ABSTRACT

The weather is phenomenal events that occurred in the face of this earth. Weather occurs due to changes in temperature and humidity between the place and somewhere else. This difference occurs because of the different angle of the sun warming at each place. Global warming resulting in erratic weather changes. For example, in the dry season it will rain continuously with high intensity, and vice versa. Because of that, we need a method to predict rainfall in order to get an overview of events to come.

This thesis uses Algorithm Neural Network (ANN) to predict rainfall next 12 months based on monthly rainfall data. However, ANN has disadvantages in determining the optimal architecture and weights. To get the best results, Genetic Algorithm is used to optimize the ANN. Genetic Algorithm generates a number of individuals with binary representation and real, then the individual is decoded to obtain a neural network architecture and weights. Each individual will be evaluated using feedforward algorithms to find the best individuals based fitnessnya. Then, the individual will experience a parental selection, recombination and mutation to obtain individuals which contains the architecture and weight of the optimal ANN.

ANN architecture and optimal weights generated by the cross-over probability (Pc) 0.6 and probability of mutation (Pm) 0.1, the population size of 200 individuals were evaluated and a maximum of 200,000 people with an average accuracy of training and testing was 75.21%.

Keyword : *rainfall, Artificial Neural Network, Genetic Algorithm, feedforward*