ABSTRACT

The EEG signal (*Electroencephalogram*) *is a recording of a signal generated from a spontaneous electric field in the activity of neurons in the brain. EEG signals are used in the health field to diagnose the neurological state of the brain, as well as in areas of technology such as Brain Computer Interface* (*BCI*) *applications. In recording EEG signals, there is an undesirable noise so that in the EEG signal analysis it is difficult to get the actual signal information. Therefore in this final project is designed a denoising system to eliminate noise in order to obtain the actual signal visualization.*

In this study the clean EEG signal will be given AWGN noise (*Additive White Gaussian Noise*), *then denoising technique that will be done is to use two methods of Discrete Wavelet Transforms and Adaptive Filter. The test is done in Matlab using Minimum Squared Error* (*MSE*), *Signal-to-Noise Ratio* (*SNR*), *and Peak Signal-to-Noise Ratio* (*PSNR*).

Based on the results of testing on 5 EEG signal data, it shows that the DWT (*Discrete Wavelet Transforms*) *method gets the average value of each parameter, MSE is 0.0000209082, SNR is 29.1607127780 dB and PSNR is 29.8262675865 dB. And for the Adaptive Filter method with Kalman algorithm, the average values for each parameter, MSE is 0.0000425027, SNR is 27.6136811973 dB and PSNR is 28.2792360058 dB.*

Keywords*: Electroencephalogram* (*EEG*), *Denoising, Discrete wavelet Transform* (*DWT*), *Adaptive Filter*