Parallel Topological Sorting

Design of High Performance Computing, Fall 2015

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Problem Description

Input Directed acyclic graph (DAG) with N nodes

Output Topological Sortings of DAG

"Efficient" Parallel and Distributed Topological Sort Algorithms

- Runtime: $\mathcal{O}(\log^2 N)$
- Reduces to matrix-matrix multiplication problem

Problem:

$\mathcal{O}(N^3)$ execution units required

Parallelization Ideas

- ¡++¿

Challenges

- Task/Load balancing

Questions

- Which platform?
- Memory distribution?