ABSTRACT

Concentration focuses on attention, mind, spirit, and physical on an object, a person's ability to concentrate is usually influenced by the surrounding situation. concentration is not an innate trait that a person has and is always there at all times. Therefore, external stimulation is needed to increase and maximize the concentration level of the brain in conditions of staying up late and smoking.

This study was conducted to determine the maximization of brain stimulation when respondents were given a smoking stimulus and stayed up late. The human brain basically has several types of signals including alpha, beta, gamma, theta and delta. From these brain signals, we can see how the human brain responds to an external stimulus so that humans can feel and concentrate. The condition of a person's brain when smoking contains nicotine and tar can be analyzed through the Electroencephalograph (EEG).

The method used in this study is Principal Component Analysis (PCA) as a feature extraction method by extracting signals to alpha and beta waves to obtain a feature required by the classification process using the K-Nearest Neighbor (K-NN) method. In this study, a recording device that has 1 channel was used, and used 10 respondents in different stimulations. In the Chebychev K-NN type, the best accuracy is 100%, while the Minkowski and Euclidean K-NN types only get an accuracy of 83%, with fs, the type of PCA feature, and the same K value.

Keywords**:** *Electroencepalograph, Princcipal Component Analysis, K-Nearest Neighbor, Gelombang Alpha, Gelombang Beta.*