

ABSTRACT

Biomedical Engineering have come to one of discipline science which can reply problems of medical at diagnostic instrumentation, and the complex medication. Electroencephalogram (EEG) representing one of technology of biomedical engineering doing recording process, processing, and analysis electrical activity of brain. But existence of this instrument medical felt still very scarce since high cost, in the case of levying and also peripheral treatment. From other side that matter, limitation ability of this instrument medical to yield optimal signal free noise or quality of Signal to Noise Ratio (SNR).

ERP signal filtering, that is Even_Related Potensial (ERP) extraction and noise reduction tend to result degradation of Signal to Noise Ratio (SNR) especially moment of Even_Related Potensial (ERP) extraction. In this Final project, we try to solve the problems by using algorithm of Adaptive Wavelet Filtering (AWF) integratedly in processing of EEG signal. The AWF technique anticipated by a strength able to yield ERP signal with high SNR without experiencing of distortion or loss at high frequency.

In this Final project will be done some important experiment , that is : scheme of Integrated Electroencephalogram Adaptive Wavelet Filtering, simulation of Adaptive Wavelet Filtering based on Matlab for Even_Related Potensial (ERP) extraction at EEG signal, simulation of Statistical Wavelet Thresholding (SWT) based on Matlab for noise reduction and artifact removal at EEG signal, simulation and visualizing of Statistical Wavelet Thresholding and Adaptive Wavelet Filtering integratedly, analysis and evaluate system.

From previous research result, AWF method is extract to 39% ERP signal from background noise (artifact), that is 38% more than Woody's filter and Standart Averaging method [3]. So result of integration AWF-SWT will given a high SNR – ERP filtering system.