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CHICAGO

THE COMMITTEE ON
COMPUTATIONAL AND
APPLIED MATHEMATICS

COLLOQUIUM

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Estimating root counts and probability distributions using homotopies

THURSDAY, April 25, at 4:00 PM
Jones 303, 5747 S. Ellis Ave. Chicago, IL 60637

ABSTRACT

A homotopy is a continuous deformation between two objects. In numerical algebraic geometry, homotopies are used to compute roots of systems of equations by deforming from the known roots of another system. Similarly, a homotopy can also be used to track how a probability distribution changes via annealing. This talk will introduce some topics involving homotopies with a particular focus on computing/estimating the total number of roots for a system of polynomial equations and approximating probability densities for variational inference. Examples arising in tensor decomposition, mechanism synthesis, and multimodal distributions will be used to illustrate the computational techniques.

Organizers:

Jeremy Hoskins, Department of Statistics (CAMI), jeremyhoskins@statistics.uchicago.edu & Yuehaw Khoo,
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