

A Hybrid Tabu Search Algorithm for the Multi-Objective Job Shop Scheduling Problems

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Abstract : In this paper, a hybrid Tabu Search (TS) algorithm is suggested for the multi-objective job shop scheduling problems (MO-JSSPs). The algorithm integrates several shifting bottleneck based neighborhood structures with the Giffler & Thompson algorithm, which improve efficiency of the search. Diversification and intensification are provided with local and global left shift algorithms application and also new semi-active, active, and non-delay schedules creation. The suggested algorithm is tested in the MO-JSSPs benchmarks from the literature based on the Pareto optimality concept. Different performances criteria are used for the multi-objective algorithm evaluation. The proposed algorithm is able to find the Pareto solutions of the test problems in shorter time than other algorithm of the literature.

Keywords : tabu search, heuristics, job shop scheduling, multi-objective optimization, Pareto optimality

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