Robust Multiobjective Linear Optimization

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Abstract

In this talk we deal with multi-objective linear programming problems in the face of data uncertainty both in the objective function and the constraints. We first provide a formula for the radius of robust feasibility guaranteeing constraint feasibility for all possible scenarios within a specified uncertainty set under affine data parametrization. We then establish dual characterizations of robust solutions of our model that are immunized against data uncertainty by way of characterizing corresponding solutions of its robust counterpart, and we present robust duality theorems. Besides that, we show numerically tractable optimality conditions for minmax robust weakly efficient solutions, i.e., the weakly efficient solutions of the robust counterpart. We also consider highly robust weakly efficient solutions, i.e., robust feasible solutions which are weakly efficient for any possible instance of the objective matrix within a specified uncertainty set.

References

[1] GOBERNA M.A., JEYAKUMAR V., LI G. & VICENTE-PÉREZ J., Robust solutions of multi-objective linear semi-infinite programs under constraint data uncertainty, *SIAM J. Optim.* **24** (3): 1402–1419, 2014.

[2] GOBERNA M.A., JEYAKUMAR V., LI G. & VICENTE-PÉREZ J., Robust solutions to multi-objective linear programs with uncertain data, *European J. Oper. Res.* **242** (3): 730–743, 2015.

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