

The Intuitionistic Fuzzy FlowSort Method for Multicriteria Group Decision Making

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ABSTRACT

The real-life problems are multidimensional in nature and may involve some ambiguity when it comes to decision making. It is, therefore, difficult to design the evaluation criteria precisely and determine the exact value of the attributes in the multicriteria analysis. The intuitionistic fuzzy set (IFS) achieved great success in treating this kind of ambiguity in a great deal of research. The study of sorting problems is an active research issue in the multiple criteria decision aid (MCDA) area. This paper investigated one of the sorting methods, FLOWSORT, and extended it to the multicriteria group decision making based on the output aggregation of the individual sorting results. The rating of each alternative was described through linguistic terms that can be expressed in triangular intuitionistic fuzzy numbers. An illustrative example as well as an empirical comparison with other multi-criteria decision-making methods were carried out to validate the extension.

KEYWORDS

FlowSort Method, Intuitionistic Fuzzy Set, Multicriteria Group Decision Making, Sorting Problematic

1. INTRODUCTION

Multi-criteria decision making (MCDM) is considered as an essential part of modern decision science and operational research. It is the process of finding the best compromise among the feasible alternatives. It provides a wide variety of methodologies and techniques that enable the systematic treatment of decision problems under multiple criteria. The MCDA methods can be applied to four different kinds of analyses that can be performed in order to provide significant support to decision-makers (Remadi and Frikha, 2019). These are: (1) the choice of the best alternative, (2) the ranking of the set of the alternatives from the best to the worst, (3) the description of the features of the alternatives and (4) the classification of the alternatives into predefined homogenous groups.

In this paper, we studied the ordinal classification problem, also called sorting problem. It consists to orienting the decision problem to an assignment of alternatives to one of the predefined, ordered and homogenous categories or classes. The class is a set of alternatives with similar properties or even values for the same properties, when compared to the alternatives of the other classes. Multiple methods have been proposed during the previous decades. Among these, we can mention the well-known sorting methods, the ELECTRE-TRI (Shen et al. 2016), the THESEUS (Fernandez and Avarro, 2011), etc. Relying on the PROMETHEE (Brans et al. 1984) methodology, several authors proposed

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Intuitionistic Fuzzy Multicriteria Group Decision Making:

Whispering the Techniques of Language: An Mental Journey through **Intuitionistic Fuzzy Multicriteria Group Decision Making**

In a digitally-driven world where monitors reign great and instant transmission drowns out the subtleties of language, the profound techniques and mental subtleties concealed within phrases usually get unheard. However, situated within the pages of **Intuitionistic Fuzzy Multicriteria Group Decision Making** a fascinating literary treasure pulsing with fresh emotions, lies a fantastic quest waiting to be undertaken. Written by an experienced wordsmith, that wonderful opus attracts visitors on an introspective journey, delicately unraveling the veiled truths and profound affect resonating within ab muscles fabric of each word. Within the mental depths of this touching review, we shall embark upon a heartfelt exploration of the book is core themes, dissect their charming writing fashion, and succumb to the effective resonance it evokes heavy within the recesses of readers hearts.

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