Abstract

Large Graph algorithms like Breadth-First Search (BFS), Depth-First Search (DFS), shortest path algorithms etc. used frequently in various engineering and real-world applications that demand execution of these algorithms in large graphs having millions of edges and sequential implementation of these algorithms takes a large amount of time. Today’s Graphics Processing Units (GPUs) provide a platform to implement such applications with high computation power and massively multithreaded architecture at low price. In this paper, we present parallel implementations of two basic graph algorithms breadth-first search and Dijkstra’s single source shortest path algorithm by using a new approach called edge based kernel execution on GPU. The performance analysis of parallel implementation over the serial execution gives a good speed-up.

References

- Ashok Jagannathan. Applications of Shortest Path Algorithms to VLSI Chip Layout

Index Terms

Computer Science

Algorithms
Keywords
SSSP (Single Source Shortest Path) problem  Dijkstra's algorithm  BFS (Breadth -First Search)
CUDA (Compute Unified Device Architecture) model
GPU(Graphic Processing Unit)