

## **ABSTRACT**

*Memorizing is something that is commonly done by people in many occasions in life. Starting from social, educational, and religious needs. Rote can also make human brain gets easily tired, caused by the complexity of the rote materials. So that we realize that the complexity of the materials that is recited might impact to our brain. Based on research, brainwaves frequency in human is always different in every phase of activity, such as awake, relax, light sleep, heavy sleep and panic.*

*This research is done to analyze and identify alpha and beta signals on electroencephalograph (EEG). Brainwaves are taken from respondents who were reciting 3 different things, those are names, a formula and a verse from The Holy Quran. This study is analyzed and identified by using Principal Component Analysis (PCA) method. In which, using orthogonal statistical procedure to transform a correlated data to an uncorrelated linear form. Signal identification in this research is using K-Nearest Neighbor (K-NN) classification. Which is a method to classify an object based on training database with the least distance to the object.*

*The output of this research is the differences of alpha and betha brainwaves when reciting 3 materials with different levels of complexity and to determine which channel and feature is the most effective to be used which are TP9 for training and TP10 for testing. The data testing result is obtained in the amount of 79,125% in both frequency. Signal comparison results show that from those 3 different rote complexity, alpha signal always liable in brain waves and the complexity order from the most complex are formula, Holy Quran, and then name, obtained from the value comparison of amplitude, magnitude and Eigen Value (EigVal).*

**Keywords:** *Rote, EEG, Alpha, Beta, PCA, K-NN, Eigen Value.*