Stanford University  
Department of Statistics

DEPARTMENTAL SEMINAR

4:30pm, Tuesday, May 31, 2016

Sloan Mathematics Building 380 Room 380C

Cookies served at 4pm, Sequoia Hall 1st floor Lounge.

Speaker:  Ping Li  
Departments of Statistics and Computer Science,  
Rutgers University

Title:  A Competitor of Random Fourier Features

Abstract:

The radial basis function (RBF) kernel is a standard tool in statistics and machine learning. To scale up the kernel computation, the method of random Fourier features is a very popular approach for approximating the RBF kernel using (randomized) linear kernel. In this talk, we introduce an alternative named “generalized min-max” (GMM) kernel, which provides a more robust measure of data similarity, compared to the sample correlation. A randomization algorithm called “generalized consistent weighted sampling” (GCWS) can effectively convert this nonlinear GMM kernel into linear kernel. Interestingly, GCWS typically requires substantially fewer samples than RFF, in order to achieve comparable accuracies. This phenomenon can be largely explained by the theoretical variance of RFF, which contains a constant term that does not vanish unless the sample size is very large. Extensive classification experiments based on 50 publicly available datasets confirm the superb performance of GCWS.

About this Speaker:  BioPing Li is an Associate Professor in the Department of Statistics and the Department of Computer Science at Rutgers University, USA. Ping Li received his Ph.D. in Statistics from Stanford University, where he also earned two masters’ degrees in Computer Science and Electrical Engineering. Ping Li is a recipient of the Air Force Office of Scientific Research Young Investigator Award (AFOSR-YIP) and a receipt of the Office of Naval Research Young Investigator Award (ONR-YIP). Ping Li (with co-authors) won the Best Paper Award in NIPS 2014, the Best Paper Award in ASONAM 2014, and the Best Student Paper Award in KDD 2006.