

Early can be further
improved by
implementing



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Early detection of severity of any disease helps in treating the patient sooner. This paper intended to verify the effectiveness of the application of Deep Learning for predicting the severity of Parkinson's disease in a patient using his other voice characteristics. The dataset used was UCI's Parkinson's Telemonitoring Dataset, comprising of 16 attributes or biomedical voice measurements with various range of values from 42 people with early-stage Parkinson's disease. It was first pre-processed by applying normalisation.

Then thesegmentation of the normalised dataset was done to create training dataset and testing dataset. Deep Neural Networks were trained on the training data, and finally the accuracy of severity prediction was obtained by running the network on the testing data. We were able to successfully implement deep neural network in predicting the severity of Parkinson's disease, achieving an accuracy of 81.6 % and 62.

7 % in the case of motor-UPDRS and total-UPDRS scores respectively. In order to analyse the dataset and make an attempt to understand the trend of these severity scores, an analysis of the normalised dataset was performed on the basis of gender and age of patients. The results indicate that accurate prediction of severity of Parkinson's disease can be done using deep learning. This implies that Deep Learning can be used for severity prediction and medical analysis for other diseases of similar types as well. Although we have used a dataset of 5875 instances, the accuracy of our approach can be further improved by implementing it on a larger dataset, having more number of instances of each severity class.

Moreover, more number of patient attributes like- gait and handwriting features- can be added to make the model more reliable. Also, more powerful computing resources (i. e. GPUs with better processing capabilities) can be used to improve the time complexity of our approach.