GIS-based最短路徑演算法之改良與測試分析

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摘要

The Shortest Path Algorithm (SPA) is a very important element and tool for solving various network optimization problems. The network analysis objects are frequently applied on the Geographic Information System (GIS), which provides many functions to storage, display, and process spatial data. Therefore, the effect of the GIS-based SPA influences the performance of GIS network analysis. This paper aims to integrate the Dijkstra's algorithm and the two-tree algorithm with the A* method, and to test the efficiency of previous GIS-based shortest path algorithms by computational experiments. There are two road networks, the Taiwan map and the Taipei map, for generating 68 testing instances under different geographic scenarios. Experimental results imply that the two-tree algorithm performs better than other algorithms, and consumes reasonable computer CPU time.

關鍵字： shortest path algorithms; GIS; network analysis objects