Simulation Analysis of Real-time Yard Control Systems for Marine Container Transshipment Terminals

by

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3:00-3:30 pm Coffee Hour
3:30-4:30 pm Seminar

Please join us for the coffee hour near the seminar venue a half hour before the seminar, 3:00 – 3:30 pm

Abstract
The maritime container shipping industry lies at the heart of our global economy. Today, almost all overseas shipping of furniture, toys, footwear, clothing, auto parts, bananas, pineapples, computers, and electronics components is done via standardized 20', 40', or 45' long steel containers aboard deep-sea container vessels. The overall productivity of a container vessel is largely determined by the amount of time it spends in port. Container terminals are the places in ports where container vessels are loaded and unloaded. Container terminals that minimize vessel turnaround time are at a competitive advantage and are likely to win new contracts with shipping lines, while benefiting the global supply chain at the same time.

In this work, several control systems are proposed for dispatching trucks, routing yard cranes, and assigning storage locations to containers in real-time at a container terminal. A fully dynamic simulation model, which tracks the detailed movement of cargo through the terminal during a several-week period, evaluates the performance of these systems. Results show that yard control systems play a major role in determining a container terminal's throughput capacity and gross crane rate.

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