论文与技术报告

区间数模糊c均值聚类中相对位置相异度的研究

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摘要：

区间数模糊c均值聚类方法中，区间数距离公式存在无法描述区间数之间相对位置的问题，针对该问题，本文分析了该问题产生原因，提出了相对位置相异度公式，并将该相异度公式应用于区间数模糊c均值聚类中。理论分析说明相对位置相异度公式能定量描述区间数之间相异程度，还能描述区间数之间相对位置。仿真实验结果表明，相对于基于现有区间数距离公式的区间数模糊c均值聚类，基于相对位置相异度的区间数模糊c均值聚类方法具有更好的聚类效果。同时，给出了相对位置相异度公式中参数选择标准。

关键词： 不确定数据；区间数；区间数距离；模糊c均值聚类

Research on Relative Position Dissimilarity in Interval-data Fuzzy C-Means Clustering

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Abstract:

This paper discussed the problem that various distances in the interval-data fuzzy c-means clustering method (labeled IFCM) can't represent the relative position of interval data, and proposed the relative position dissimilarity. The relative position dissimilarity is constructed based on the fact that the differential value between distance of midpoint of interval data and sum of the half length of interval data could reflect the relative position of interval data. And the relative position dissimilarity satisfies the conditions: 1) it decreases as the decrease of the differential value; 2) it decreases as the increase of the sum of interval data length. In theory, the relative position dissimilarity depicts the difference of the interval data in quantity and the relative position of interval data. Meanwhile, the relative position dissimilarity was applied in the IFCM clustering method, which called as IFCM-RPD clustering method. Experimental results show that the IFCM-RPD clustering method has better clustering effect. As well, selection criteria of the parameters in the relative position dissimilarity are given.

Keywords: uncertain data   interval data   interval data distance   fuzzy c-means clustering

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