

MANAGEMENT SCIENCE AND ENGINEERING SEMINAR

Monday, February 25, 2008, 4 pm
Terman 217

Refreshments will be served.
Host: Jim Primbs

John Birge

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Graduate School of Business

Title: Estimation effects in large-scale optimization

Abstract:

Increases in computational efficiency lead to the ability to solve ever larger optimization models, but these larger models then require estimation of ever more parameters. In many cases, such as portfolio optimization, the number of these estimates may grow at a greater than linear rate in the number of variables. The result is that the probability of one of more extremely biased estimate within the entire set of estimates may increase rapidly in problem size. Optimization of models with these highly biased estimates may then yield solutions that are far from a true optimum and may even be worse than following simple rules of thumb or vastly simplified models. This talk will describe a model of the effects of estimation errors in optimization models using portfolio optimization and tracking as an example. We will discuss various alternatives for addressing this issue, such as increased sampling, Bayesian views, robust optimization, re-sampling or batching, and model reduction.