Optimised crossover genetic algorithm for capacitated vehicle routing problem.

ABSTRACT

This paper presents a genetic algorithm for solving capacitated vehicle routing problem, which is mainly characterised by using vehicles of the same capacity based at a central depot that will be optimally routed to supply customers with known demands. The proposed algorithm uses an optimised crossover operator designed by a complete undirected bipartite graph to find an optimal set of delivery routes satisfying the requirements and giving minimal total cost. We tested our algorithm with benchmark instances and compared it with some other heuristics in the literature. Computational results showed that the proposed algorithm is competitive in terms of the quality of the solutions found.

Keyword: Genetic algorithm; Vehicle routing problem; Combinatorial optimisation; Network; Heuristics.