

The Design of Batch Construction Heuristic for Order Picking Systems

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Abstract

To quickly adjust to the needs of customer and adapt to the changes, enterprises must utilize their distribution center to integrate and connect all the partners on the supply chain, allowing the products to be delivered to the customer even faster. A new batch construction heuristic called Self-organization Map Batching (SOMB) is developed in this paper, and compared with the other popular order batching algorithms. To ensure the feasibility and preciseness of SOMB, the optimal weights for applying SOMB are found by weights testing experiment to further improve the solution quality of SOMB. It is verified that SOMB has a preferment of superior performance in total travel distance and average picking vehicle utility, even a conspicuous improvement in total CPU running time by simulation experiments. The results propose the information in hope of providing references for enhancing the overall performance of the order picking systems.

Keyword : Operations Management; Storage Assignment; Order Batching; Picker Routing; Order Picking Systems