Abstract

Capacitated Vehicle Routing Problem (CVRP) is an issue of distribution of goods from a depot to a group of customers using vehicles with capacity limit by utilizing the limited number of vehicles and the capacity limit of each vehicle, to be able to distribute the goods to customers with an optimal route. Optimal route is a route that has the shortest distance and the fastest delivery time. In the previous study there is still little research on CVRP which takes into account one of the real factors, namely traffic density. This final project described the handling of CVRP with traffic density. Traffic density values were generated randomly as an actual state representation. Genetic Algorithm (GA) was chosen as the method on this issue because it is considered suitable for solving stochastic problem and can find the global optimum value more quickly because it does not evaluate all possible solutions. Tests were conducted in two phases, they were travel time-based and distance-based route search. At the end of the test, obtained the delivery speed of travel time-based is faster by almost two times compared to distance-based route search. However, the distance of the route based on travel time is longer than the distance of the distance based route search. Sometimes delivery are supposed to prioritize speed, for example express delivery and disaster relief, this research could be used for route search with such conditions.

Keywords: CVRP, GA, traffic density, travel time, distance