

A particle swarm optimization for multi-objective flowshop scheduling

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Abstract

The academic approach of single-objective flowshop scheduling has been extended to multiple objectives to meet the requirements of realistic manufacturing systems. Many algorithms have been developed to search for optimal or near-optimal solutions due to the computational cost of determining exact solutions. This paper provides a particle swarm optimization-based multi-objective algorithm for flowshop scheduling. The proposed evolutionary algorithm searches the Pareto optimal solution for objectives by considering the makespan, mean flow time, and machine idle time. The algorithm was tested on benchmark problems to evaluate its performance. The results show that the modified particle swarm optimization algorithm performed better in terms of searching quality and efficiency than other traditional heuristics.

Keyword : PSO - Multi-objective - Flowshop scheduling - Pareto optimal