**DETECTING OF PARKINSON'S DISEASE USING MACHINE LEARNING.**

***INTRODUCTION***

Machine learning techniques are being increasingly applied in the healthcare sector. As the name implies, machine learning allows for a computer program to learn and extract meaningful representation from data in a semiautomatic manner. For the diagnosis of PD Machine learning. models have been applied to multimode of data. modalities, including handwritten patterns, movement neuroimaging, voice, cerebrospinal fluid, cardiac scintigraphy, serum and optical coherence tomography. Machine learning also allows for combining different modalities, such as magnetic resonance imaging (MRI) and single photon emission computed tomography. (SPECT) data in the diagnosis of PD. By using machine learning approaches, we may therefore identify. relevant features that are not traditionally used. in the clinical diagnose of PD and rely on these measures to detect po in preclinical stages or atypical forms.

***LITERATURE REVIEW:***

**[1]** Early detection of Parkinson's Disease using deep learning and machine learning. Accurately detecting Parkinson's disease (PD) at an early stage is certainly indispensable for slowing down its progress and Providing patients the possibility of accessing to disease modifying therapy.

Advantage: Early detection of PD is an important step to understand the causes, develop better treatments and carry out effective early management of the disease.

Disadvantage: Even though deep learning offers superior performance compared to machine learning models, it is hard to say that the deep learning dominates the others.

**[2]** High-Accuracy detection of Early Parkinson’s disease. through Multimodal features and machine learning. TO perform clarification, we use the preclinic markers of non-motor features of RBD and Olfactory loss, CSF measurements and dopaminergic imaging features

Advantage: The dataset can be divided into 70% and it is used for training and the next 30% is used for testing

Disadvantage:

Larger the increase, higher the importance of the fracture out of bag error is estimated by comparing out of bag predicted responses and the observed responses for all observations used for training

**[3].** Telemonitoring Parkinson’s disease using machine learning by combining tremor and voice analysis This proposed system receives rest tremor and vowel phonation data acquired by smartphones with built in accelerometer and voice recorder sensors. The data are primarily collected from diagnosed PD patients and healthy people for briefing and optimizing machine learning models that exhibits higher performance.

Advantage: The proposed system can detect pp using. a cloud-based system for computation, data providing, and regular monitoring of voice and tremors samples captured by smartphones thus, this system. can be a solution for healthcare authorities to ensure the older population's accessibility to a better medical diagnose system in the developing countries especially in the pandemic situation tire could-19, when in-person monitoring i minimal.

Disadvantage: Not every people will have smartphones for consultation.

**[4].** Early diagnosis of Parkinson’s disease in brain. MRI using deep learning algorithm. In preceding year, deep learning algorithms. have accomplished striking performance in numerous. fields that include computer vision NEP (Natural language processing) and speech recognition Many changes are being brought about by deep learning in other fields like engineering and biology

Advantage: We can generalize them to obtain optimum solutions to distinct problem making use of the consistent design.

Disadvantage: The main cause of Parkinson disease is unknow. It describes problems in selection et majority of the discriminative and precise features. that are essential for classification model building.

**[5].** Parkinson’s Detection from spiral and wave drawings using convolutional Neural Networks. A system design is proposed for analysing spiral drawing patterns and wave drawing pattern in patients suffering from Parkinson’s disease and healthy subjects’ identification of the correct biomatter with respect to particular heath issues and detection of the same is of paramount importance for the development of clinical decision support system.

Advantages: The complete model was trained on the data of 55 patients and have achieved an overall accuracy of 93.3% average recall of 94%. average precision of 93.5%.

Disadvantages: The major drawback of these kinds of diagnose needs proper interpretation of sketching and handwriting.

**[6].** Detection of Parkinson's disease from handwriting wring deep learning

In this, an automatic clarification system for PD detection is developed based on online handwriting. Two deep- learning models, trained end-to-end, have been proposed for time series classification, namely the CNN and the CNN-BLSTM. For the CNN Model, two. different approaches were proposed to encode time series into images for the CNN-BLSTM Model the raw time series are directly used.

Advantage: With the spread of digitizing devices, it’s now Possible to record sequences of measurements from handwriting tasks, provided by tablet and pen devices.

Disadvantage: These methods are expensive and need a high level of professional expertise.

**[7.]** Deep learning aided Parkinson’s disease diagnose from Handwritten dynamics

In this, we cope with the problem of PD Identification by means of convolutional Neural Networks Basically, the idea is to model the handwritten dynamics as a time series, and to use it as an input to a CNN, which will be able to learn features that are used to distinguish healthy individuals from PD patients

Advantage: Section making techniques based on machine learning, might be the most fruitful ones to deal with PD

Disadvantage: Since the waiting ability & affected by Parkinson’s disease, it is very usual to find such exams in hospitals only one a few works have considered them for automatic diagnostic purposes.

**[8]** Parkinson’s Disease detection using voice and spiral drawing dataset.

Parkinson’s speech dataset with different recordings was taken from the VCI machine learning repository. The dataset included 20 voice data with Parkinson's disease and 20 voice data from healthy individuals. The voice data was focussed on those vowels |a|, |o| and |u|.

Advantage: The main advantages of using voice and spiral drawing dataset are

* Highly efficient
* Accurate detection
* Real time implementation

Disadvantage: No other data except for voice and spiral are used, no other algorithm or scan reports are used

**[9]** It represents research effort that were undertaken to inform on how well traditional machine learning algorithm can handle this task. Thus, the primary objective of the research is to provide a literary foundation for development and improvement of algorithm for deducting PD related motor symptoms.

Advantages: We can easily know the symptoms by this. It exhibits PD- like phenotype and established behavioural test. Ease of genetic manipulation process.

Disadvantage: It relatively expensive and it has long life cycle.

**[10]** Dis-luminating progressive supranuclear palsy from Parkinson’s Disease using machine Learning. Progressive supra nuclear palsy (PSP), a neurodegenerative condition may be difficult to discriminate clinically from idiopathic Parkinson’s disease. Analysis of gait and relate tasks is one possible means of discrimination.

Advantage: Machine learning methods can accurately discriminate PSP from PD choice of array computing depend on content for diagnostic purpose a high specification is needed suggestion the more complete array advantage.

Disadvantage: We the explore the effect of adding one arm and one leg sensor to the lumber sensor making the three-sensor including lumber right arm and right foot.

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