CSE4014 - High Performance Computing (Project Review 1)

CUDA Implementation of Dijkstra's Algorithm

GROUP MEMBERS

15BCE0076 - Vignesh Vaidyanathan

15BCE0082 - Voleti Ravi

15BCE0093 - Samudra Borkakoti

ABSTRACT

Dijkstra's algorithm is an algorithm for finding the shortest paths between nodes in a graph, which may represent, for example, road networks. The algorithm exists in many variants; Dijkstra's original variant found the shortest path between two nodes, but a more common variant fixes a single node as the "source" node and finds shortest paths from the source to all other nodes in the graph, producing a shortest-path tree.

In this project, we present different implementations of Dijkstra's Algorithm with comparisons in performance between them. The implementations are:

1. Serial C
2. OpenMP
3. CUDA

SOFTWARES

Python, Jupyter, Conda, Tensorflow, Numpy, Pandas