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基于分式规划的区间直觉梯形模糊数多属性决策方法

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Multi-attribute decision making method based on inter-valued trapezoidal intuitionistic fuzzy number

摘要　　　　图/表　　　　参考文献(13)　　　相关文章 (0)

全文: PDF (143 KB)　　HTML (1 KB)

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摘要

针对属性值为区间梯形直觉模糊且属性权重为区间数的多属性决策问题, 提出一种基于分式规划的决策方法. 定义了区间梯形直觉模糊数的Hamming 距离和Euclidean 距离, 采用优劣解距离法构建了相对贴近度的非线性分式规划模型, 并通过Charnes and Cooper 变换转化为线性规划模型求解, 得到各方案相对贴近度的区间数, 进而提出了决策方法. 数值算例分析验证了所提出方法的有效性.

关键词 ：多属性决策；区间梯形直觉模糊数；分式规划；Hamming 距离；Euclidean 距离

Abstract :

For the problem of multi-attribute decision making, in which the attribute values are the interval-valued trapezoidal intuitionistic fuzzy numbers and the weights of attributes are intervals, a decision making method is proposed based on
fractional programming. Hamming and Euclidean distances for interval-valued trapezoidal intuitionistic fuzzy numbers are
defined. By using the TOPSIS(technique for order preference by similarity to an ideal solution), the models of non-linear
fractional programming for alternative's relative closeness are built. Through the Charnes and Cooper transformations, these
non-linear models are transformed into linear programming models. The interval of alternative's relative closeness is obtained
by solving these linear programming models, and the method of decision making is given. The numerical example analysis
shows the effectiveness of the method.

Key words : multi-attribute decision making ; interval-valued trapezoidal intuitionistic fuzzy number ; fractional programming ; Hamming distance ; Euclidean distance

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