

A Hybrid Distributed Algorithm for Solving Job Shop Scheduling Problem

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Abstract : In this paper, a distributed hybrid algorithm is proposed for solving the job shop scheduling problem. The suggested method executes different artificial neural networks, heuristics and meta-heuristics simultaneously on more than one machine. The neural networks are used to control the constraints of the problem while the meta-heuristics search the global space and the heuristics are used to prevent the premature convergence. To attain an efficient distributed intelligent method for solving big and distributed job shop scheduling problems, Apache Spark and Hadoop frameworks are used. In the algorithm implementation and design steps, new approaches are applied. Comparison between the proposed algorithm and other efficient algorithms from the literature shows its efficiency, which is able to solve large size problems in short time.

Keywords : distributed algorithms, Apache Spark, Hadoop, job shop scheduling, neural network

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