**Abstract**

Association rule mining is one of the important problems of data mining. Single minimum support based approaches of association rule mining suffers from "rare item problem". An improved approach MSApriori uses multiple supports to generate association rules that consider rare item sets. Necessity to first identify the "large" set of items contained in the input dataset to generate association rules results in high storage and processing time requirement. The proposed work overcomes this drawback by storing items and their support values as total support tree data structure, resulting in an algorithm that is more efficient than existing algorithm both in terms of memory requirement as well as in processing time.

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Index Terms

Computer Science
Artificial Intelligence

Keywords

Msaopriori Algorithm Total Support Tree Data Structure Association Rule Mining Data Mining
MSApriori using Total Support Tree Data Structure