

Parallel and Concurrent Programming Project

Parallel algorithms

Problem statement

Minimum Spanning Tree (MST) algorithms are fundamental in graph theory and have applications in various domains, including network design, transportation planning, and data clustering. As graphs continue to grow in size and complexity, the need for efficient MST algorithms that leverage parallel computing resources becomes increasingly critical.

The primary objective of this course project is to develop and evaluate parallelized versions of MST algorithms and compare their performance.

Solution Direction

The three widely used MST algorithms are:

- 1. Prim's algorithm**
- 2. Kruskal's algorithm**
- 3. Boruvka's algorithm**

Our project objective is to write parallel versions of these algorithms and compare their performances like:

1. no. of threads vs Time
2. no. of nodes vs Time
3. Graph complexity (no. of edges) vs Time
4. Speedup and efficiency analysis

The dataset http://opsahl.co.uk/tnet/datasets/USairport_2010.txt is used to compare performance of the algorithms.

Team Members

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