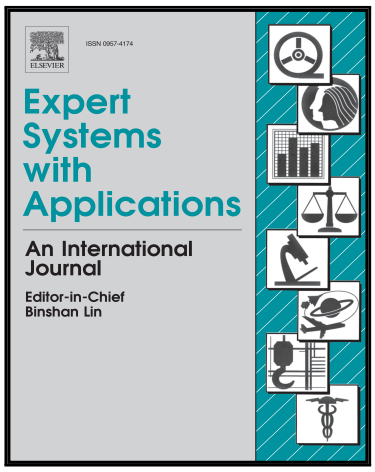

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A better score function for multiple criteria decision making in fuzzy environment with criteria choice under risk

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Abstract

The aim of this paper is to develop a new method for solving multiple criteria decision making (MCDM) problems in fuzzy environment to overcome all the deficiencies observed in the existing methods. For this purpose a weighted geometric aggregation operator (WGAO) and a new score function based on interval valued intuitionistic fuzzy soft set of root type (IVIFSSRT) are defined and some interesting theoretical properties of these tools are established. It is shown that interval valued intuitionistic fuzzy set of root type is a generalization of interval valued intuitionistic fuzzy set. A new method for ranking the alternatives of the MCDM problem based on WGAO and the new score function is presented and an algorithm is developed for this purpose. The working of the algorithm is explained with an example and the efficiency and superiority of the tools and new method are established with the help of a critical comparison study. It is shown that the proposed method works efficiently in solving the MCDM problem in fuzzy environment.

Keywords: Interval valued intuitionistic fuzzy soft set of root type, new weighted geometric aggregation operator, new score function, multiple criteria decision making problem

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