

A Simultaneous Scheduling Method for Berth and Container Cranes

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Abstract

It is discussed how to simultaneously schedule berth and container cranes, which are the critical resources in port container terminals. A mixed-integer-programming model is formulated by considering various practical constraints. A two-phased solution procedure is suggested for solving the mathematical model. The first phase is to determine the berthing position and time of each vessel as well as the number of cranes assigned to each vessel at each time segment. The subgradient optimization technique is applied for obtaining a near-optimal solution of the first phase. In the second phase, a detailed schedule of each container crane is constructed based on the solution from the first phase. The dynamic programming technique is applied for solving the second phase problem.