STATISTICS COLLOQUIUM

MONDAY, APRIL 04, 2011
TALK: 4:00 PM - SCIENCE CENTER RM. 309
RECEPTION: 5:15 PM - SCIENCE CENTER, 7TH FLOOR

“When Bayesians Can't Handle the Truth”

Cosma Shalizi
Carnegie Mellon University

ABSTRACT

When should a frequentist expect Bayesian updating to work? There are elegant results on the consistency of Bayesian updating for well-specified models facing IID or Markovian data, but both completely correct models and fully observed states are vanishingly rare. In this talk, I give conditions for posterior convergence that hold when the prior excludes the truth, which may have complex dependencies. The key dynamical assumption is the convergence of time-averaged log likelihoods (Shannon-McMillan-Breiman property). The main statistical assumption is a building into the prior a form of capacity control related to the method of sieves. With these, I derive posterior convergence and a large deviations principle for the posterior, even in infinite-dimensional hypothesis spaces, extending in some cases to the rates of convergence; and clarify role of the prior and of model averaging as regularization devices. Paper:
http://projecteuclid.org/euclid.ejs/1256822130