

For favour of posting

DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Seminar

Dr. Jeffrey S. MORRIS

Department of Biostatistics
Division of Quantitative Sciences
The University of Texas MD Anderson Cancer Center
Houston, U.S.A.

will give a talk

entitled

**AUTOMATED, ROBUST ANALYSIS OF FUNCTIONAL AND
QUANTITATIVE IMAGE DATA USING FUNCTIONAL MIXED
MODELS AND ISOMORPHIC BASIS-SPACE MODELING**

Abstract

In this talk, I will describe flexible new automated methods to analyze functional and quantitative image data. The methods are based on functional mixed models, a framework that can simultaneously model multiple factors and account for correlation within and between the functions. We use an isomorphic basis-space approach to fitting the model, which leads to efficient calculations and adaptive smoothing yet flexibly accommodates the complex features characterizing these data. The method is automated and produces inferential plots indicating regions of the function or image associated with each factor, simultaneously considering practical and statistical significance, and controlling the false discovery rate. We discuss both a Gaussian and robust version of the method. The robust approach is able to accommodate outlying curves or regions of curves, down-weighting their effect. Our simulation studies show that this robust approach yields adaptive estimation and inference that can remove spurious local features induced by outliers while retaining true features characterizing the signal. The approach is robust enough to model data with extremely heavy tails (e.g. Cauchy), and yet still performs well when the data are in fact Gaussian. These methods are applicable to any functional or quantitative image data sampled on a fine grid, including many types of high-throughput genomic and proteomic data. We present results applying these methods to MALDI-TOF and 2D gel proteomic data.

on

Tuesday, July 13, 2010

2:00 p.m. – 3:00 p.m.

at

**Room 524, Meng Wah Complex
(behind the Chong Yuet Ming Amenities Centre)**

Visitors Please Note that the University has limited parking space. If you are driving please call the Department at 2859 2466 for parking arrangement.

All interested are welcome