**LITERATURE SURVEY**

**1) A comparison of multiple classification methods for diagnosis of Parkinson disease**

# AUTHORS: [ResulDas](https://www.sciencedirect.com/science/article/abs/pii/S0957417409006137" \l "!)

In this paper, different types of classification methods are compared for effective diagnosis of Parkinson’s diseases. The reliable diagnosis of Parkinson’s disease is notoriously difficult to achieve with misdiagnosis reported to be as high as 25% of cases. The approaches described in this paper purpose to efficiently distinguish healthy individuals. Four independent classification schemas were applied and a comparative study was carried out. These are Neural Networks, DMneural, Regression and Decision Tree respectively. Various evaluation methods were employed for calculating the performance score of the classifiers. According to the application scores, neural networks classifier yields the best results. The overall classification score for neural network is 92.9%. Moreover, we compared our results with the result that was obtained by kernel support vector machines [Singh, N., Pillay, V., & Choonara, Y. E. (2007). Advances in the treatment of Parkinson’s disease. Progress in Neurobiology, 81, 29–44]. To the best of our knowledge, our correct classification score is the highest so far.

# 2) Predicting Severity Of Parkinson's Disease Using Deep Learning

# AUTHORS: Srishti Grover, Saloni Bhartia, Akshama, Abhilasha

# Parkinson's disease is a progressive and chronic neurodegenerative disorder. As the dopamine-generating neurons in parts of the brain become damaged or die, people begin to experience difficulty in speaking, writing, walking, or completing other simple tasks. These symptoms grow worse over time, thus resulting in the increase of its severity in patients. In this paper, we have proposed a methodology for the prediction of Parkinson’s disease severity using deep neural networks on UCI’s Parkinson’s Telemonitoring Voice Data Set of patients. We have used ‘TensorFlow’ deep learning library of python to implement our neural network for predicting the severity. The accuracy values obtained by our method are better as compared to the accuracy obtained in previous research work.

# 3) UPDRS tracking using linear regression and neural network for Parkinson’s disease prediction

**AUTHORS** **: Elmehdi BENMALEK , Jamal ELMHAMDI , Abdelilah JILBAB**

# The Unified Parkinson’s Disease Rating Scale (UPDRS) is often used to track Parkinson's disease (PD) but it requires costly and logistically inconvenient for patient and clinical staff. In this work we present clinically useful accuracy replication of UPDRS, so we can classify the disease’s severity of the patients with, and predict the evolution of PD based on those results. We map the features extracted from the speech to UPDRS using Least-squares regression technique and neural network. We applied our techniques on large database of PD speech (~6,000 recordings from 42PD patients). And we compare our results with state of the art.

# 4) Predicting Severity Of Parkinson’s Disease Using Deep Learning

**AUTHORS :** **[SrishtiGrover](https://www.sciencedirect.com/science/article/pii/S1877050918308883" \l "!)****[SaloniBhartia](https://www.sciencedirect.com/science/article/pii/S1877050918308883" \l "!)****[Akshama](https://www.sciencedirect.com/science/article/pii/S1877050918308883" \l "!)**

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# 5) High-accuracy detection of early Parkinson's Disease using multiple characteristics of finger movement while typing

**AUTHORS :** **Warwick R. Adams**

# Parkinson’s Disease (PD) is a progressive neurodegenerative movement disease affecting over 6 million people worldwide. Loss of dopamine-producing neurons results in a range of both motor and non-motor symptoms, however there is currently no definitive test for PD by non-specialist clinicians, especially in the early disease stages where the symptoms may be subtle and poorly characterised. This results in a high misdiagnosis rate (up to 25% by non-specialists) and people can have the disease for many years before diagnosis. There is a need for a more accurate, objective means of early detection, ideally one which can be used by individuals in their home setting. In this investigation, keystroke timing information from 103 subjects (comprising 32 with mild PD severity and the remainder non-PD controls) was captured as they typed on a computer keyboard over an extended period and showed that PD affects various characteristics of hand and finger movement and that these can be detected. A novel methodology was used to classify the subjects’ disease status, by utilising a combination of many keystroke features which were analysed by an ensemble of machine learning classification models. When applied to two separate participant groups, this approach was able to successfully discriminate between early-PD subjects and controls with 96% sensitivity, 97% specificity and an AUC of 0.98. The technique does not require any specialised equipment or medical supervision, and does not rely on the experience and skill of the practitioner. Regarding more general application, it currently does not incorporate a second cardinal disease symptom, so may not differentiate PD from similar movement-related disorders.