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一种基于知识颗粒的高效完备属性约简算法

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摘要: 为获取高效算法, 结合Rough集和粒计算理论, 基于知识颗粒设计出获取等价类的算法及计算正区域的等价算法, 使用动态SQL语句直接获取已排序的对象集, 省略类似算法必需的排序算法, 降低了实现的复杂度。给出一种增量式的属性约简算法, 设计5种选择属性的新启发策略供算法使用, 可避免无用属性入选, 更有效去除可省属性及缩减搜索空间等, 确保约简算法的完备性, 简化了中间步骤, 从而保证算法的高效性。理论分析及实验结果表明: 采用该约简算法的时间复杂度和实际求解时间均比采用现有算法的时间复杂度和实际求解时间低, 并能更好地适应海量数据集的挖掘。

关键字: 粒计算; 粗糙集; 属性约简; 启发策略

An efficient and complete attribute reduction algorithm based on knowledge granular

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Abstract: To gain an ideal algorithm, based on the theories of rough set and granular computing, the basic algorithms of indiscernibility relation and computing positive region were designed, in which dynamic SQL was used to directly get the sorted object sets so that the sort algorithm was left out. Thus an incremental efficient algorithm for reduction of attributes was proposed, and several heuristic strategies were designed to select attributes to avoid useless attributes selected, wipe off attributes that can be omitted more efficiently and reduce the search space etc, which assured the completeness and simplified the mid result so as to ensure the efficiency. The theoretical analysis and experimental results show that the reduction algorithm is more efficient than the existing ones and more adaptive to very large databases.

Key words: granular computing; rough set; attribution reduction; heuristic strategy

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