Department of Information and Systems Management
School of Business and Management
The Hong Kong University of Science and Technology

Seminar Announcement

Selected Topics in Robust Optimization: Modeling and Solving Stochastic Optimization Problems under Ambiguous Distributions

by

Professor Melvyn Sim

Department of Decision Science

National University of Singapore

12 October 2007 (Friday)
4:00 – 5:00 pm
Room 3416 (L17/18)

All interested are welcome

Abstract

A typical stochastic programming problem assumes full prior knowledge of the data distributions, which is practically prohibitive. On the other hand, a classical robust optimization model assumes that data uncertainty belongs to an uncertainty set and its solution is optimal under the worst-case scenario that might arise within the uncertainty set. Such worst-case solution can be rather conservative in addressing a stochastic programming problem. Using the descriptive statistics of the uncertain data, such as means, supports, standard deviations, bounds on moment generating functions, we can make a robust optimization model less conservative, while keeping it computationally tractable in the form of SOCP. In this talk, I will show how we can address hard stochastic programming problems under ambiguous distributions including joint chance constrained problems with recourse and multiperiod dynamic optimization problems.

Biography

Dr. Melvyn Sim is currently an Assistant Professor in the Department of Decision Sciences, NUS Business School. He earned his PhD from the Operations Research Center at MIT under the Overseas Graduate Scholarship from the National University of Singapore (NUS). His research interests fall broadly under the categories of decision making and optimization under uncertainty with applications ranging from finance, supply chain management to engineered systems. Dr. Sim is one of the active proponents of Robust Optimization. He was the semi-plenary speaker on Robust Optimization for the second International Conference on Continuous Optimization held in McMaster University, Aug 2007. Together with Professor Aharon Ben-Tal, they conducted the first Robust Optimization Summer School organized by the Institute of Systems Analysis and Computer Science (IASI), Italy, July 2007. Two of his papers on Robust Optimization, "Robust Discrete Optimization" and "Robust Conic Optimization" won second places in the 2002 and 2004 George Nicholson Best Student paper organized by INFORMS. His recent paper, "Satisficing Measures for Analysis of Risky Position", has been chosen as one of the six finalists for the INFORMS Junior Faculty Interest Group (JFIG) Paper Competition, 2007.