



Statistical Sciences
UNIVERSITY OF TORONTO

SEMINAR

January 28, 2016 at 1:30pm

Refreshments will be provided at 1:15pm

Sidney Smith Hall, Room 2128

Speaker: Dehan Kong, University of North Carolina

Host: Jamie Stafford

High-dimensional Matrix Linear Regression Model

We develop a high-dimensional matrix linear regression model (HMLRM) to correlate matrix responses with high-dimensional scalar covariates when coefficient matrices have low-rank structures. We propose a fast and efficient screening procedure based on the spectral norm to deal with the case that the dimension of scalar covariates is ultra-high. We develop an efficient estimation procedure based on the nuclear norm regularization, which explicitly borrows the matrix structure of coefficient matrices. We systematically investigate various theoretical properties of our estimators, including estimation consistency, rank consistency, and the sure independence screening property under HMLRM. We examine the finite-sample performance of our methods using simulations and a large-scale imaging genetic dataset collected by the Alzheimer's Disease Neuroimaging Initiative study.