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Abstract
With the growth of electronic information such as transaction records, documents and etc, various data accumulated rapidly and hugely. By the development of information technology, data mining become more and more important for predictions and decisions making in various commercial purposes, and associate rules mining is one of the most important technologies in data mining.

In this thesis, we propose a real-time frequent patterns mining algorithm called GDP(Gradationally Differentiating Process). This algorithm is combined the advantages of FP-Growth and GRA, so it can mining frequent patterns in real time efficiently. There are three mechanisms to speed up the performance.

The first mechanism we propose is a new decomposition method which can avoid decomposing the similar records. Next, the second mechanism is a new prune method which can prune nodes of GDP-Tree produced according to the result of previous mining process. And the third mechanism is a differentiating process method. It can outputs the frequent itemsets immediately before the end of mining process and detects whether there is any frequent itemset and terminates the mining process early, so we can speed up the performance in every mining step.
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