

基于关系逻辑的大数据处理研究

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摘 要: 提高系统运算速度是解决大数据问题的有效途径, 而从原始数值层进行高性能运算是解决这个问题最直接方法. 提出一种基于速度、功能、资源和连线的可编程部件优化设计方法, 将同类格式的数据运算归并为一类关系, 以函数的约束列出输入对应输出的运算关系逻辑表, 表的每列示一级位域; 表的行示由函数确定的运算数据集. 根据逻辑关系, 采用位域、邻域和全域运算的三个逻辑层次获得输出数值的逻辑表达式; 对数量或位长不同的数据变化情况, 具有差时可控功能. 给出了累加和判定两种关系的设计方法并且将其应用于大数据地址变换和挖掘分析.

关键词: 大数据; 关系逻辑; 可编程部件; 一体化设计; 粗糙集; 决策表

Research on Big Data Processing Based on Relational Logic

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Abstract: Improving the speed of system operation is an effective way to solve the problem of Big data, and the most direct method is to perform high performance computing from the original value layer. The method of optimization design is proposed based on the speed, function, resources and the connection of the programmable components, the operations in the same format are merged into a class of relation, the relation table on the input corresponding to the output data is listed as a function of the constraint, each column shows the a bit field and the data in the rows is determined by the function. According to the relationship, the logical expression of the output value is obtained using a domain, neighbourhood, global operations, differential time control can achieve for the number or bit length of different data changes. The design methods of two logic relations with accumulation and decision are given and it is applied to address transform and mining analysis on Big data.

Key words: big data; relational logic; PLD; integrated design; rough set; decision table

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