

A Study on Distance - Similarity Measures of Intuitionistic Fuzzy Sets and its Applications

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ABSTRACT

Intuitionistic fuzzy sets (IFS) provide a mathematical framework for dealing with the uncertainty and ambiguity associated with decision-making. The study meticulously scrutinizes existing similarity measures, offering a detailed overview before introducing and discussing several innovative measures. According to our numerical simulation results, the measures that have been proposed are well suited for the management of logistics and supply chains. The findings attest to their efficacy in fostering swift and accurate decision-making, thereby mitigating the risk of economic losses and instability. Through numerical comparisons, it is possible to determine the effectiveness of the proposed distance and similarity measures over the existing measures in the intuitive fuzzy environment as compared to the suggested measures. This comparative insight serves as a compass for decision-makers seeking optimal solutions amid uncertain conditions. Finally, we demonstrate the application of the suggested measures in patterns recognition, medical diagnosis, and the formulation of multicriteria decision making based on the results obtained.

Keywords: Intuitionistic fuzzy sets, Distance & Similarity measures, Pattern recognition and Multi Criteria Decision Making.

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