Optimal Order Picking Planning for Distribution Center with Cross Aisle

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Abstract

Order picking method is one of the most important operations in the distribution center. The route planning of order picking systems will allow for the possibilities of increasing in production efficiency, reducing the operation cost in distribution center, and improving the corporation competitiveness. In a distribution center with cross aisle, although the cross aisle layout may reduce the order picking distance, it also may raise the complexity for picking routing planning. Focus on this problem, a heuristic algorithm (called Maximum Loop Insertion) is proposed in this paper, as well as compare with other famous algorithms and Particle Swarm Optimization (PSO), in order to improve the order picking performance. According to the simulation experiment, it verified that the Maximum Loop Insertion algorithm actually achieves the better performance. Overall, the result of this research will enhance the best route planning of order picking systems in distribution center and provide the industry as a reference in the warehouse design in the future.

Keyword：Order picking system, Cross aisle, Maximum Loop Insertion, Particle Swarm Optimization, Performance