The University of Chicago

Department of Statistics

Seminar Series

SAMUEL KOU

Department of Statistics
Harvard University

"Equi-energy Sampler: From Statistical Inference to Statistical Mechanics"

MONDAY, January 23, 2005 at 4:00 PM
133 Eckhart Hall, 5734 S. University Avenue
Refreshments following the seminar in Eckhart 110.

ABSTRACT

We introduce a new sampling algorithm, the equi-energy sampler, for efficient statistical sampling and estimation. Complementary to the widely used temperature-domain methods, the equi-energy sampler, utilizing the temperature-energy duality, targets the energy directly. The focus on the energy function not only facilitates efficient sampling, but also provides a powerful means for statistical estimation, for example, the calculation of the density of states and microcanonical averages in statistical mechanics. The equi-energy sampler is applied to a variety of problems, including exponential regression in statistics, motif sampling in computational biology, and protein folding in biophysics.

This work is joint with Qing Zhou and Wing Wong.