The Split Delivery Vehicle Routing Problem: Using Mixed Integer Programming within a Heuristic Framework

by

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Abstract

The split delivery vehicle routing problem (SDVRP) is a relaxation of the traditional vehicle routing problem, in the sense that a customer's demand can be split between two or more vehicles. The SDVRP remains computationally difficult, despite this relaxation. Several researchers have studied this problem. Dror and Trudeau developed a savings heuristic (denoted by DT). Archetti et al. proposed a tabu search algorithm (denoted by SplitTabu) to solve the SDVRP.

In our work, we have developed a new heuristic and a set of benchmark problems for the SDVRP. Our heuristic is based on a mixed integer programming formulation and is iterative in nature. The computational results indicate that our heuristic outperforms DT and SplitTabu. In addition, a number of benchmark problems for the SDVRP will be made available to the research community.

References

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