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WORKING PAPER

A two-phase genetic algorithm for the berth and quay crane allocation and scheduling problem

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ABSTRACT

This paper presents a hybrid genetic algorithm for a dynamic continuous berth allocation and quay crane scheduling problem. In the first phase of the algorithm, vessels are positioned at berthing locations and quay cranes are assigned to vessels using novel crane assignment heuristics. In the second phase, cranes are scheduled to minimize the distance travelled in repositioning the cranes. The solution approach is tested on benchmarks derived from real-life data, with varying levels of capacity utilization.

KEYWORDS: Berth allocation, Quay crane scheduling, Genetic algorithm.