ABSTRACT

The Brain Computer Interface (BCI) is a system that can translate, manage and recognize human brain activity. One device from BCI to record brain signal is Electroencephalogram (EEG). Brain signals recorded with EEG have varied information signals, one of which is the signal of motor imagery.

In this study the integrated selection method for transfer learning will be implemented in the EEG motor imagery signal which can be used to filter the dataset into a more optimal size by removing the irrelevant channels with the desired EEG signal defined as the noise channel and can improve the performance of the dataSet. This Transfer learning uses the CUR matrix decomposition algorithm which outlines the data into two components C and UR are each subject to the EEG signal and general matrix derived from historical EEG data. This method is considered a Transfer Learning process because it uses historical data to create information data.

In this research uses existing data from previous research and implemented in conjunction with fast fourier transform (FFT), hjorth descriptor, and common spatial pattern (CSP) as the extraction feature and k-nearest neighbor (K-NN) as the classification and the accuracy of the BCI system using the Integrated Selection method with the K-NN classification with the k = 1 parameter and the extraction of CSP is the result of improved accuracy and highest accuracy results, increased accuracy up to 6% and the highest accuracy of 0.65. In addition to this research shows that the integrated selection method can shorten compute time six times faster. In general, the integrated selection method has been proven to improve BCI system performance.

Keywords : ***Brain Computer Interface*** **(BCI),** ***Electroencephalogram*** **(EEG),** ***Integrated Selection, Fast Fourier Transform (FFT), and Hjorth Descriptor, Common Spatial Selection*****(CSP**), ***k- Nearest Neighbor*** **(K-NN)**