STANFORD UNIVERSITY
DEPARTMENT OF STATISTICS
DEPARTMENTAL SEMINAR

4:15 p.m., Tuesday, January 15th, 2008
Sequoia Hall Room 200
(Cookies at 3:45 in 1st Floor Lounge)

Inchi Hu
Department of Information and Systems Management
Hong Kong University of Science and Technology, Hong Kong, China

The coupling spline model and stochastic approximation

The seminal work of Robbins and Monro (1951) brought into being a sequential nonparametric procedure to find the root of a regression function. The nonparametric nature of Robbins-Monro scheme allows broad applicability but also causes slower convergence. This talk introduces a new semi-parametric model and an algorithm to generate a sequence of approximations to the root. The simulation study demonstrates computational efficiency and faster convergence of the proposed method. With moderate sample sizes, the method is as accurate as the optimal Robbins-Monro procedure in the linear case. In a few nonlinear examples, it is 10 to over 1000 times more accurate as measured by mean square error. We then apply the algorithm to compute MLE in some spatial models and generalized linear mixed models and report some encouraging results.