Aline de Paula Nascimento

"Aglomeração de Tarefas em Arquiteturas Paralelas com Memória Distribuída"

This dissertation focuses on the problem of scheduling tasks of a parallel application onto a set of processors of a distributed memory architecture. Since this problem is known to be NP-Complete, many heuristics have been proposed which find good makespans within reasonable computation times. While the problem of scheduling under the delay model has been extensively studied, little research exists for this problem under a more realistic model such as LogP. LogP-type models consider, in addition to latency, the coast of sending and receiving messages , and the network or link capacity. This work studies differences and similarities between task clustering algorithms for the delay and LogP models, and describes a new task sceduling algorithm for the allocation of arbitrary task graphs to fully connected networks of processors under the LogP model. The proposed stategy exploits task clustering and replication of tasks to minimise the effects of communication on the makespan . In aaddition, four basic design issues have been identified, which greatly influence the quality of the solutions generated by clustering algorithms . The quality of the schedules produced by the proposed algorithm compare favorably with two well-known delay model-based algorithms and a previouly exiting LogP strategy.