

Abstract

Delivering some goods in daily life needs some optimal routes in order to get those commodity delivered to some destination in accordance with the demands of those destination places. This case is one example of applied Capacitated Vehicle Routing Problem with Time Windows (CVRPTW) in real life. CVRPTW itself is a route searching problem for a number of vehicles from one depot to another available nodes in purpose to deliver some goods from depot to destination nodes with time constraints for each node and vehicles' capacity.

In this final project, Improved Ant Colony System (IACS) and Simulated Annealing (SA) methods are proposed to solve CVRPTW in PT. POS Indonesia goods' delivering case. Ant Colony System is used because this method is able to do multiple search in certain area simultaneously in one searching space and commonly used in route searching case. Meanwhile Simulated Annealing (SA) is a local search which can avoid the solution from local optima. The combination of these two methods yields nearly optimum solution which can be seen from total distance.

Testing is done in order to find best parameters. α , β , and q_0 Parameters significantly involve in IACS-SA method. To know IACS-SA method's performance, IACS-SA is compared to two other methods like DE & AG and HS method in the end of testing.

Keywords : Capacitated Vehicle Routing Problem with Time Windows (CVRPTW), Improved Ant Colony System (IACS), Simulated Annealing (SA), route searching.