

# THE PARKINSON'S DISEASE DETECTION USING MACHINE LEARNING TECHNIQUES

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**ABSTRACT:** The Parkinson's disease is progressive neuro degenerative disorder that affects a lot only people significantly affecting their quality of life. It mostly affect the motor functions of human. The main motor symptoms are called "parkinsonism" or "parkinsonian syndrome". The symptoms of Parkinson's disease will occur slowly, the symptoms include shaking, rigidity, slowness of movement and difficulty with walking, Thinking and behavior change, Depression and anxiety are also common. There is a model for detecting Parkinson's using voice. The deflections in the voice will confirm the symptoms of Parkinson's disease. This project showed 73.8% efficiency. In our model, a huge amount of data is collected from the normal person and also previously affected person by Parkinson's disease. these data is trained using machine learning algorithms. From the whole data 60% is used for training and 40% is used for testing. The data of any person can be entered in db to check whether the person is affected by Parkinsons disease or not. There are 24 columns in the data set each column will indicate the symptom values of a patient except the status column. The status column has 0's and 1's.those values will decide the person is effected with Parkinsons disease. 1's indicate person is effected, 0's indicate normal conditions.

**Key Words:** Parkinson's disease; machine learning (ML), XGBoost, Decision tree.

## I. INTRODUCTION:

Parkinson's disease is a disorder of the central nervous system affecting movement and inducing tremors and stiffness a neurodegenerative disorder affecting dopamine neurons in brain. Parkinson's disease is difficult to diagnose. Common diagnostic criteria require the medication before. In this model, the huge data is collected from previously affected person and then by using machine learning algorithm will process the user input data with previous data to check he/she affected.

## II. LITERATURE REVIEW:

Glenda-M.halliday,Nichola,"Parkinson's progression prediction using ml and serum cytokines". 25-July-2019. The serum samples from a clinic are tested to find Parkinson's disease and the same samples are tested using

ML algorithm to detect Parkinson's disease.Blauwendraat, C., Bandres-Giga, S. & Singleton, A. B.Predicting the progression in patients with Parkinson's disease using their voice. Lancet Neurol.2017. •Voice change is also a symptom of Parkinson's disease by applying ML algorithm. Das R. "A comparison of multi-classification methods for diagnosis of Parkinson's disease". Expert Systems With Applications"; 37:1568-1572 2010. •For methods used for testing Parkinson's disease they are ML ,DM neural, regression, decision tree in those ML show high performance.

## III.OBJECTIVES

### Aim of the Project:

The main aim is to test the ability of motor function of the patient with Parkinson's disease.

### Scope of the Project:

The scope of this project is to show the high accuracy of detecting Parkinson's disease in early stage.

## IV.DESIGN AND METHODOLOGIES:

### MODULE 1:

- Data Collection

### MODULE 2:

- Training and testing of data.

### MODULE 3:

- Apply XGBoost algorithm.

### MODULE 4:

- Cod completion.

## V.IMPLEMENTATION:

- ARCHITECTURE DIAGRAM
- DATA-FLOW-DIAGRAM
- ER-DIAGRAM

•SEQUENCE DIAGRAM

ARCHITECTURE DIAGRAM:

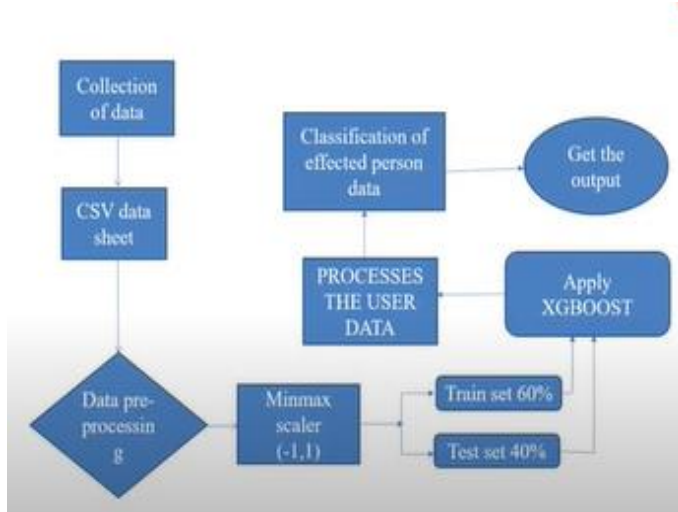


Fig.1 Architecture Diagram

DATA FLOW DIAGRAM:



