

## ABSTRACT

In general, human brain waves change when under normal conditions and when doing activities. one of them when drinking caffeine which causes changes in the condition of a person's brain towards the desired object. The object to be tested is one's self-concentration when doing the mathematics test.

In this final project, analysis will be carried out on the *alpha* and *beta* waves of the human brain when in normal conditions and when drinking caffeine, which provides a comparison of the two conditions and shows the desired analysis results. Measurement of signal shape the brain is measured from the *Electroencephalogram* (EEG) signal information that can record electrical activity along the scalp.

The method used in this study is *Discrete Wavelet Transform* (DWT) as a feature extraction method by extracting signals for Alpha and Beta waves to obtain a feature that will affect the next stage, namely in carrying out the classification process using the *K- Nearest Neighbor* (K-NN). In this study, we used *NeuroSky MindWave* or a recording device that has 1 channel. In this study, 10 respondents were used in different stimuli and have been classed, in this study there are two best KNN distances, namely *euclidean* and also *minkowski* which both have the best accuracy of 83% with different parameters.

**Keywords :** *Elektroensephalogram, Discrete Wavelet Transform, K-Nearest Neighbor, Alpha Wave, Beta Wave, Mathematics Test.*