Abstract

This paper addresses the problem of static load balancing in heterogeneous distributed computing systems taking into account both memory and communication capacity constraints. The load balancing problem is first modeled as an optimization problem. Then, a heuristic approach, called Adaptive Genetic Algorithm (AGA), is proposed to solve the problem. The
performance of the proposed algorithm is evaluated by simulation studies on randomly generated instances and the results are compared with that obtained by applying both the Genetic Algorithm (GA) and the Simulated Annealing (SA). Also, the qualities of the results are compared with the optimal solutions that obtained by applying the Brach-and-Bound (BB) algorithm.

Reference


Index Terms

Computer Science  
Distributed Systems

Key words

Load Balancing  
Simulated Annealing

Genetic Algorithm

Heuristics

Mapping
Static Workload Distribution of Parallel Applications in Heterogeneous Distributed Computing Systems with Memory and Communication Capacity Constraints