



McGill

Department of
Epidemiology
And Occupational
Health

Department of
Diagnostic Radiology

Joint Biostatistics & Radiology Seminar Winter 2018

SPECIAL SEMINAR



Sahir Bhatnagar,
PhD Candidate
in Biostatistics,
Department of Epidemiology,
Biostatistics and Occupational Health

Betting on Sparsity

Thursday, March 1, 2018
10:30 am – 11:30 am
Purvis Hall - Room 24

ALL ARE WELCOME

Abstract:

Accurate prediction and understanding which variables improve that prediction are two very challenging and overlapping problems in the analysis of high-dimensional data, such as those arising in genomic and neuroimaging studies. By assuming the number of important predictors is small relative to the total number of variables, we can estimate an interpretable model that can yield more stable predictions. In this context, I start with a brief overview of sparse modeling and a toy example illustrating their utility. I then introduce our methodological developments in the context of dimension reduction and variable selection for high-dimensional-exposure interaction models. Our method is motivated by the fact that diseases are now thought to be the result of changes in entire biological networks whose states are affected by a complex interaction of genetic and environmental factors. Understanding these environmental effects are crucial because they can lead to ways to intervene. I then conclude with an application of our method to the Alzheimer's Disease Neuroimaging Initiative to identify interactions of amyloid beta levels and the APOE gene on mental health state.

Bio:

Sahir is currently a Biostatistics PhD candidate in the Department of Epidemiology, Biostatistics and Occupational Health at McGill. He holds a Bachelors in Actuarial Mathematics (Concordia) and a Masters in Biostatistics (Queen's). He recently completed a research term at the Wellcome Trust Sanger Institute in Cambridge, UK as a Queen Elizabeth II scholar. He is broadly interested in developing statistical methods and writing software for analyzing high-dimensional data using penalized regression methods. For more information visit <http://sahirbhatnagar.com/>