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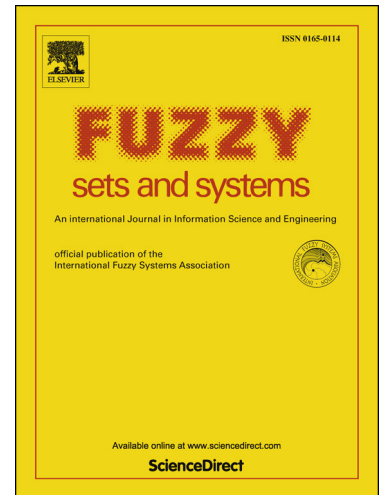
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Monotonicity-based ranking on the basis of multiple partially specified reciprocal relations

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Abstract

The aggregation of rankings is a recurrent task in several fields of application. In a recent work by Rademaker and De Baets, a ranking rule based on a natural monotonicity property was proposed in the context of social choice theory. This rule is built on the premise that, for a ranking $a \succ b \succ c$ to represent a group's opinion, it would be natural that the strength with which $a \succ c$ is supported should not be less than both the strength with which $a \succ b$ and the strength with which $b \succ c$ are supported. A first approach to this ranking rule considering totally specified monotone reciprocal relations on a bipolar qualitative scale has already been taken. In this paper, a more general setting is considered: each voter is allowed to provide a partially specified reciprocal relation (that may not be monotone) on the unit interval. Additionally, new ways of measuring the cost of imposing monotonicity are introduced.

Key words: Social Choice; Group Decision Making; Reciprocal Relation; Ranking Rule; Monotonicity; Monometric.

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