OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

Prof. Dr.
Gerhard Wäscher

2017 / I.

Order Picking in Narrow-Aisle Warehouses: A Fast Approach to Minimize Waiting Times.

This page contains material of the following paper:

Hahn, S.; Scholz, A. (2017):
Order Picking in Narrow-Aisle Warehouses: A Fast Approach to Minimize Waiting Times.

Abstract: Mail order companies like Zalando or Amazon reported a significant increase regarding the number of incoming customer orders in recent years. Customers are served from a central distribution center (warehouse) where requested items of the orders have to be retrieved (picked) from their storage locations. The picking process is performed by human operators (orde pickers) who are employed on a large scale in order to enable a fast processing of the orders. However, due to limited space, aisles are often very narrow in warehouses, and order pickers cannot pass or overtake each other. Thus, an order picker may ha to wait until another picker has performed his/her operations. The arising waiting times may significantly increase the processing times of the orders, implying that a large number of pickers does not guarantee for small processing times. Therefore, in this pap the impact of several problem parameters on the amount of waiting time is investigated first and situations are identified where th consideration of waiting times is inevitable for an efficient organization of the picking process. In the second part of the paper, a solution approach, namely a truncated branch-and-bound algorithm, is proposed which aims for the minimization of the waiting times. By means of extensive numerical experiments, it is demonstrated that this approach provides solutions of excellent quality within a very small amount of computing time.

Typ	› Titel	Content
	› Appendix - Results of the Numerical Experiments	This file contains the appendix of the paper including the results of the numerical experiments.
	› Instances Analysis	This file contains all data files for the analysis of the impact of the problem parameters on the proportion of the total waiting time.
	› Instances TBB algorithm	This file contains all data files for the evaluation of the performance of the TBB algorithm.

Materials
- ▸ 2019
- ▸ 2017 / III.
- ▸ 2017 / II.
- ▸ 2017 / I.
- ▸ 2016 / III.
- ▸ 2016 / II.
- ▸ 2016 / I.
- ▸ 2015 / III.
- ▸ 2015 / II.
- ▸ 2015 / I.
- ▸ 2014
- ▸ 2012 / I.
- 2007 / II.