An approach of Ant Colony algorithm for unrelated parallel machine scheduling

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ABSTRACT

In this research, an unrelated parallel machine scheduling problem with the objective of minimizing total flow time is addressed. A practical restriction sequence dependent setup times is taken into consideration. Two kinds of Ant Colony Optimization (ACO) based heuristics are proposed for solving the addressed problems. For those two heuristics, one is based on the traditional ACO concepts called ACO1; the other one modifies the ACO1 called ACO2. The experimental results shown that ACO2 is outperform ACO1. Meanwhile the ACO2 heuristic also makes performance comparisons with some well known algorithms, Simulated Annealing (SA) and Tabu Search (TS) in various of manufacturing environments. Computational results show that the ACO2 performs well with respect to solution quality and efficiency.

Keywords : Unrelated Parallel Machine ; Flow Time ; Dependent Setup Time ; Ant Colony Optimization ; Simulated Annealing ; Tabu Search

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