

عنوان مقاله:

Multi-objective Differential Evolution for the Flow Shop Scheduling Problem with a Modified Learning Effect

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خلاصه مقاله:

This paper proposes an effective multi-objective differential evolution algorithm (MDES) to solve a permutation flow shop scheduling problem (PFSSP) with the modified Dejong's learning effect. The proposed algorithm combines the basic differential evolution (DE) with local search and borrows the selection operator from NSGA-II to improve the general performance. First the problem is encoded with an appropriate rule to make the continuous nature of DE suitable for flow shop problems. Second, insert based local search is added in the initialization stage, as well as in each iteration to speed up convergence. The former guarantees that the algorithm commences with better solutions while the latter focuses the algorithm on promising areas. Third, in each generation, in order to improve diversity, two populations are introduced, current pop and advanced pop. The best solutions of each iteration are stored in the current pop, while the less than desirable solutions are added to the advanced pop. At the end of each generation, the two are combined and better individuals are selected for the next generation. The algorithm is then tested on benchmark problems to demonstrate its effectiveness and the results are discussed. Finally, a truncated version of Dejong's learning effect is proposed and MDES is used to solve the permutation flow shop with the modified learning effect

کلمات کلیدی:

Differential Evolution Multi-Objective Scheduling Flow shop Truncated Dejong's Learning Effect

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