

Robust solutions using fuzzy chance constraints

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Abstract-

It is well known that optimization problems for decision-making process in real environments should consider uncertainty to attain robust solutions. Although this uncertainty has been usually modelled using probability theory, assuming a random origin, possibility theory has emerged as an alternative uncertainty model when statistical information is not available, or when imprecision and vagueness have to be considered. This paper proposes two different criteria to obtain robust solutions for linear optimization problems when the objective function coefficients are modelled with possibility distributions. To do so, chance constrained programming is used, leading to equivalent crisp optimization problems, which can be solved by commercial optimization software. A simple case example is presented to illustrate the use of the proposed methodology.

Index Terms- Robustness, Possibility theory, Fuzzy linear programming, Chance constraints

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