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# AN ASSESSMENT OF EPILEPSY DISORDER USING NUMEROUS MACHINE LEARNING ALGORITHIMS

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## ABSTRACT

*Epileptic seizures are caused by brain abnormalities that can have a negative impact on the patient's health. The key obstacles in epilepsy prediction systems are seen to be feature selection and categorization. The support vector Machine algorithms (SVM), K-Nearest Neighbor (K-NN), Decision Tree, and Random Forest algorithms ,are used.Many approaches based on various characteristics and classifiers have been presented in this work . The approaches will provide a thorough grasp of seizure prediction as well as suggestions for further research.*

**Keyword : -***Epileptic seizure, K-nearest neighbour, Support vector machine.*

## 1. INTRODUCTION

A disease in which a patient becomes unconscious due to brain function orderliness is called epilepsy. Although over 50 million people find out they have it worldwide, in the United States, about 3 million patients they have seized it. Epilepsy is the third most common mental disorder. Meanwhile, epilepsy has many potential causes, one of which is cellular mutations. This leads to abnormal behavior of neurons or movement of neurons. Although the main cause of epilepsy is unknown, early diagnosis can be helpful in treatment epilepsy. Unfortunately, it does take that it can't be completely cured in a patient's energetic lifestyles span. In a few times, the affected person works independently nor can it do any paintings.[1]

Epileptic seizures are predicted using machine learning algorithms. Obtaining EEC signals, preprocessing signals, extracting signals from functions, and finally classifying unique slice states are part of these machine learning models. Few types of algorithms are used for the k-nearest neighbor, random forest, decision tree, etc. And help the vector device. Literature review of relevant and recent studies related to the effective diagnosis of epilepsy using EEG signals is presented.[7]

## 2. LITERATURE SURVEY

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### 2.1 Classification algorithms

Srinath R and Gayathri R [4] have provided an EEG data categorization algorithm for determining the patient's brain state. The method outlined in this White Paper can be used to effectively classify EEG alarms. EHS the warnings of all participants in the training and analysis of data sets are mutually impartial.

Advantages  are follow :

1) They use Deep learning algorithms  to implement it.
2) The capability to hit upon lengthy-term non-stop EEG recording turned into investigated.

Limitation :

This system is too  more complicated for analysis to provide us accurate categorization for findings  EEG severity diagnosis method.

### 2.2 . Neural network for robust detection

Wei Zhao, 1 Wenbing Zhao,[5]  have worked on robust seizure detection. according to as a result, this study worked well on many EEG classification tasks in the Bon Dataset. Seizures are classified into 2 categories (non-seizure and paroxysmal), 3 categories (systemic, intermittent, and seizure), and 5 categories, with data collected in various combinations to test a generic classification model (A, B, C, D, and E). Best performance comes from Class 2 and 3 type tests in a particular combination provide satisfactory overall performance.

### 2.3 EEG-based Epileptic Seizure Detection

Christine Osquist and Sandy Kang Lovgrena[3] have carried out a comparative evaluation of pattern reputation algorithms used for EEG-based totally epileptic seizure identity. EEG analysis allows for the differentiation of epileptic from normal data, as well as the differentiation of separate seizure stages. The normal stage is EEG data from a healthy person, the pre-ictal stage is EEG changes that occur before a seizure, and the inter-ictal stage is EEG changes that occur during a seizure. More classifiers could be examined in order to develop a more effective detecting approach.

### 2.4. Classification of epileptic seizure dataset :-

Khaled Mohamad Almustafa[1] used the separate wavelet transform and wavelet packet decomposition, as well as robust machine learning classification techniques and different feature extraction strategies, to perform automated epileptic seizure detection and prediction.

The authors looked at how wavelet constants could be used to classify EEG recordings. They use multiple resolutions of attenuation and artificial neural networks to classify EEG subsets in terms of delta, theta, alpha, beta, and gamma.

### 2.5. Epileptic Seizure Detection Using Machine Learning:-

HA Lateef and G Ralston[2], The principle motive of this paper is to build a greater efficient technique (Seizure Seeker) for evaluating EEG statistics the usage of gadget studying algorithms that might routinely distinguish among regular EEG output and epileptic seizures.

The researchers compared algorithm like logistic regression, support  vector machines (SVM), Long Short-Term Memory (LSTM).all of the models were equipped the usage of the Orange facts mining software and current Python libraries. based on recurrent neural networks, the LSTM technique generated near-ideal class outcomes with a 99 percentage accuracy.

### 2.6. Machine learning methods

Syed Muhammad Usman,1 Muhammad Usman,1 and Simon Fong2 [6] worked on the CHB-MIT dataset, which was collected by putting electrodes on participants' scalps to predict epileptic seizures. In this paper model on the dataset, and the findings reveal that there model outperforms than other models for epileptic seizure.

Advantages are following :

1) Enhanced to achieve a higher sensitivity of seizure prediction.
2) We can also enhance our online epilepsy prognosis process.

## 4. CONCLUSIONS

This paper has aimed to give an overview of this paper focuses on the review of selecting machine learning classifiers and suitable features. We studied that classification method provides higher  accuracy than a number of the techniques proposed inside the literature survey .Comparison performance of various machine learning algorithms in the diagnosis of the epilepsy disease faster and more effective results than previous studies for early diagnosing Epileptic seizure.

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