

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

Xavier Schepler

Potential competing interests: No potential competing interests to declare.

Dear Editors and Authors,

The manuscript is about solving a 3D pallet loading problem, with real-world constraints. After an introduction of the problem and a review of the literature, the authors propose a heuristic Branch-and-Bound (B&B), and briefly describe some experiments and the obtained results.

I recently met a warehouse manager which is in need of algorithms and software to deal with this problem. So, the subject of this study is of real interest to logistics practitioners.

I read the manuscript carefully and have the following remarks.

- The loading order assumption is not discussed enough. The authors say that it ensures the structural integrity of the transport units and their contents. I need some arguments to understand why it is the case. Do other studies make the same assumption?
- The solution quality is not evaluated. Could an exact method provide solutions to small instances, so that the solutions of the heuristic B&B may be evaluated by comparison?
- In the branch-and-bound algorithm, the authors use an upper bound obtained by solving a knapsack problem, maximizing the total loaded volume. Is this bound tight? How far is this bound at the root node from the best found solution value?
- The authors described a procedure to solve the knapsack problem which is not state-of-the-art. There are much more performant algorithms: <http://hjemmesider.diku.dk/~pisinger/codes.html>
- The experiments are not detailed enough. What are the characteristics of the instances that were solved? What was the upper bound at root node? What was the final solution value? How many B&B nodes were created? Some detailed result tables would be interesting.
- Matlab is used for the implementation. Results obtained with a compiled language such as C would be interesting. The solving time is very important to evaluate the practical interest of the algorithm.

In summary, in my opinion, the proposed approach to solve the 3D pallet loading problem seems to be interesting, but more detailed and complete numerical results are required to evaluate its performance.

