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Major Research Interests:

Developmental Toxicity Analysis
Clustered/Longitudinal Data Analysis
Mixed Effects Model
Kernel Smoothing
Survey Methodology

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Statistical science has come a long way since the early days when the emphasis was on linear models for independent univariate data. With the development of technology, we have to deal with multivariate, dependent and non-linear data nowadays. I am quite interested in the generalizations of these three aspects. I proposed methodologies and analyzed correlated multivariate binary data in my PhD research with particular applications to the developmental toxicity studies. In my postdoctoral research, I further concentrated on the general correlated data analysis. I studied the random effect and transformation models for clustered data. These results can be applied to the biological and medical studies as well as the survey methodology like the small area estimation. Prediction of the random effects and the robust analysis of the data with multiple levels of variations are under investigation. Another aspect of my current research is to extend the class of general linear mixed models to allow for various exponential family forms of non-Gaussian response in the sense that we are dealing with non-linear data.

Selected Publications:

- Pang, Z. and Welsh, A. H. (2007). Maximum likelihood inference of clustered survey data. The 56th International Statistical Institute Session, Lisboa, Portugal.
- Pang, Z. and Kuk, A. Y. C. (2007). Test of marginal compatibility and smoothing methods for exchangeable binary data with unequal cluster sizes. *Biometrics*, **63**, 218-227.
- Pang, Z. and Kuk, A. Y. C. (2005). A shared response model for clustered binary data in developmental toxicity studies. *Biometrics*, **61**, 1076-1084