

ABSTRACT

Concentration is very much needed in doing every activity to prevent things that we don't want. According to the official website of the National Highway Traffic Safety Administration, lack of concentration is one of the causes of road accidents. The level of human concentration can be known by looking at physiological signals in humans. By using brain signals (EEG) and signals from heart rate (ECG) we can detect the level of concentration (Low, Medium and Good) someone using fuzzy logic that is trained with ANFIS.

Electrodes connected to the ECG module are attached to the surface of the subject's body to obtain ECG signals. EEG signal is taken using Muse Headband, where the EEG signal used is alpha signal. The signal from the ECG was processed into a BPM (Beat Per Minute) and the alpha signal was extracted using Power Spectral Density (PSD) and the maximum value was taken. Furthermore, the BPM and the maximum value of the PSD will be used as input to the fuzzy system created and also as training data on ANFIS.

The results obtained show that the range of values of Δ BPM when concentration levels are Low, Medium and Good are 1-15, 3-19 and 11-27, respectively. And training results from ANFIS produce an accuracy of 80.69% for training data and 65.88% for testing data.

Keyword : *EEG, ECG, Fuzzy, ANFIS, BPM, PSD*