Mathematical Programming Series B -- Special Issue on

Stochastic Programming and Distributionally Robust Optimization with Decision-dependent Uncertainty

Outline: Stochastic programming (SP) and distributionally robust optimization (DRO) with decision-dependent, or endogenous, uncertainty constitute an important class of optimization problems that have numerous practical and industrial applications. In the decision-dependent uncertainty setting, (some of) the decision variables in the optimization problem affect the probability space of the stochastic variables, either by altering directly the probability distribution (probabilities, atoms, parameters of distribution, type of distribution, etc.) or by determining the time at which information and uncertainty unfolds. The coupling between decision and random variables poses substantial modeling and computational challenges, which may explain, to some extent, that the literature on such problems is fairly scant as compared to that devoted to SP and DRO problems with exogenous uncertainty. Moreover, existing SP and DRO problems with decision-dependent uncertainty are more often expectation-based, risk-neutral models.

This Mathematical Programming B special issue aims at addressing this gap in the literature and at enticing the SP and DRO community to devote more attention to this class of problems. The objective will be to review, assess, and chart future directions in SP and DRO problems with decision-dependent uncertainty. This special issue will include papers devoted to (exact or approximate) provably computationally efficient modeling, reformulation, and algorithmic methods, as well as to studies dealing with well-motivated and innovative applications where accounting for decision-dependent uncertainty in SP and DRO models is needed. Additionally, papers that have a relation with the primary theme of decision dependent uncertainty will also be considered for inclusion in the special issue.

The participants of the upcoming XVI International Conference Stochastic Programming in Davis, CA (July 24-28, 2023) are invited to submit their research presented at the Conference to this special issue. We will accept and process manuscripts submitted by people other than those attending and presenting at the XVI International Conference Stochastic Programming.

Guest Editors: Miguel Lejeune (George Washington University), Pavlo Krokhmal (University of Arizona), Ward Romeijnders (University of Groningen).

Submission deadline: March 31, 2024