Abstract

Parallelizing an algorithm can boost its effectivity and running speed compared with serial algorithm. A shortest path problem, especially one that involve a large scale graph, can also be done by a parallel algorithm. There are two famous shortest path algorithm, the greedy Dijkstra and dynamic Bellman-Ford. Dijkstra is harder to parallelize but had faster execution time, while Bellman-Ford is easier to parallelize but relatifly slow to run. To further improve their performance, graph data used is stored in Compact Sparse Row format, the algorithm's designed to partition data needed in efficient way and to minimize communication among processors.

Keywords: *parallel, shortest path, graph, Dijkstra algorithm, Bellman-Ford Algorithm, performance, Compact Sparse Row.*