ABSTRACT

Human activity conditions such as walking, running, sleeping, etc. have unique biopotential signals, which can be monitored from body signals such as EEG signals, ECG signals, and EMG signals. In this final project the signal classification is determined using EEG and ECG for three conditions, namely activity, drowsiness, and sleep.

Heart signal can be an indication to find out a person's sleepiness. The signal will be processed into BPM (Beat per Minute) to find out whether someone is feeling sleepy or not. This BPM will be combined with the frequency and maximum value of the alpha signal obtained from the EEG signal.

In this final project, the writer designed the K-NN classification using the Euclidean distance method on BPM data from the ECG and the maximum frequency and alpha value of the EEG, and produced an output classification of the activity state, drowsiness, and sleep.

With 72 numbers of training data and 30 test data, the accuracy of the K-NN classification accuracy with k = 10 gives an average success rate of 90.00%, where the accuracy of the success of the activity classification is 86.67%, 80% drowsy, and 100% sleep.

Keyword : EKG, EEG, BPM