World Academy of Science, Engineering and Technology
International Journal of Computer and Information Engineering
Vol:11, No:09, 2017

Task Scheduling on Parallel System Using Genetic Algorithm

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Abstract : Scheduling and mapping the application task graph on multiprocessor parallel systems is considered as the most crucial and critical NP-complete problem. Many genetic algorithms have been proposed to solve such problems. In this paper, two genetic approach based algorithms have been designed and developed with or without task duplication. The proposed algorithms work on two fitness functions. The first fitness i.e. task fitness is used to minimize the total finish time of the schedule (schedule length) while the second fitness function i.e. process fitness is concerned with allocating the tasks to the available highly efficient processor from the list of available processors (load balance). Proposed genetic-based algorithms have been experimentally implemented and evaluated with other state-of-art popular and widely used algorithms.

Keywords : parallel computing, task scheduling, task duplication, genetic algorithm
Conference Title : ICCSDCN 2017 : International Conference on Computer Sciences, Data Communication and Networking
Conference Location : Vancouver, Canada
Conference Dates : September 17-18, 2018