

Machine learning approaches for binary classification using brain signals

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Abstract

This paper attempts to perform a comparative analysis of brain signals dataset using various machine learning classifiers such as random forest, gradient boosting, support vector machine, extra trees classifier. The comparative analysis is accomplished based on the performance parameters such as accuracy, area under the ROC curve (AUC), specificity, recall, and precision. The key focus of this paper is to exercise the machine learning practices over an Electroencephalogram (EEG) signals dataset provided by Rochester Institute of Technology and to provide meaningful results using the same. EEG signals are usually captivated to diagnose the problems related to the electrical activities of the brain as it tracks and records brain wave patterns to produce a definitive report on seizure activities of the brain. While exercising machine learning practices, various data preprocessing techniques were implemented to attain cleansed and organized data to predict better results and higher accuracy. Section II gives a comprehensive presurvey of existing work performed so far on the same; furthermore, section III sheds light on the dataset used for this research.

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