

A Simulated Annealing Algorithm for Unrelated Parallel-Machine Scheduling Problem with Constrained resources

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ABSTRACT

The study on unrelated parallel-machine scheduling problems has been assuming unconstrained resources. However, the resources in scheduling problems are usually limited in practice. It is well known that most of the unrelated parallel-machine scheduling problems alone are NP-hard. Therefore, utilizing its ability to escape local optimal points, the study applies simulated annealing method and attempts to develop an algorithm for unrelated parallel-machine scheduling problems. The objective considered in this study is to minimize the machines completing time.

In order to evaluate the performance of the proposed algorithm, numerical experiments are conducted and the algorithm is tested on three numerical examples of different sizes, as well as, practical cases. The results show that it performs well compared to simple dispatching rules.

Keyword: Simulation annealing Unrelated parallel-machines Minimum makespan