

Review of: "Solving Pallet loading Problem with Real-World Constraints"

Dr. Dharmadas Mardanya

Potential competing interests: No potential competing interests to declare.

Review Report: "Solving Pallet loading Problem with Real-World Constraints.", Qeios ID: M1W1U6.

Dear Alberto Bedogni,

I am writing to submit my review report for the article titled Solving Pallet loading Problem with Real-World Constraints by **Marko Svaco, Filip Šuligoj, Bojan Šekoranja et al.** I have thoroughly assessed the content and methodology presented in the manuscript, and I would like to provide an overview of my findings.

The article addresses the crucial role of efficient cargo packing and transport unit stacking in enhancing logistics efficiency and reducing costs within the field of logistics. The authors specifically focus on the challenging problem of loading transport units onto pallets, which falls into the class of NP-hard problems.

To tackle this problem, the authors propose a novel method utilizing a branch and bound algorithm, where a loading order of transport units is considered. The algorithm selects a heuristically favorable subset of possible positions of the transport units, improving computability. Additionally, the authors ensure that the pallet configuration meets real-world constraints, such as the stability of transport units under the influence of transport inertial forces and gravity.

The paper presents valuable contributions to the field, presenting a novel approach for solving the pallet-loading problem and addressing real-world constraints to enhance logistical operations.

The findings have the potential to assist logistics professionals in improving efficiency, reducing costs, and ultimately optimizing overall logistics operations.

Furthermore, the authors suggest avenues for future research, which includes exploring novel algorithms, hybrid approaches, and real-time optimization strategies to further enhance logistics efficiency and address the complexities of cargo packing in varying contexts.

Overall, I find the article to be well written, clear, and presenting a substantial contribution to the field of logistics. However, there are a few areas that require minor revisions and clarifications, which will be detailed in the attached review comments.

Thank you for considering my review for this article.

Sincerely,

Dr. Dharmadas Mardanya

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Review Comments:

1. What role do efficient cargo packing and transport unit stacking play in the field of logistics?
2. What type of problem is loading transport units onto pallets classified as?
3. How do we propose to solve the pallet loading problem in this article?
4. What approach does the proposed algorithm use for solving the problem?
5. What is the advantage of considering only a heuristically favorable subset of possible positions of transport units?
6. What are some real-world constraints that the pallet configuration must meet?
7. How does the proposed algorithm ensure stability of transport units under the influence of transport inertial forces and gravity?
8. How effective has the proposed branch and bound algorithm been in finding pallet configuration solutions?
9. What role does favoring the defragmentation of the collective support surface of transport units play in obtaining applicable solutions?
10. How can the findings of this study assist logistics professionals?
11. What are some potential areas for future research in improving logistics efficiency and cargo packing?
12. How can hybrid approaches and real-time optimization strategies contribute to enhancing logistics efficiency?
13. What are some complexities associated with cargo packing in different contexts that need to be addressed?