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Abstract
Recently, the application of Global Positioning System (GPS) in the mobile devices for navigation has become more and more popular. If we collect and store these navigation data that used by each user, it may generate the path sequence databases. Moreover, we can extract much useful information and knowledge by analyzing these data in the path sequence databases.
Most of the shortest-path planning of the GPS related productions is simply to find the shortest path between the starting and the terminal point. However, this kind of shortest path may be not the best one. The drivers that were familiar with paths and situations of the journey would choose the best path of the journey by their experiences on the roads.
Aiming at the problem above, this paper proposes PP-mine-P and PP-mine-W two algorithms for mining the fittingly shortest path from GPS navigation data. In terms of the concept and method of data mining, these two algorithms use the threshold value to filter the paths which had rarely been passed. These algorithms will build the tree structure to store the paths sequence data and mine the path by traversing the tree. Besides mining the basic shortest path, these two algorithms could mine the conditional path which included or excluded the specific positions that were specified by user. Furthermore, the PP-mine-P algorithm will only need one-time access of database, and the PP-mine-W algorithm will only need two-time access of database. Thus, these algorithms will avoid the disadvantages of too many times of input and output of the hardware.
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