STEVENS
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Interior Decomposition Algorithm Using Weighted Barrier and Sparse Grid Scenario Generation in Stochastic Programming

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4:00 pm
Peirce 120

Abstract:

Stochastic programming models are fundamental in modeling situations where data uncertainty is addressed using a future recourse function. We will present a stochastic semi-definite generalization of the two-stage stochastic linear programs. We will present an interior decomposition algorithm for this problem where the barrier function is defined using probability weights. The polynomial iteration complexity of this algorithm is possible by showing that the barrier recourse function is self-concordant. Since scenario generation is a fundamental problem in evaluating the recourse function in stochastic programming, we will adapt the sparse-grid method for scenario generation as an alternative to the Monte-Carlo and Quasi-Monte-Carlo techniques. We will present computational results on several classical portfolio optimization models demonstrating the applicability of developed techniques.

Dr. Mehrotra is a professor of Industrial Engineering and Management Sciences department at Northwestern University. He is known for his predictor-corrector interior point methods and many contributions to computational and algorithmic development in optimization. His research interests include optimization under uncertainty as well as discrete optimization. He is a past vice president of the Institute of Operations Research and Management Science (INFORMS) and a past section chair of linear and cone programming of the INFORMS Optimization Society. He is an associate editor of Operations Research, and a department editor of IIE-Transactions.

Refreshments will be provided.
For more information contact Darinka Dentcheva or call 201-216-5449.