Minimizing Cost on Non-identical Parallel Machines Using a Hybrid Metaheuristic Method

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In this paper the problem of scheduling of n jobs on m non-identical parallel machines is considered. All jobs can be processed on all machines and the processing time and cost of each job depend on the machine on which the job is performed. Job cannot be split or divided and all jobs are available at time zero. The goal is to minimize cost which is composed of two parts: earliness-tardiness cost and production cost. The problem is formulated as a MILP model. A hybrid method based on simulated annealing and genetic algorithm is proposed to solve this problem. After parameter tuning of the algorithm, the proposed algorithm was tested on different combinations of jobs and machines and the results were compared with those obtained by genetic algorithm.