

Combinatorial Bees Algorithm for Vehicle Routing Problem

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Abstract

Vehicle routing problem (VRP) is a combinatorial optimisation problem, that has been studied intensively for more than fifty years. Although VRP could be solved using an exact algorithm for small problem instances, a bigger instance will be unrealistic if solved using exact algorithm due to its nature as an NP-hard problem. A metaheuristic is more suitable to solve this kind of problem because the near-optimal solution could be found in a relatively shorter time compared to the exact algorithm. The Bees Algorithm (BA) as nature-inspired metaheuristic has gain popularity over decades that could find a near-optimal solution in continues and combinatorial problem. However, the BA has never been used to solve VRP in benchmark datasets. This study used VRP TSPLIB datasets to show that BA is a competitive metaheuristic compared to Genetic Algorithm (GA), Ant Colony Optimisation(ACO), and Particle Swarm Optimisation (PSO) and Tabu Search (TS).