

ABSTRACT

Epilepsy is a neurological disorder of the brain caused by abnormalities in the nervous cell system of the brain, resulting in excessive neuronal activity patterns. Seizures are commonly associated with symptoms found in the patient's body. The next step is for the patient to undergo a test examination with using an electroencephalogram (EEG). Signals EEG can be performed under two conditions : focal and non-focal. The initial condition seen in the patient but not diagnosed with epilepsy is referred to as focal. Then if the eeg signal for epileptic seizures is non-focal and the disease appears to be worsening in the patient's body, surgery must be performed right away. As a result, the performance of EEG makes it very easy for expert doctors to detect focal and non-focal conditions in patients as a result of epilepsy diagnosis, and it takes relatively little time to determine epilepsy.

The digital signal is processed in four stages : preprocessing, decomposition with WPD, feature extraction, and feature classification. The preprocessing and signal merging processes are carried out at this stage. Meanwhile, in the feature extraction stage, entropy, specifically shannon and renyi are used. As a result, features from the feature extraction stage are transferred to the classification stage using the SVM and K-NN methods.

The Bern Barcelona database is used in this study. The parameters, particularly regarding accuracy, specificity, and sensitivity as a result of SVM classification and focal and non-focal K-NN classification, can be used to adjust the results. 3750 dataset pairs of EEG signals from 5 epilepsy patients were recorded. According to the results of the feature classification obtained at level 3, the Shannon-renyi classification using the SVM and K-NN methods has a best accuracy value of 99.86 percent. K-NN has a specificity of 99.86 percent and a sensitivity of 99.89 percent. The specificity of SVM is then 99.86 percent, and the sensitivity is 100%.

Keywords: *Epilepsy, EEG Signal, SVM, KNN, Bern Barcelona.*