

عنوان مقاله:

An overview of the decision theory

محل انتشار:

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خلاصه مقاله:

A counterpart to von Neumann and Morgenstern' expected utility theory is proposed in the framework of possibility theory. The existence of a utility function, representing a preference ordering among possibility distributions (on the consequences of decision-maker's actions) that satisfies a series of axioms pertaining to decision-maker's behavior, is established. The obtained utility is a generalization of Wald's criterion, which is recovered in case of total ignorance; when ignorance is only partial, the utility takes into account the fact that some situations are more plausible than others. Mathematically, the qualitative utility is nothing but the necessity measure of a fuzzy event in the sense of possibility theory (a so-called Sugeno integral). The possibilistic representation of uncertainty, which only requires a linearly ordered scale, is qualitative in nature. Only max, min and order-reversing operations are used on the scale. The axioms express a risk-averse behavior of the decision maker and correspond to a pessimistic view of what may happen. The proposed qualitative utility function is currently used in flexible constraint satisfaction problems under incomplete information. It can also be used in association with possibilistic logic, which is tailored to reasoning under incomplete states of knowledge.

کلمات کلیدی:

possibility theory " , " decision maker " , " logic

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