Abstract

The essential elements of any network application system uses shortest-path algorithm mostly for problems of network namely routing, viz. When seen in the light of the basic requirement of such a system, to provide high quality path identification or routing solutions fast, algorithms have to be efficient. There are many speedup techniques and combined speedup techniques available which find shortest path efficiently in networks. Also parallelization is incorporated in some of the speedup techniques, where the performance is monitored in multicore processors. This paper deals with comparison of parallelized speedup techniques with sequential version of the same and finding performance improvement achieved in parallelized speedup techniques with respect to runtime and number of vertices visited during shortest path computation. The techniques were tested in random and planar types of graph networks, which may be suitable for networks of the same type. Performance of parallelization has good impact of speedup in random graph type of networks (45% to 90% with respect to runtime and 25% to 830% with respect to vertices visited) than planar graph type of networks.
Performance Analysis of Parallel Speedup Techniques for Shortest Path Queries in Networks of Random and Planar Types


- Reinhard Bauer, Daniel Delling, Peter Sanders, Dennis Schieferdecker, Dominik Schultes, & Dorothea Wagner. (2010) Combining hierarchical and goal-directed
speed-up techniques for Dijkstra’s algorithm, ACM Journal of Experimental Algorithmics, Vol. 15, Article No. 3.

- The OpenMP - API specification for parallel programming, available at http://www.openmp.org

**Index Terms**

Computer Science

Algorithms
Keywords
Dijkstra's Algorithm  Shortest Path Computation  Speedup Techniques  Parallel Speedup.