

基于三角直觉模糊数Choquet积分算子的多属性决策方法

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Multi-attribute Decision Making based on Triangular Intuitionistic Fuzzy Number Choquet Integral Operator

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摘要 定义了三角直觉模糊数的Hamming距离, 给出了属性独立情形下的三角直觉模糊数算术集成算子, 并运用模糊测度和Choquet积分, 定义了三角直觉模糊Choquet积分算子, 并分析其有关性质。针对方案评价信息为三角直觉模糊数的关联多属性决策问题, 利用三角直觉模糊Choquet积分算子集成得到方案的综合属性值, 建立多目标优化模型并转化为线性目标规划求解, 客观地确定了属性集的模糊测度, 进而提出了相应的决策方法。实例分析表明了方法的有效性和合理性。

关键词: 多属性决策 三角直觉模糊数 Choquet积分 关联 集成算子

Abstract: In this paper, the Hamming distance between the triangular intuitionistic fuzzy numbers is defined. The triangular intuitionistic fuzzy arithmetic aggregation operators are developed under the independence of attributes. Combining the fuzzy measure and Choquet integral, the triangular intuitionistic fuzzy Choquet integral aggregation operator is defined. Some desirable properties for this operator are investigated. What's more, for the interactive multiple attribute decision-making problem in which the evaluation information for the alternatives is expressed with the triangular intuitionistic fuzzy numbers, the overall attribute value of alternative is integrated by the triangular intuitionistic fuzzy Choquet integral aggregation operator. The multi-objective programming model is constructed and transformed into linear object programming to solve. The fuzzy measures of the attribute set are objectively derived. The corresponding decision making method is then proposed. The example analysis shows the effectiveness and reasonability of the method.

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