

NYU Stern School of Business
Department of Information, Operations & Management Sciences
STATISTICS RESEARCH SEMINAR

TOPIC: A new approach to sparse PCA

SPEAKER: Vincent Vu (Ohio State University)

DATE: Friday, October 3, 2014

TIME: 11:30 AM - 12:30 PM

PLACE: KMC 4-80

Abstract

Sparse PCA is a type of methodology for simultaneous dimension reduction and variable selection in high-dimensional data analysis. It has attracted much attention over the past 10 years, but there have been few theoretical insights until recently. This talk will report some recent developments in sparse PCA with a special focus on subspace estimation. The results include minimax rates of estimation and a new convex relaxation based on a semidefinite program called Fantope Projection and Selection (FPS). FPS can be computed efficiently by alternating direction method of multipliers and it has near-optimal statistical properties. A key tenet of the new methodology is that sparse PCA should be viewed as projection matrix estimation problem. The utility of this viewpoint will be demonstrated with an application to a text mining problem.

Bio

Vince Vu is an Assistant Professor of Statistics at The Ohio State University. His research focuses on statistical machine learning, high-dimensional inference, and applications in neuroscience. Previously, he was a postdoctoral fellow at Carnegie Mellon University after obtaining his Ph.D. in Statistics from the University of California, Berkeley in 2009. He was a recipient of the National Science Foundation Mathematical Sciences Postdoctoral Fellowship and has won the best paper award at the Artificial Intelligence and Statistics (AISTATS) conference in 2012. Once upon a time he was a software engineer in Silicon Valley so his work is highly motivated by the desire to combine statistical theory and computation to solve real-world problems.