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STATISTICS COLLOQUIUM

MONDAY, OCTOBER 26, 2015
TALK: 4:15 PM — SCIENCE CENTER 300H
RECEPTION: 3:50 PM

"Fast Moment-Based Estimation for Hierarchical Models"

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ABSTRACT

Hierarchical models allow for heterogeneous behaviours in a population while simultaneously borrowing estimation strength across all subpopulations. Unfortunately, existing likelihood-based methods for fitting hierarchical models have high computational demands, and these demands have limited their adoption in large-scale prediction and inference problems. This talk proposes a moment-based procedure for estimating the parameters of a hierarchical model which has its roots in a method originally introduced by Cochran in 1937. The method trades statistical efficiency for computational efficiency. It gives consistent parameter estimates, competitive prediction error performance, and substantial computational improvements. When applied to a large-scale recommender system application and compared to a standard maximum likelihood procedure, the method delivers competitive prediction performance while reducing the sequential computation time from hours to minutes.

http://arxiv.org/abs/1504.04941