Stanford University
Department of Statistics

Departmental Seminar

*** Extra Seminar ***

4:30pm, Thursday, January 18, 2018
Sloan Mathematics Center Room 380Y

Refreshments served at 4pm in Sequoia Lounge.

Speaker: Anderson Ye Zhang
Department of Statistics,
Yale University

Title: Mean Field Variational Inference: Computational and Statistical Guarantees

Abstract:

The mean field variational inference is widely used in statistics and machine learning to approximate posterior distributions. Despite its popularity, there exist remarkably little fundamental theoretical justifications. The success of variational inference mainly lies in its iterative algorithm, which, to the best of our knowledge, has never been investigated for any high-dimensional or complex model. In this talk, we establish computational and statistical guarantees of mean field variational inference. Using community detection problem as a test case, we show that its iterative algorithm has a linear convergence to the optimal statistical accuracy within log n iterations. We are optimistic to go beyond community detection and to understand mean field under a general class of latent variable models. In addition, the technique we develop can be extended to analyzing Expectation-maximization and Gibbs sampler.