ABSTRACT

Students must have a strong memory and consider the development of memory to memorize as one of the goals of education. Memorizing is an activity that can make a person's brain tired, depending on the level of difficulty memorization. With different levels of memorizing difficulty, we can know the difference in brain signals when memorizing using EEG. Three levels of difficulty are divided into levels that are easy, medium and difficult.

In this Final Project will be proposed the title of Influence Analysis of Comparison Rate of Rechargeable Gamma Signal and Theta EEG. EEG is one of the tests performed to measure the signal activity of the brain. This test uses a special sensor that is electrodes mounted on the head and connected through a cable to the computer. After data is taken as many as 144 data from 11 different people, the pre-process process which consists of two processes, namely the normalization of the amplitude of the EEG signal and the resample of the result of the normalization of the amplitude. Then the gamma and theta extraction process uses the DWT decomposition method. The analysis uses the Hjorth descriptors method and use the K-NN classification using 3 classes, namely easy memorization, intermediate memorization and difficult memorization. The combination of parameters in the test includes 4 EEG signal channels and 3 types of Hjorth descriptor parameters.

The results of this study showed that the best accuracy result was on TP10 channel with average accuracy at 87.0% on gamma signal, accuracy on the theta signal equal to 87.5%, and average accuracy of gamma and theta = 87.2%. While in the Hjorth descriptor parameter shows the result of the theta signal type is much better than gamma or a combination of theta and gamma.

Keywords: DWT, EEG, Hjorth Descriptor, K-NN.