



The University of Chicago  
Department of Statistics

MASTER'S THESIS PRESENTATION

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## **Scalable Stochastic Optimization**

**TUESDAY, July 5, 2011, at 11:00 AM**  
110 Eckhart Hall, 5734 S. University Avenue

### **ABSTRACT**

Stochastic optimization is a paradigm for incorporating uncertainty into decision models. We provide a brief introduction to stochastic optimization, and then proceed to present PIPS, a novel hybrid parallel solver for Sample Average Approximation (SAA) problems based on a Schur-complement technique for decomposing structured optimization problems. We developed a specialized parallel factorization procedure for dense Schur-complement systems, together with a streamlined method for assembling such matrices. PIPS is applied to a stochastic economic dispatch problem which has important applications for a future smart grid. Strong scaling efficiency of 96% is obtained on 32 racks (131,072 cores) of the “Intrepid” Blue Gene/P system at Argonne National Laboratory.

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Information about building access for persons with disabilities may be obtained in advance by calling Sandra Romero at 773.702-0541 or by email ([sandra@galton.uchicago.edu](mailto:sandra@galton.uchicago.edu)).