, Pan, and Ip proposed an interesting class of latent curve models, termed as the generalized latent curve mixture models, to analyze longitudinal data with heterogeneous individual trajectories. Dong, Yu, and Sun discussed robust variations of kernel inverse regression to avoid sensitivity to outliers for finding linear combinations of the predictor that contain all the relevant information for regression.

Another cluster of papers pertains to the new development in clustering analysis. Wu considered a very interesting problem of collusion set detection by using the quasi hidden Markov model. Zhang and Zhu proposed a cluster detection algorithm to identify irregularly shaped clusters in space. A multi-scale test statistic based on the likelihood ratio statistic is proposed and a neighborhood variability measure is used to select the optimal test threshold. Their method can be applied for cluster detection of large scale spatial data.

Analysis of genomic and genetic data has attracted a great deal of attention in statistics and biomedical research. The permutation procedure proposed by Westfall and Young (1993) is revisited by Rempala and Yang for the analysis of gene expression data. The authors proposed a new notion of partial strong control and showed that the Westfall-Young's method is valid under the new notion. Guo, Ji, Wang, Zhang, and Zhong address a classic issue on culture transmission in twin and family studies. Liu proposed a penalized regression method to account for linkage disequilibrium in genome-wide association studies. Imaging analysis is another area of great importance in biomedical research. Silwal, Wang, and Maldonado assessed random-noise contamination in digital images by testing on Wavelet coefficients.

The paper by Liu and Tian focuses on sensitive questions in survey design. They proposed a new non-randomized response design based on a multi-category parallel model, which is shown to gain an improved degree of privacy protection.

Wang and Guo introduced some junction trees in graphical models, investigated their basic properties, and proposed an algorithm for finding the leaves in those trees.

Lastly and importantly, we thank the enthusiastic support by all authors and referees. The dedication of the referees has enabled us to conduct timely and thorough reviews of all submissions.

Guest Editors: Yufeng Liu, Peter Song, and Hui Zou
Editor-in-Chief: Heping Zhang