ABSTRACT

Stroke can be interpreted as a nervous system malfunction that occurs suddenly and is caused by blocked blood vessels that occur in the brain. Generally, the effort used to reduce the number of stroke patients is by using magnetic resonance imaging (MRI) diagnosis methods. However, the cost of examinations using the MRI method is relatively expensive and not portable. One way to overcome these problems is to use an electroencephalograph (EEG) tool to detect stroke signals in parts of the brain.

In previous studies, EEG stroke signal processing has been carried out using the Brain Symmetry Index and Hilbert Huang Transform (BSI-HHT) methods. However, this study does not specifically address channel selection in EEG stroke signals. Given these problems, in this study, the writer will process the EEG stroke signal using the Spatial selection method which is modified using the Fast Fourier Transform (FFT) method. The data used are 8 data from stroke patients and 8 healthy data whose accuracy will be compared. The classification process is carried out using the k-Nearest Neighbor (k-NN) and Extreme Learning Machine (ELM) methods.

In the implementation of the k-NN classification, the optimal results reach a value of 1 when the value of k = 1 with the same accuracy results with normal data in several regions. Whereas the ELM classification has an increase in the 0.027 Highmean regions from the normal data that is the Highmean data with the results of 0.859 and the normal data of 0.832. And the implementation of the Spatial Selection method can find the relevant channel composition in each data.

Keywords: Stroke, Electroencephalogram (EEG), Spatial Selection.