



## An Evolutionary Algorithm with Multi-Local Search for the Resource-Constrained Project Scheduling Problem

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### ABSTRACT

This paper introduces a hybrid evolutionary algorithm for the resource-constrained project scheduling problem (RCPSP). Given an RCPSP instance, the algorithm identifies the problem structure and selects a suitable decoding scheme. Then a multi-pass biased sampling method followed up by a multi-local search is used to generate a diverse and good quality initial population. The population then evolves through modified order-based recombination and mutation operators to perform exploration for promising solutions within the entire region. Mutation is performed only if the current population has converged or the produced offspring by recombination operator is too similar to one of his parents. Finally the algorithm performs an intensified local search on the best solution found in the evolutionary stage. Computational experiments using standard instances indicate that the proposed algorithm works well in both computational time and solution quality.

### KEYWORDS

Resource-Constrained Project Scheduling, Evolutionary Algorithms, Local Search, Hybridization

### Cite this paper

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