

ABSTRACT

Electroencephalogram Signal (EEG) defines the signal of electricity activity from outer region of brain (cerebral cortex). EEG has been used for diagnosing brain and mental abnormality, one of the method is by classifying eye state of EEG signal. The classifying procedure in this final project was Neural Network with Backpropagation algorithm. Moreover, combination of architecture parameter and hidden layer used in Backpropagation's training process was decided not manually but using Genetic Algorithm. Hidden layer used as a parameter to calculate fitness number. Best individual chosen by smallest Sum of Squared Error (SSE). The previous research done by Oliver Roesler in 2014 shown an unsatisfying result with more than 25% rate of error. On the other hand, this research resulted in 93.4836% rate of error, using 90:10 ratio of training and testing data, 50 population, crossover probability 0.7, mutation probability 0.1, learning rate 0.5, maximum epoch 100 and maximum generation 100. This result shown that genetic algorithm can produce a solution for Backpropagation Algorithm with shorter training time and lower error.

keywords: EEG, Eye State, JST, Backpropagation, Genetika algorithm, SSE