Parallel Graph Coloring

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The problem of graph coloring is a fundamental problem in computer science. The goal is to assign colors to the vertices of a graph such that no two adjacent vertices share the same color. This problem has applications in various fields, including scheduling, register allocation, and frequency assignment.

In this paper, we consider the parallel graph coloring problem, which is to find a coloring for a graph using the minimum number of colors. A parallel algorithm is designed to solve this problem, taking advantage of the parallel processing capabilities of modern computer systems.

The algorithm is based on a divide-and-conquer strategy, where the graph is divided into smaller subgraphs, and each subgraph is colored independently. The results are then combined to obtain a global coloring.

The performance of the algorithm is evaluated using a parallel computing framework, MPI. The results show that the algorithm is efficient and scalable, achieving good speedup on large graphs.

In conclusion, the parallel graph coloring algorithm presented in this paper provides an effective solution to the problem, with applications in various fields of computer science.


