Abstract

The number of people that always increases, makes the amount of cellular customer increases. So, the cellular network's planning must be created effectively to give better service to customers. An important thing in this planning is the placement of Base Transceiver Station (BTS), so that, it can serve the customers optimally.

Genetic Algorithm (GA) is one of optimization algorithm in Evolutionary Algorithms (EAs) which is often used to find the optimum solution from a problem. GA's performance which adopts the 'evolution' and 'genetical' habits can be used to decide the positions of BTS, so that it can produce maximum coverage area and traffic service.

To increase the performance of GA, then Fuzzy Systems (FS) is used to control the values of Pc and Pm in evolution process in GA, so that it can avoid the premature convergence in GA.

Fuzzy Evolution Algorithm is implemented to decide the optimum position of Base Transceiver Station (BTS) in Yogyakarta City, so that it can produce the largest coverage area and the largest traffic service. In this research, solution space is 5,011 x 10^{34}. Solution which is produced can cover 90,57% from all area in Yogyakarta City.

Keywords: *Genetic Algorithm, Fuzzy Systems, Base Transceiver Station, premature convergence.*