



Modelling a Novel Multi-Objective Open-Shop Scheduling Problem and Solving by a Scatter Search Method

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Keywords

Open shop scheduling problems,
Tardiness and earliness time,
Makespan, Setup cost, NSGA-II,
Multi-objective scatter search

ABSTRACT

This paper proposes a novel, multi-objective integer programming model for an open-shop scheduling problem (OSSP). Three objectives are to minimize the makespan, total job tardiness and earliness, and total jobs setup cost. Due the complexity to solve such a hard problem, we develop a meta-heuristic algorithm based on multi-objective scatter search (MOSS), and a number of test problems are solved by this proposed algorithm. Finally, to prove its efficiency, the related results are compared with the results obtained by the well-known multi-objective evolutionary algorithm, called NSGA-II. The results confirm the efficiency and the effectiveness of our proposed MOSS to provide good solutions, especially for medium and large-sized problems.

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NP-hard

NSGA-II

NSGA-II

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NSGA-II [19].

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NSGA-II

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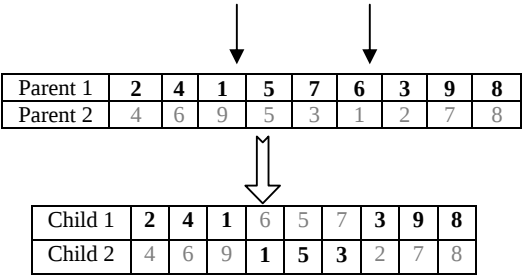
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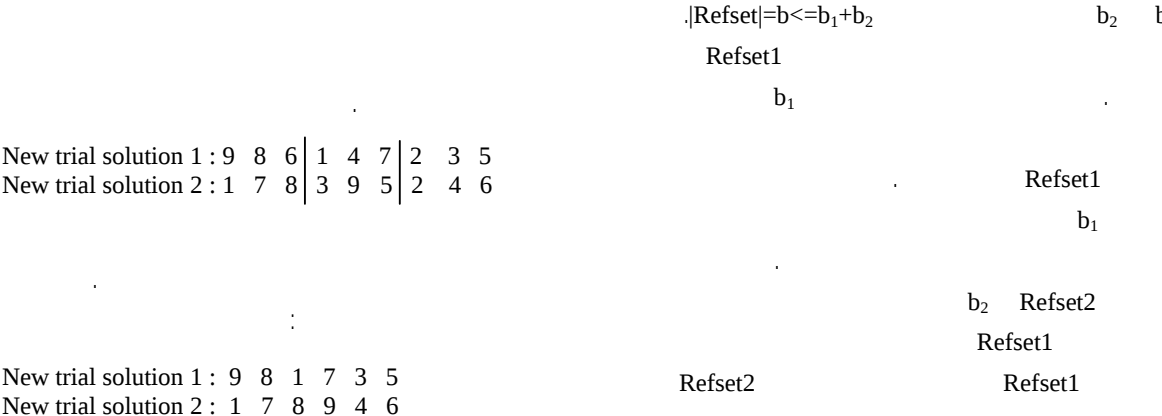
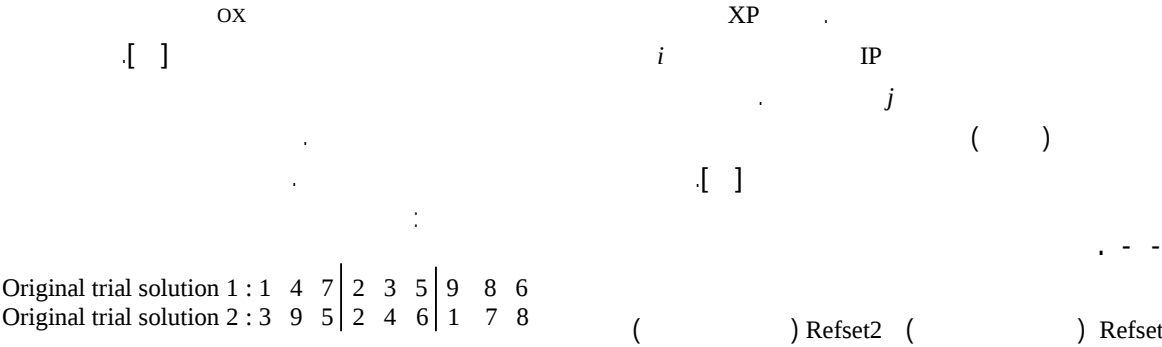
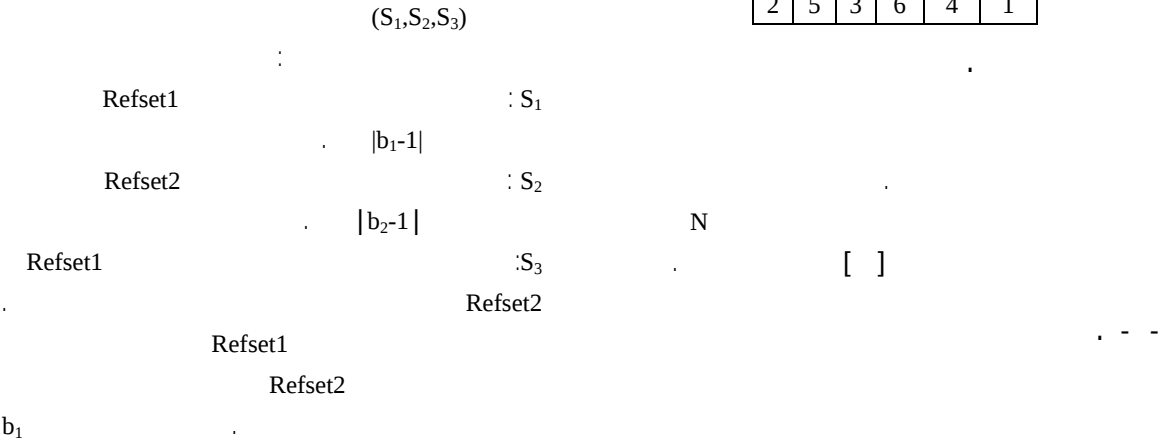
4	2	6	3	1	5
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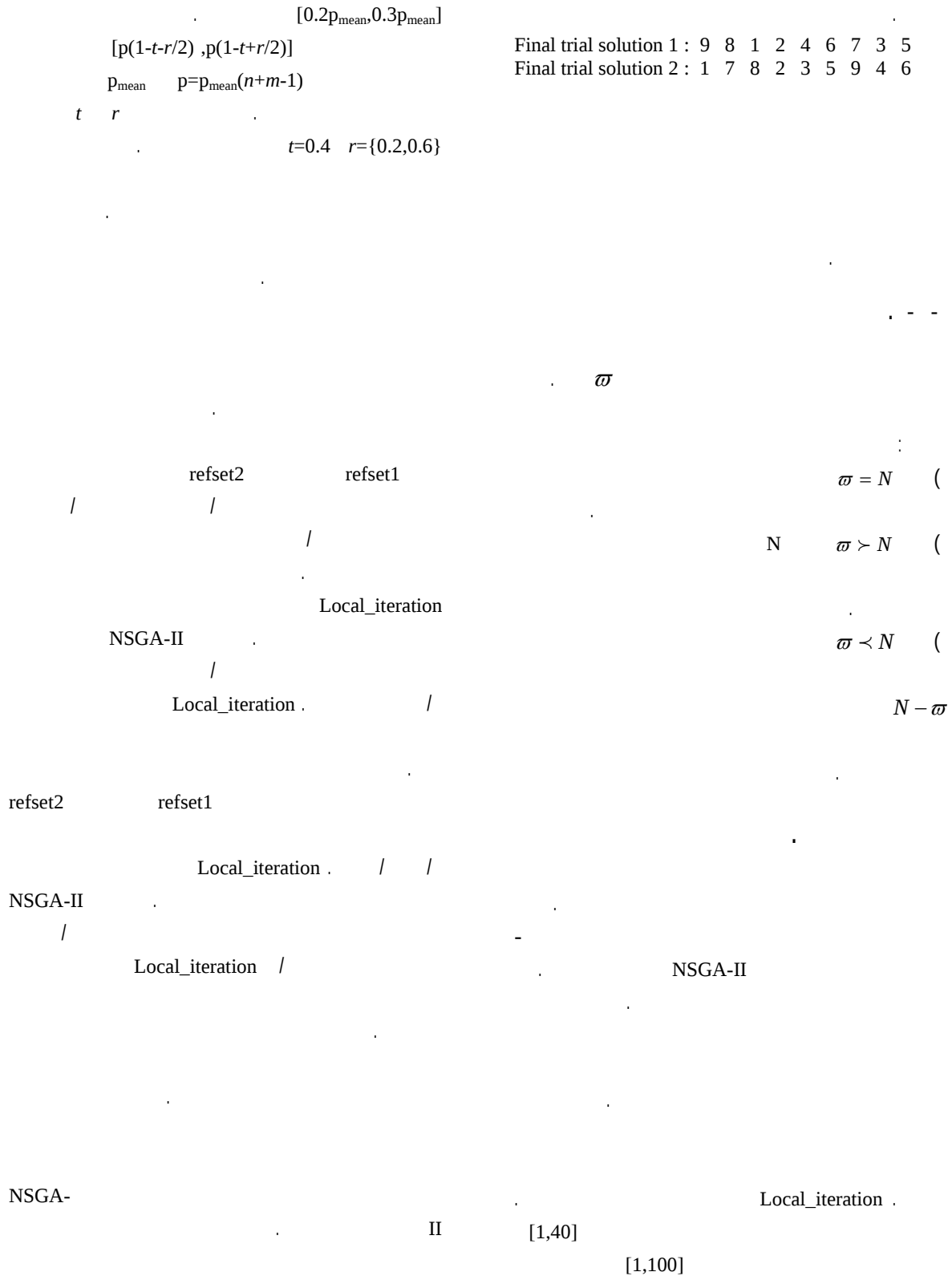
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4	2	6	3	1	5
1	2	6	3	4	5
5	2	6	3	4	1
2	5	6	3	4	1
2	5	3	6	4	1





NSGA-II

$t=0.4$, $r=0.6$

[illegible]

$t=0.4, r=0.6$

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NP-hard

NSGA-II

NSGA-II

NSGA-II

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