

## Abstract

For a company, product distribution is one of the common problems. Product distribution problem itself is a real application of Capacitated Vehicle Routing Problem (CVRP). CVRP is one of the combinatorial problems where a number of vehicles must travel from a depot to a certain number of nodes and then returning to the depot. The goal of this problem is to find the routes that gives shortest total distance.

In this final project, a new method called Galaxy-based Search Algorithm (GbSA) is proposed to solve CVRP. As a new method, this final project is focused on how to implement GbSA into a discrete problem such as CVRP and to understand the performance of the parameters inside GbSA.

Testing finds out that GbSA can be implemented to CVRP and are able to produce accuracy around 80%, but it can still be trapped into local optimum in several occurrences.

**Keywords:** *galaxy-based search algorithm, capacitated vehicle routing problem, supply chain management.*