Abstract

There are many data mining techniques for finding association rules with the predefined minimum support from transaction databases. However, common problems with existing approaches are that an appropriate minimum support is difficult to determine and that the derived rules convey common-sense knowledge. Mining association rules without minimum support threshold is an important approximation of the association rule mining problem, which has been recently proposed[1]. In this approach rules are generated based on logical implications and hence fewer and more meaningful rules called coherent rules are reported. An algorithm named ChSearch, is proposed to mine coherent rules for the user specified itemset. In this paper, the same problem is studied with two additional improvements. First, Apriori-based algorithm, namely ECARM for mining all coherent rules is proposed. Second to
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speed up time consuming candidate generation process an efficient pruning strategy is introduced. The proposed method generates coherent rules in shorter average execution times and fewer database scans, and thereby reduce great amount of I/O time per database scan and hence scaled to large databases. The method has been evaluated using both synthetic and real datasets, and the experimental results demonstrate its effectiveness and efficiency.

References


**Index Terms**

Computer Science  
Data Mining

**Keywords**

Association Rules  
Minimum Support threshold  
Coherent Rules  
Preposition logic