McMASTER UNIVERSITY

GRADUATE PROGRAM IN STATISTICS

STATISTICS SEMINAR

Speaker: Dr. Peter X.-K. Song, Department of Statistics and Actuarial Science, University of Waterloo

Title: *"Nonparametric Statistics: Some New Challenges and Promises in Medical and Biological Applications"*

Day: Tuesday January 18, 2005

Time: 3:30 - 4:30 PM

Place: HH/217 – Deloitte Colloquium Room (Refreshments in HH/216 at 3:00 PM)

SUMMARY

In this talk I will present some case studies that I have been recently involved with, in which various nonparametric techniques were applied to analyze data arising from medical, public health sciences and bioinformatics. In these real world problems, nonparametric statistics provides an amazing arsenal enabling me to conduct novel data analyses in clinical trials, epidemiology, genetics and bioinformatics. Through several data analysis examples, I hope to address some new challenges in the traditional theory and methods of nonparametric statistics, and then to provide my insights on how to deal with these challenges. Issues to be discussed include modeling time-varying drug treatment efficacy, logistic regression analysis of pooling data, smoothing techniques for detecting origins of DNA replication, and ANOVA *F*-test in microarray experiments.

REEFERENCES

1. Gao, X & Song, PXK (2005) "Nonparametric Tests for Differential Gene Expression and Interaction Effects in Multi-Factorial Microarray Experiments," to appear in *Informatics*.
2. Lin, H & Song, PXK (2003) "Varying-Coefficient Marginal Models and Applications in Longitudinal data Analysis," submitted for publication.
3. Song, PXK, Gao, X, Liu, R & Le, W (2004) "Nonparametric Inference for Local-Extrema with Application to Oligonucleotide Microarray Data in Yeast Genome," submitted for publication.

ABOUT THE SPEAKER: Dr. Peter X.-K. Song is an Associate Professor in the Department of Statistics and Actuarial Science at University of Waterloo. Previously he was a faculty member in the Department of Mathematics and Statistics at York University from 1996 to 2004 and a Visiting Associate Professor of Biostatistics in the School of Public Health, University of Michigan at Ann Arbor, from 2002 to 2003. Song obtained his PhD in Statistics from UBC in 1996. He is an active researcher and mentor, with interests in the areas of bioinformatics, genetics, generalized linear models, longitudinal data analysis, missing data in clinical trials, statistical computing and time series analysis. Song was the Program Chair for the Seventh North American New Researchers Conference held in August 2004 in Toronto.

For more information, please contact Román Viveros at (905) 525-9140 ext. 23425, e-mail: *rviveros@math.mcmaster.ca*
http://icarus.math.mcmaster.ca/rviveros/StatsSem.html