

STATISTICS COLLOQUIUM

MONDAY, FEBRUARY 10, 2014

TALK: 4:15 PM — SCIENCE CENTER RM. 705

RECEPTION: 3:50 PM — SCIENCE CENTER, 7TH FLOOR

“Sequential Bayesian Inference and Model Choice for Hidden Markov Models”

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ABSTRACT

We consider the generic problem of performing sequential Bayesian inference in a general hidden Markov model (or state-space model). We explore the applicability of the proposed SMC² algorithm for both sequential and non-sequential problems, with respect to various inferential goals such as parameter inference, latent variable prediction and model choice. A theoretical analysis based on the forgetting properties of hidden Markov models allows to estimate the expected computing time as a function of the size of the dataset. Some algorithmic improvements are also discussed, towards an truly online scheme. Finally, the problem of joint estimation of multiple state space models coupled through some of their state variables is discussed.