MINI PROJECT

PROJECT SYNOPSIS
of
PARALLEL IMPLEMENTATION OF DJIKSTRA'S ALGORITHM TO INVESTIGATE NATIONAL CITY TRAFFIC

ABSTRACT: In the intelligent transportation system, the calculation of the shortest path and the best path is an important link of the vehicle navigation procedure. Due to more and more real-time information to participate in the calculation, the calculation requires high efficiency of the algorithm. One of the many common algorithms in solving the shortest path problem is Dijkstra's algorithm. The algorithm has its advantages on both reducing the number of repeated operations and reading the shortest path and the path length from the startpoint to all the other nodes by the shortest path tree or by the feature matrix. In this paper, we show that the parallel implementation of Djikstra's algorithm, which is based on the message passing interface, provides better efficiency and better speedup when compared to the algorithm's sequential execution.

INPUT: A N x N cost matrix that indicates the cost incurred to go from one node to another, wherein N indicates the number nodes in the graph.

OUTPUT:
- A path array that will tell the least-cost path that should be taken when we want to go from a source vertex to a destination vertex.
- The total cost incurred when using the path above. This cost will be the least cost.
- The time taken for the entire code to run.
- The efficiency provided by the parallel implementation of the code.

REFERENCES:
- An Investigation of Dijkstra and Floyd Algorithms in National City Traffic Advisory Procedures - Arun Kumar Sangaiah, Minghao Han, Suzi Zhang.
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