

# Application of machine learning in epileptic seizure detection

The presented work utilizes machine learning methods to solve the problem of detecting epileptic seizures using EEG signals. Epilepsy is one of the most common neurological diseases, affecting millions of people worldwide. This disease has always been of great importance in the field of biomedicine due to the health risks it poses. It is characterized by recurring, unprovoked epileptic seizures and can be recognized using an electroencephalogram. These signals are complex, noisy, nonlinear, non-stationary, and generate a large amount of data. Additionally, the problem may turn out to be class imbalance - a small sample of data indicating an epileptic seizure compared to the normal state.

The paper describes the data preparation process and the chosen approach to the problem of epilepsy seizure detection. The used data set and methods of filtering and cleaning data are described. Then, the chosen methods of feature extraction and selection, as well as the applied machine learning models: Support Vector Machine (SVM) and decision trees are discussed. The results were compared using appropriate classifier evaluation measures based on the confusion matrix: accuracy, sensitivity, specificity.

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