Abstract

In the present paper, a new entropy of order $a$ and type $\beta$ on Interval-Valued Intuitionistic Fuzzy Sets (IVIFSs) along with their proofs of validity is proposed. It has been proved that the proposed entropy has monotonic decreasing behavior with respect to $a$ and $\beta$. Further, a new algorithm for multiple attribute decision making method (MADM) has been provided using the benefit attributes and cost attribute weights on the proposed entropy, where the alternatives on attributes are expressed by interval-valued intuitionistic fuzzy sets (IVIFS). The information about attribute weight is unknown. Finally, numerical example for illustrating the proposed methodology has also been provided to illustrate the applicability and validity of the newly proposed method.

**Index Terms**

Computer Science  
Fuzzy Systems

**Keywords**

Interval valued intuitionistic fuzzy set (IVIFS)  
entropy  
multi attribute decision making (MADM)