

## ABSTRACT

Evolution of medical technology is very fast. Medical technology created to facilitate doctor and health workers for live monitoring condition of the patient and long distance monitoring. One of the medical technology evolution is EEG, this instrument use to capture electrical activity in cortex of human brain. EEG signal divided into 4 category based on the frequency classification (alpa, beta, delta, tetha). By monitoring and processing EEG signal, doctor can analysis patient brain condition.

Basically EEG signal capture by place electrode in human scalp. Need amplifier circuit because EEG signal that be taken out by human brain has the lower amplitude in 5uV. Bandwidth of monitoring EEG is 0.1 – 30 Hz, so need filter to discard noise. After amplify and filtering, EEG signal can be monitoring using oscilloscope.

In this final project has been successfully realize hardware for conditioning EEG signal by using amplifier with 8938 gain and filter that pass 0.28 - 25.7 Hz frequency. Then signal convert to digital using Arduino Uno microcontroller and send digital signal to computer using serial communication. After that, computer read serial value using Matlab program and show EEG signal in graph. So the brain electrical activity that out from patient brain can be show and analysis by doctor to know patient brain condition.

Keywords : EEG, amplifier, filter, ADC, serial communication.