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Interference aware scheduling of triple-crossover-cranes. (English) Zbl 1446.90073
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Summary: In order to increase the productivity of sea port container storage yards, a triple-crossover-stacking-crane setting can be deployed. Although this setting yields promising results, there is increasing risk of cranes interfering. Coping with interference is a key factor for exploiting the potential of triple-crossover-stacking-cranes to increase overall productivity. In this paper, we tackle the problem of finding an assignment of transport jobs to cranes, a processing sequence for each crane as well as a conflict-free routing under the objective of minimizing the makespan. We develop several variants of branch-and-bound algorithms differing in the order of assignment and sequencing decisions and in the techniques applied for routing decisions. We compare the performance of our algorithms with regard to solution quality and run times and use standard solver CPLEX as benchmark.

MSC:

- 90B35 Deterministic scheduling theory in operations research
- 90C27 Combinatorial optimization
- 90C57 Polyhedral combinatorics, branch-and-bound, branch-and-cut
- 90B06 Transportation, logistics and supply chain management

Keywords:

rail mounted gantry cranes; scheduling; container terminals; combinatorial optimization; branch and bound

Software:

CPLEX

Full Text: [DOI](#)

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