



Thema

Energy-Efficient Retrieval Strategies in Robotic Compact Storage Systems with Side Access

Kurzbeschreibung

This thesis will explore the operational efficiency of robotic compact storage systems (RCSS) with side-access retrieval, aiming to minimize energy consumption during the order retrieval process. It will examine different retrieval strategies, formulate mathematical models, and develop algorithms to optimize the sequence of retrieving stock-keeping units (SKUs), considering constraints imposed by compact storage configurations.

Objectives:

1. Define formal optimization models for retrieval operations in side-access compact storage systems.
2. Evaluate algorithmic strategies (heuristics, dynamic programming) for minimizing energy use.
3. Conduct computational experiments to assess algorithmic performance and practical applicability.
4. Provide managerial insights into optimal retrieval practices in compact storage contexts.

Zusätzliche Informationen

Bachelor / Master	Bachelor / Master
Betreuer	Julian Golak
Unternehmenspartner	-
Forschungsfrage	Design of algorithms to compute energy efficient retrieval strategies in compact storage systems with side access.
Methodik und Implementierung	Algorithm design, Programming
Literaturhinweise	[1] Fauvé, N., & Neumann, S. (2022, September). Storage and Retrieval in Fully Automated Grid-Based Storage Systems. In <i>International Conference on Operations Research</i> (pp. 589-594). Cham: Springer International Publishing.



Universität Hamburg

DER FORSCHUNG | DER LEHRE | DER BILDUNG

Ausschreibung: Abschlussarbeit am
Institut für Operations Management

	[2] Fauvé, N., Jaehn, F., Golak, J., Gül, Y., Koch, P., Neumann, S., ... & Nehrke, L. (2024). Optimierung der Auslagerungsprozesse in automatisierten Kompaktlagern. <i>dtec. bw-Beiträge</i> , 100.
Sonstige Hinweise	-