

## ABSTRACT

Telecommunication network was developed to create and distribute information through a routing process. Routing process from a router to another router consider the efficiency of time and delay, so it is needed accurateness to establish shortest path routing from source to destination in telecommunication network. Generally, establishing the shortest path routing can be divided into two methods that are conventional method and heuristic method. According to the concept of algorithm, conventional method is easier to understand than heuristic method, but the result from heuristic method more variety.

This thesis will be applied one of heuristic method which name is genetic algorithm that can do computation quite reliable in order to find solution from a difficult and complex problem. Genetic algorithm applies the comprehension of natural evolution such as selection process based on fitness, crossover, and mutation in solving the problem.

From the result of testing which is developed using MATLAB Version 7.4.0.287 (R2007a), dijkstra algorithm with convensional method is more superior to genetic algorithm for a problem that is not so difficult in small network. Genetic algorithm has the ability to compute faster up to 48,567 % in large network than dijkstra algorithm.

**Keywords** : *shortest path routing, genetic algorithm, dijkstra algorithm*