An Approach of Flowshop Scheduling with Identical Parallel Machine Consideration

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ABSTRACT

In this research, an identical parallel machine flowshop scheduling problem in which the dependent setup time is taken into account is considered with minimization of total flowtime. The addressed flowshop scheduling problem is more complex than the traditional flowshop scheduling problems since in the addressed flowshop scheduling problem both machine assignment and job sequencing problems are considered simultaneously. To solve the addressed problem two different solving models are developed. First, a 0-1 integer programming model is constructed; however, the mathematical model is too time consuming to solve the medium or large size problem, thus, a hybrid heuristic which is combined with simulated annealing and tabu search is proposed to get an near optimal schedule in a reasonable computation time. During the research, the parameters used in the heuristics that affect the solution quality and efficiency are analyzed and designed; then for the constructed heuristic, a good parameter setting is suggested. The experimental results are reported, and provided for the references for the further research

Keywords : Identical parallel machine ; Flowshop ; Dependent setup time ; Total flowtime ; Simulated annealing

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