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Major Research Interests: **Generalized Linear Mixed Models, Mixture Models, Survival Analysis, Statistical Diagnostics, Robust Estimation,**

Other Interests: **Multivariate Analysis, Statistical Quality Control**

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I am generally interested in the development of statistical methods with applications to scientific problems in the areas of medicine, epidemiology, public health and quality management.

My current work includes:

a) Development of robust estimation in a finite mixture of GLMMs

The heterogeneity in clustered count data arising from latent subpopulations is a challengeable problem in statistical modeling. A finite mixture of GLMMs model, which combines GLMMs with a mixture regression setting, is proposed for analyzing clustered count data in this situation. We have developed (1) influence assessments of a few clusters or subjects on the model performance using statistical diagnostics, and (2) robust estimation in a finite mixture of GLMMs via minimum Hellinger distance and other robust methods to improve the efficiency of the model.

b) Statistical process control in industrial management

We develop statistical methods for monitoring processes with multiple stages based on an engineering model, and a statistical monitoring procedure for detecting mean shifts in autocorrelated processes with count outputs in order to reduce the false alarm rate of the traditional control charts and the cost of process monitoring.

c) Modelling the heterogeneity in transaction frequency data in real estate finance

We apply the ZIP model and long term survival mixture model techniques to shed light on the specification of transaction frequency modelling in real estate market.

Selected Publications

Xiang, L., Yau, K.K.W., Lee, A.H. and Hui, Y.V. (2008) Minimum Hellinger Distance Estimation for k-Component Poisson Mixture Model with Random Effects. *Biometrics* 64, 508-518.

Xiang, L. and Tsung, F. Statistical Monitoring of Multistage Processes Based on Engineering Models. *IIE Transactions*, in press.

Xiang, L., Yau, K.K.W., Tse, S.K and Lee, A.H. (2007) Influence Diagnostics for Random Effect Survival Models: Application to a Recurrent Infection Study for Kidney patients on Portable Dialysis. *Computational Statistics and Data Analysis* 52, 5977-5993.

Xiang, L., Yau, K.K.W., Lee, A.H. and McLachlan, G.J. (2007) A Score Test for Overdispersion in Zero-inflated Poisson Mixed Regression Models. *Statistics in Medicine* 26, 1608-1622.

Xiang, L. and Tse, S.K. (2005) Maximum Likelihood Estimation in Survival Studies Under Progressive Interval Censoring with Random Removals. *Journal of Biopharmaceutical Statistics* 15, 981-991.

Lee, A.H., **Xiang, L.** and Fung, W.K. (2004) Sensitivity of Score Tests for Zero-Inflation in Count Data. *Statistics in Medicine* 23, 2757-2769.