The Application of Combined Simulated Annealing and Tabu Search in FMS Scheduling

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ABSTRACT

In this research, two heuristic algorithms are presented to deal with the Flexible Manufacturing System (FMS) scheduling problems with the due date constraints, which minimize the mean tardiness of the system.The approach is studied from four phases. First, for the mean tardiness criterion, a job-oriented heuristic (JOH) is constructed to solve the addressed FMS scheduling problem. An experiment is designed to check the solution quality and efficiency among the designed algorithms and another heuristics, which are presented by some paper and shown good performance in the FMS scheduling. Following, two near optimal solution technique known as Simulated Annealing and Tabu Search are studied; then new combined heuristics call SATS and TSSA are developed to improve the performance quality. Third, using the factorial design to analyze the factors that are effected the performance of the two new algorithms significantly. Finally, the performance of the designed algorithm will be compared with some heuristics. Through the statistical analysis to show the superior of the constructed heuristics.Keyword: FMS, scheduling, Tabu Search, Simulated Annealing, Heuristic, minimum mean tardiness.

Keywords : FMS ; Scheduling ; Tabu Search ; Simulated Annealing ; Heuristic ; Minimum Mean Tardiness

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