

A Primal Perspective on Distributionally Robust Two-Stage Problems with Integer Recourse

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In this talk, we introduce and study a two-stage distributionally two-stage linear problem with integer recourse, where the objective coefficients are random. The random parameters follow the worst-case distribution belonging to a second-order conic representable ambiguity set of probability distributions. We show that the worst-case recourse objective, under various risk measures, can be formulated as a conic program from a primal perspective. This method also provides additional information on the probability of attaining an integer recourse solution, extending the concept of persistency studied in Bertsimas et al. (2006). Unlike the marginal moment sets used in Bertsimas et al. (2006), the second-order conic representable ambiguity sets in our method offer greater flexibility by incorporating more distributional information.

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