

IMPROVED SOLUTION FOR THE LOCATION-ROUTING PROBLEM

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ABSTRACT

In many logistic environments, managers have to make decisions such as location for distribution centers (DC), allocation of customers to each service area, and transportation plans connecting customers. The location-routing problems (LRPs) are, hence, defined to find the optimal number and locations of the DCs, simultaneously with the vehicle schedules and distribution routes so as to minimize the total system costs. This study follows the decomposition-based logic proposed in the literature for solving the LRP with multiple depots, multiple fleet types, and limited number of vehicles for each different vehicle type. The entire LRP was hence decomposed into three subproblems. In each subproblem, a Lagrangian relaxation method is employed to solve the generalized assignment problem (GAP) embedded inside the problem. The computational results of the proposed method are compared to those from the literature. In some test problems, it outperforms the other methods. The effectiveness of the proposed method is hence confirmed.

Keywords : Location-Routing Problems ; Lagrangian Relaxation ; Tabu Search

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