

论文

基于划分子集的属性约简算法

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摘要:

Pawlak提出的基于属性重要度的约简算法是常用的算法之一,它通过计算等价关系对论域划分的粒度来度量属性的重要度。但用该算法计算每一个属性的重要度时,都要计算不同等价关系对整个论域的划分,计算复杂度非常高。受决策树划分子集思想的启发,对基于属性重要度的属性约简算法进行了改进,提出了一种基于划分子集的属性约简算法。在核属性集形成划分的基础上,通过在核属性中添加非核属性从而形成更细的划分,如此反复。在保持正域不变的框架下,形成最细化分的属性集就是一个约简。理论分析显示该算法减少了求属性约简的计算时间复杂度,提高了求属性约简的效率。

关键词: 粗糙集 属性约简 计算复杂度 划分子集 信息系统

An attribute reduction algorithm based on partition subset

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Abstract:

Based on the degree of significance of the attribute, the attribute reduction algorithm proposed by Pawlak is one of the commonly used algorithms, which measure the degree of significance of the attribute by calculating the granularity of the equivalence relation. However, the computational complexity of this algorithm which calculates the degree of significance of every attribute is very high due to computing the partition of different equivalence relation on whole university. Motivated by the idea of set partition in decision tree methods, an attribute reduction algorithm based on set partition was proposed which could improve the attribute reduction algorithm based on the significance of attributes. The basic idea of the proposed algorithm was to calculate the new partition iteratively by adding a no core attribute to the core attribute set using the partition induced by the core attribute set. In the framework of keeping the positive region of decision attribute invariant, the attribute set with the most refined partition was an attribute reduct. Theoretical analyses showed that the algorithm could reduce the computational time complexity for calculating the attribute reduction,thereby the efficiency can be improved.

Keywords: rough sets attribute reduction computational complexity partition subset information system

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