Fig.2. Data Flow Diagram

ER DIAGRAM:

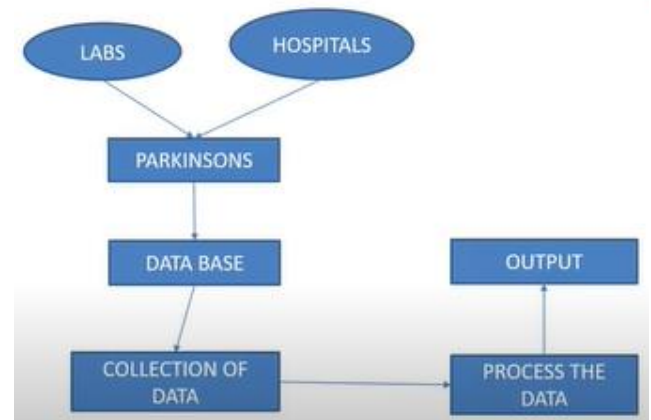


Fig.3 .ER Diagram

SEQUENCE DIAGRAM:

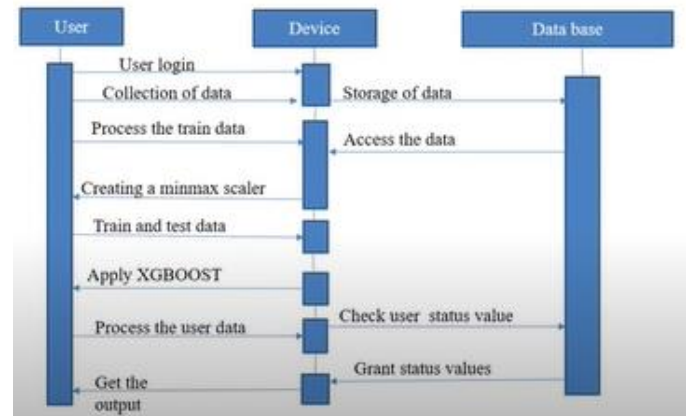


Fig.4.Sequence Diagram

VI.TESTING:

- UNIT TESTING
- INTEGRAION TESTING
- FUNCTIONAL TESTING.

UNIT TESTING:

It is the level of software testing where individual units and the components are tested. In the proposed project the data of an individual person is taken and tested. The accuracy is high 100% when tested with a single person data.







```
from sklearn.metrics import confusion_matrix
gn_cm_test=confusion_matrix(y_test,y_pred)
print(gn_cm_test)
gn_cm_train=confusion_matrix(y_train,y_pred1)
print(gn_cm_train)

[[ 5  2]
 [ 8 24]]
[[39  2]
 [44 71]]
```

Fig.16.Confusion Matrix for Navie bayes

```
from sklearn.metrics import accuracy_score
accuracy = accuracy_score(y_test,y_pred)
print(accuracy)

0.7435897435897436
```

Fig.17.Accuracy using Navie Bayes

### VIII.CONCLUSION:

In this process we can predict the parkinsons disease in patient's body using machine learning technology and this method makes the process easy to our user.

Our analysis provides very accurate performance in detecting Parkinson's disease using XGBOOST algorithm

### IX. REFERENCES:

- 1.Mahlknecht, P.; Krismer, F.; Poewe, W.; Seppi, K. Meta-Analysis of Dorsolateral Nigral Hyperintensity on Magnetic Resonance Imaging as a Marker for Parkinson's Disease. *Mov. Disord.* 2017, 32, 619–623.
2. Dickson, D.W. Neuropathology of Parkinson disease. *Parkinsonism Relat. Disord.* 2018, 46 (Suppl. 1), S30–S33.
3. Kalia, L.V.; Lang, A.E. Parkinson's Disease. *Lancet* 2015, 386, 896–912.
4. D. Heisters, "Parkinson's: symptoms treatments and research", vol. 20, no. 9, pp. 548-554, 2011.

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