Statistics Seminar Series

Session 2, 2009

James Flegal

University of California, Riverside

Batch Means and Spectral Variance Estimators in Markov Chain Monte Carlo

Calculating a Monte Carlo standard error (MCSE) is an important step in the statistical analysis of the simulation output obtained from a Markov chain Monte Carlo experiment. For example, it can be used to provide a rigorous method for terminating the simulation. An MCSE is usually based on an estimate of the variance of the asymptotic normal distribution. We consider spectral and batch means methods for estimating this variance. In particular, we establish conditions which guarantee that these estimators are strongly consistent as the simulation effort increases. In addition, for the batch means and overlapping batch means methods we establish conditions ensuring consistency in the mean-square sense which in turn allows us to calculate the optimal batch size up to a constant of proportionality. Finally, we examine the empirical finite-sample properties of spectral variance and batch means estimators and provide recommendations for practitioners.

About the speaker: Dr James Flegal is Assistant Professor in Statistics at the University of California, Riverside. He received his Ph.D. from the School of Statistics at the University of Minnesotta. His research interests include statistical computing, Markov chain Monte Carlo, subsampling, and evaluating Monte Carlo standard errors.

Time: 4pm, Friday, 21st August
Location: Room RC4082

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