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Authors: Bing Wang, Xiaozhi Wang, Fengming Lan, Quanke Pan



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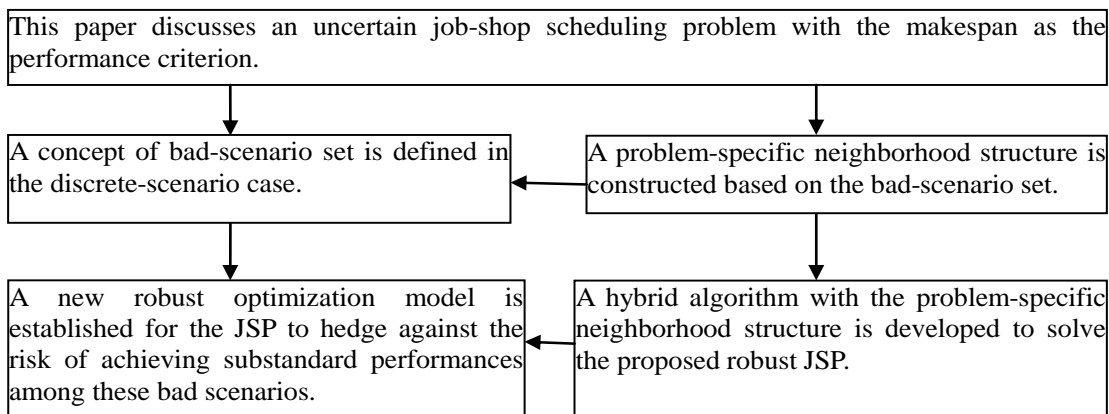
A Hybrid Local-search Algorithm for Robust Job-shop Scheduling under Scenarios

Bing Wang^{*a}, Xiaozhi Wang^b, Fengming Lan^a, Quanke Pan^a

a. School of Mechatronic Engineering and Automation, Shanghai University, Shanghai 200072, China

b. School of Information Science Technology, East China Normal University, Shanghai 200241, China

Graphical abstract



The Graphical Abstract

Highlights

- We propose a new robust scheduling model for uncertain job shop scheduling to hedge against the risk of performance degradation on a set of bad scenarios.
- A neighborhood structure is constructed by uniting multiple single-scenario neighborhoods to handle the uncertainty described by scenarios.
- A hybrid algorithm with the united-scenario neighborhood structure is developed to solve the proposed robust job shop scheduling problem.
- The hybrid algorithm has the simulated annealing search mechanism with the tabu technique applied in the local search of neighborhood.

Abstract: This paper discusses an uncertain job-shop scheduling problem with the makespan as the performance criterion. Uncertain processing times are described by discrete scenarios. A robust optimization model is established for the job-shop scheduling problem based on a set of bad scenarios to hedge against the risk of achieving substandard performances among these bad scenarios. To solve the established problem, a problem-specific neighborhood structure is constructed by uniting multiple single-scenario neighborhoods.

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