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Acknowledgement

Acknowledgement: yes

Requested Track

Ant Colony Optimization and Swarm Intelligence:
Artificial Immune Systems:
Artificial Life/Robotics/Evolvable Hardware:
Bioinformatics, Computational, Systems and Synthetic Biology:
Digital Entertainment Technologies and Arts:
Estimation of Distribution Algorithms:
Evolution Strategies and Evolutionary Programming:
Evolutionary Combinatorial Optimization and Metaheuristics: 1
Evolutionary Machine Learning:
Evolutionary Multiobjective Optimization:
Generative and Developmental Systems:
Genetic Algorithms:
Genetic Programming:
Integrative Genetic and Evolutionary Computation:
Parallel Evolutionary Systems:
Real World Applications: 2
Search-Based Software Engineering:
Self- Search:*
Theory:

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Paper

Paper:
pdf

Supplementary Material

Supplementary Material:

Keywords

Applications:
Time-tabling and scheduling
General methodology:
Metaheuristics
Problem characteristics:
Combinatorial optimization
Robustness of solutions
Algorithm analysis:
Performance measures

Abstract

Abstract (Maximum 200 words):

A prevalent approach to solving job shop scheduling problems is to combine several relatively simple dispatching rules such that they may benefit each other for a given problem space. Generally, this is done on an ad-hoc basis, requiring expert knowledge from heuristics designer, or extensive exploration of suitable combinations of

basis, requiring expert knowledge from heuristics designer, or extensive exploration of suitable combinations of heuristics. The approach here, is to automate that selection, by translating dispatching rules into measurable features and optimising what their contribution should be via evolutionary search. The framework is straight forward and easy to implement and shows promising results. Various data distributions are investigated, for both job shop and flow shop problems, as is scalability for higher dimensions.

Moreover, the study showed that the choice of objective function for evolutionary search is worth investigating. Since the optimisation is based on minimising the expected mean of the fitness function over a large set of problem instances, which can vary within. Then normalising the objective function can stabilise the optimisation process away from local minima.

Title

Title: Evolutionary learning of weighted linear composite dispatching rules for scheduling