ABSTRACT

Brain-computer interface technology or widely known as brain-computer interface (BCI) is capable of translating brain activity represented by brain waves into commands or messages. Utilization of the BCI system with external equipment depends on the accuracy of the classification and identification of EEG signals, especially imagery motor motion. The use of the convolution neural network method for the classification of EEG motor imagery signals for finger movements is presented in this paper. By using the convolutional neural network method, there are 4 parts, namely input, feature learning, classification, and output which are implemented using the python 3.8 programming language with libraries time, pandas, numpy, tensorflow, hard, sklearn, mlxtend plotting, matplotlib. The system design test used six subjects from MI-EEG 5F data with a sampling frequency of 200 Hz. Using k-fold cross validation for the classification stage and confusion matrix to display the predicted results for each finger class. At the testing stage using k-fold cross validation and analysis on the confusion matrix. Based on the results of system testing, the accuracy value increases with each increase in the number of kernels. The best accuracy results are obtained with the number of kernels 25 with an accuracy value of 41.88%.

Keywords: EEG *Signal, Motor Imagery, One Dimensional Convolution Neural Network.*