Job Scheduling Problem with Fuzzy Neural Network by using the MapReduce Model in a Cloud Environment

Abstract

Cloud computing is a solution for processing large amounts of data. Therefore, Google introduced map reduce as a programming model for large scale data applications in the cloud environment. Map reduce is used for data processing and parallel computing. The Apache Hadoop is an open source implementation of mapreduce. However, job shop scheduling problem (JSSP) is an important issues that is one of the most popular NP hard, it is necessary to find a faster solution for large scale problems. For this purpose, fuzzy neural network must be use to solve this kind of optimization problem. In this paper, we proposed new novel method by using a fuzzy neural network with map reduce model to solve job shop scheduling problem, implementation and results are presented. The experiments of our proposed method are performed for well-known problem instances from job scheduling. The results show our method has high convergence speed and less execution time compared with Genetic algorithm.

References
Job Scheduling Problem with Fuzzy Neural Network by using the MapReduce Model in a Cloud Environment


- Hadoop MapReduce, hadoop.apache.org/mapreduce.
- Huang Di-Wei. and Lin J. 2010. Scaling Populations of a Genetic Algorithm for Job Shop Scheduling Problems using MapReduce, This work was supported in part by the NSF under awards IIS-0836560 and IIS-0916043, and also in part by Google and IBM, via the Academic Cloud Computing Initiative (ACCI).
- Yang, Sh. and Wang, D. 2008. A New Adaptive Neural Network and Heuristics Hybrid Approach for Job-Shop Scheduling, This research was supported by the National Nature Science Foundation (No. 69684005) and National High-Tech Program of P. R. China (No. 863-511-9609-003) and was done when Shengxiang Yang was pursuing his Ph. D. degree.
- Fisher, H. and Thompson, G. L. 1963. Probabilistic learning combinations of local


Index Terms

Computer Science
Artificial Intelligence

Keywords

Cloud Computing  Map Reduce  Fuzzy Neural Network  Job Scheduling.