Abstract:

In this paper, route planning of waste collection trucks using R&R (Ruin and Recreate) approach is explored. We assume the trucks are guided by the central depot in selecting the optimal route for waste collection. Heuristic algorithms are simulated to find the optimal routes for the waste management fleet. Through the use of smart dumpsters that can communicate the current level of waste using sensors and communication modules, we aim to reduce the number of trucks used, the total time taken and total distance traveled by the fleet in a day. Our work is based on variations of CVRPTW (Capacitated Vehicle Routing Problem with Time Window Constraint). The central management system selects the dumpsters, based on their waste levels, in descending order, and dispatches appropriate number of trucks, with path assignments using Ruin and Recreate (R&R) approach of the VRPTW strategy. The municipal authority saves transit time, fuel cost and service time by using our approach, through a simulation of smart waste collection.