A Study of Lot-Streaming in Two-Stage Flow-Shop with Parallel Machine

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ABSTRACT

Lot streaming has been widely implemented in a number of production system and shown favorable results; but still there is space of development. In this research, we study the multi-job lot streaming problem which setup time and transportation time is considered in two stage flowshop with parallel machine. The objective is to minimize the makespan. First, a 0-1 integer programming model is constructed; however, the mathematical model is too much time consuming to solve the medium or large size problem. We propose two heuristic algorithms to get a near optimal schedule in a reasonable computation time. One is that particle swarm optimization based heuristic another one is combined with genetic algorithm and particle swarm optimization that two kinds are performed in heuristics. During the research, the parameters used in the heuristics that affect the solution quality and efficiency are designed and analyzed; then for the constructed heuristics, a good parameter setting is suggested. The experimental results are reported and provided for the references for the further research.

Keywords : Two-stage flow-shop system ; Lot streaming ; Particle swarm optimization (PSO) ; Hybrid genetic algorithm (HGA)

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