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Refinements of the maximum approach to decision-making in a fuzzy environment. (English)

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Summary: The most popular approach to decision-making in the setting of fuzzy sets is the maximin ranking of solutions. This method is natural when interpreting the fuzzy sets as flexible constraints that cannot compensate with one another. However the obtained ranking of solutions is very coarse. Two kinds of refinements to this ordering are introduced: a partial ordering according to the least satisfied discriminating constraint, and a lexicographical ranking. The latter refines the former and combines utilitarian and egalitarian points of view on the aggregation of feasibility degrees. These orderings are characterized in several ways and their representation by means of two-place numerical functions is studied. Dual refinements of the maximax ranking are provided.

MSC:

91B06 Decision theory

03E72 Theory of fuzzy sets, etc.

Cited in **37** Documents

Keywords:

fuzzy constraints; vector maximization; leximin ordering; decision-making; fuzzy sets; maximin ranking; partial ordering; lexicographical ranking

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