Abstract

Advancement in computer architecture leads to parallelize the sequential algorithm to exploit the concurrency provided by multiple core on single chip. Sequential programs do not gain performance from multicore. For multicore architectures, OPENMP and MPI are application programming interfaces. They can be used for parallelization of codes. For shared memory architecture OPENMP is used, whereas for distributed memory architecture MPI is used. In this paper, analysis of the performance of parallel algorithm over sequential algorithm is done. In particular, Graph Isomorphism problem based on vertex invariants is considered and parallelized using OpenMP. We demonstrate the performance of Graph Isomorphism using variable size graphs and parallelize it using vertical tiling technique on multicore architecture. Our previous work shows, sequential implementation of modified algorithm based on vertex invariants using Euclidian vector performs better than existing algorithm of Graph Isomorphism based on vertex invariants. To analyze the performance of parallel implementation, we present practical experiments with randomly generated graphs.
Parallelization of Graph Isomorphism using OpenMP


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Index Terms

Computer Science Programming Languages

Keywords

Graph Isomorphism Vertex Invariant Euclidean vector OpenMP MPI.