

LITERATURE SURVEY

**DETECTING OF PARKISONS DISEASE USING
MACHINE LEARNING**

SUBMITTED BY,

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DETECTING PARKINSON'S DISEASE USING MACHINE LEARNING LITERATURE SURVEY

SURVEY 01:

Gabriel Solana-Lavalle (2021)

“Analysis of voice as an assisting tool for detection of Parkinson's disease and its subsequent clinical interpretation”

Gabriel Solana-Lavalle et al uses the algorithms such as Multilayer Perceptron (MLP), Random Forest (RF) and K-Nearest Neighbor (KNN). For the prediction of Parkinson disease, three set of experiences were conducted to obtain the features with highest contribution to Parkinson's disease. This three sets are 1.a population with male and female subjects (balanced), 2.male subjects (balanced and unbalanced), and 3. Female subjects (balanced and unbalanced). In this study, the researchers used acoustic devices to collect speech parameters from **50 persons with Parkinson's disease and 50 healthy people**. They employed the **k-fold cross validation method for testing** and claim that it can deliver **85 percent accuracy**.

SURVEY 02:

Mosarrat Rumman (2018)

“Early detection of Parkinson's disease using image processing and artificial neural network”

Mosarrat Rumman et al works based on Image Processing and Artificial Neural Network (ANN) classification algorithm. According to ANN prediction, **if value closer to 1 then suggests PD and value closer to 0 then suggest normal**. Parkinson disease is a global public health issue. Machine learning technique would be a best solution to classify individuals and individuals with Parkinson's sickness (PD). This paper gives an entire review for the forecast of Parkinson disease by utilizing the machine learning based methodologies. To improve the imaging diagnosis of PD, researcher proposes a model in this paper, for early detection of PD using image processing and artificial neural network (ANN). **The model used 200 SPECT images, 100 of healthy normal and 100 of PD**, obtained from Parkinson's Progression Marker's Initiative (PPMI) database and processed them to find the area of caudate and putamen which is the region of interest (ROI) for this study. The area values of ROI were then fed to the ANN which is hypothesized to mimic the pattern recognition of a human observer. The simple but fast ANN built, could classify subjects with and without PD with an **accuracy of 94%, sensitivity of 100% and specificity of 88%**. This paper likewise displays the outline of results acquired by different scientists from accessible information to predict the Parkinson disease.

SURVEY 03:

Shreevallabhadatta G, Suhas M S, Vignesh, Manoj C, Rudramurthy V C, Bhagyashri R Hanji (2022)

“PARKINSON’S DISEASE DETECTION USING MACHINE LEARNING”

Shreevallabhadatta G, Suhas M S, Vignesh, Manoj C describes Parkinson's disease is a brain disorder that affects the central nervous system (CNS), and there is currently no cure for it unless it is diagnosed early. Late detection results in no therapy and death. As a result, early detection is critical. **"Parkinson's Disease Detection Using Machine Learning Technologies"** was launched in try to diagnose the disease at an early stage. They used machine learning algorithms such as **SVM (Support Vector Machine), Decision Tree, Random Tree Classifier, and Neural networks** for early disease detection because they are known for their efficiency and quick retrieval. And they found the results using Performance Metrics like Accuracy Score, Mean Absolute Error, Root Mean Absolute Error, Precision, F1 Score, and Recall Score, among others play a prominent part in the outcomes of any Machine Learning project. **Accuracy Score around 97.43 %, Precision Score around 96.55%, F1 Score around 98.24%, whereas XG Boost lead the Recall Score with 97.252%.** Most importantly, speech processing has a lot of potential in terms of Parkinson's disease detection, classification, and diagnosis. They expect that more Machine Learning-based technologies and medical techniques will be available soon to save people from this disease.

SURVEY 04:

Yatharth Nakul, Ankit Gupta, Hritik Sachdeva (2020)

“Parkinson Disease Detection Using Machine Learning Algorithms”

Yatharth Nakul, Ankit Gupta, Hritik Sachdeva, the researchers describes about Parkinson’s disease and its issues .Nerve cells, the building blocks of the nervous system in the brain stop producing when they are damaged. Thus, less dopamine is produced that inhibits motor skills and speech. Voice changes in the first stage before brain cells are affected, hence helps identify Parkinson's disease in the early stages and therefore prevent brain cell damage that can lead to reduced fusion and movement. Introduction of different ML algorithms for classification of Parkinson's disease is presented. So they used Supervised Learning Algorithms such as **Random Forest, Support Vector and Naive-Bayes** are also compared. **Confusion matrix** was used for accuracy checking and different Classification methods were used. ML classification technique will improve the accuracy and reduce possible loopholes. Hyper parameter tuning is used to achieve the maximum accuracy. Achieved **maximum accuracy of 98.30% using the K nearest neighbor classification followed by the Random Forest Classification model with an accuracy score equal to 94.91%.**

The main drawbacks are Delay in Results derived and Output Progression is slow and Best Proposed Methodology used gives higher error rate when Confusion Matrix is plotted.

REFERENCES:

01. Gabriel Solana-Lavalle, "Analysis of voice as an assisting tool for detection of Parkinson's disease and its subsequent clinical interpretation", ELSEVIER, Biomedical Signal Processing and Control, **2021**.
02. Mosarrat Rumman, "Early detection of Parkinson's disease using image processing and artificial neural network", Department of Computer Science & Engineering, BRAC University, Bangladesh, **2018**.
03. Shreevallabhadatta G, Suhas M S, Vignesh, Manoj C, Rudramurthy V C, Bhagyashri R Hanji, "PARKINSON'S DISEASE DETECTION USING MACHINE LEARNING", Department of Computer Science and Engineering, Global Academy of Technology, International Research Journal of Engineering and Technology (IRJET) Volume: 09 Issue: 06 | June **2022**.
04. Yatharth Nakul, Ankit Gupta, Hritik Sachdeva, "Parkinson Disease Detection Using Machine Learning Algorithms", Department of Computer Science Engineering, SRMIST, Uttar Pradesh, India. International Journal of Science and Research (IJSR), **2020**