

ABSTRACT

Telecommunications technology is increasingly growing, from the first generation to the next generation, namely 4G LTE technology, which has a quality telecommunications network, especially in terms of data speed and voice. This leads to a growing need for communication services, increasing the demand for traffic and making the number of operators providing services of the highest quality.

This final project proposes genetic algorithm as an optimization algorithm that is often used to solve complex problems. The genetic algorithm is able to provide a good enough solution for eNodeB position placement in customer reach issues. From the design results based on the calculation of capacity for the city Cimahi in get as many as 10 eNodeB with radius of 0,903 km is enough to meet the demand traffic until the year 2022.

With the implementation of genetic algorithm, obtained from a combination of parameters that is the size of cross over: 0.8, population: 1000, generation: 1000 and mutation: 0.05, is the most optimum combination of the results of this experiment, with fitness generated 0.90716824, where can cover the area of Cimahi city of 36,46542 km² and the un-covered area of 3,73458 km², the combination is done with the purpose, determine the optimal position of eNodeB to minimize the blankspot area and optimally in terms of cost or cost using the LCC method (life cycle cost), can be obtained the lowest cost of Rp.13,314,348,098.15 such costs, is the real maintenance cost required by the company in order to avoid the budget swelling for maintenance activities.

Keywords : 4G LTE, Optimization, Genetic Algorithm, eNodeB, LCC (Life Cycle Cost).