Ant colony optimization for container loading problem.

Abstract

Problem statement: The Container Loading Problem (CLP) considers packing a subset of given rectangular boxes into a rectangular container of fixed dimensions in the most optimum way. This was very important in the logistics industries and warehousing problems, since the cost can be reduced by increasing the space utilization ratio. Approach: This problem was solved in a two phased Ant Colony Optimization (ACO) where a tower building approach was used as the inner heuristic. In the first phase, ACO with its probabilistic decision rule was used to construct a sequence of boxes. The boxes were then arranged into a container with the tower building heuristic in the second phase. The pheromone feedback of ACO using pheromone updating rule helped to improve the solutions. Results: Computational experiments were conducted on benchmark data set and the results obtained from the proposed algorithm are shown to be comparable with other methods from the literatures. Conclusion: ACO has the capability to solve the CLP.