Abstract

VRP is an optimization problem of routing vehicles that concern on the distribution of products from a depot to a number of customers at the point of destination are separated by a number of vehicles. In the real world VRP problems often met with the obstacle of of congestion. Congestion can affect the total trip travel time required by the vehicle, causing the cost incurred by the company growing in terms of vehicle fuel. One cause of congestion is a huge volume of traffic in a way not matched by the capacity of existing roads or more commonly known as the problems of V / C ratio.

In this Final Task used Multiobjective Ant Colony System algorithm in solving VRP problems with congestion levels as an obstacle. Inside the algorithm there is a probability to select a path that influencing the selection of the path taken by the vehicle. Inside the probability, Writer paste congestion level that comes from the V/C ratio as an additional parameter that affects the value of these probabilities.

From the simulation results can be seen that the higher the value of a road congestion levels, the smaller the probability of such roads for elected thus causing the resulting route can be differen and system that has built using the level of congestion on the probability of the election result in better total travelling time solutions than systems that do not involve the level of congestion on the VRP problem with the level of congestion of a road as an obstacle.

Keywords: VRP, congestion, V / C ratio, Multiobjective Ant Colony System, the probability of a path to be chosen.