SmallSEOTools

# PLAGIARISM SCAN REPORT

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A Survey on Prediction Of Parkinson's Disease Using Machine Learning Abstract—Machine Learning is one of the many applications five years before the actual diagnosis of the disease. So,using of Artificial Intelligence that enables the system to learn auto- this symptom along with other symptoms like tremor,machine matically by itself ,it also allows the system to improve from learning algorithms are applied to detect PD and also to predict its experiences without being programmed to do so explicitly. its severity. Machine learning includes designing algorithms that will access the data and avail the results to improve its performance. This II. RELATED WORK paper includes a survey of the Machine Learning techniques implemented to predict Parkinson's Disease. A. Patric Schwab et al Index Terms—Parkinson, Deep Learning, Unified Parkinson's For distinguishing patients with and without PD, an ap- Disease Rating Scale, Machine Learning proach consists two stages. In the first stage, specialized training models are designed to predict the pinpointing from I. INTRODUCTION the signal data given for all types of tests. Second stage Machine Learning is the study of algorithms and math- comprises the use of EAM that aggregates specialized model ematical models,it performs tasks based on inferences and outcomes and metadata to devise single diagnostic prediction. patterns. Machine Learning is used to make predictions using Sensor data includes walking, memory, voice and tapping tests data.. There wasn't any prevailing diagnosis procedure of outcomes, size of which is down- sampled to certain fixed Parkinson's Disease which lead the researchers to use ML as length. In case of voice test, instead passing raw voice signals, a tool to achieve the above task. Melfrequency ceptral is extracted from audio and passed. The Parkinson's disease is a progressive neurological disorder accelometer data of walking and tapping tests is standardized in which dopamine generating cells die in a part of our considering mean as 0 and variance as 1. RNN is used for brain known as Substantia Nigra. Dopamine is a chemical memory test whereas CNN is used during walking, tapping generated in our body which acts as both neurotransmitter and voice tests as shown in Fig. 3. and a hormone. It has various functions like motor control B. Monica Giuliano et al and controlling release of various other hormones. Due to Principle Component Analysis(PCA) is done to reduce the death of dopamine generating cells, the level of dopamine 66 components to 33 components. K-means clustering and decreases in our body which causes various motor and non- ANOVA are implemented on 9-factor PCA. Taking 5 voice motor symptoms. Motor symptoms like tremor,rigidity and parameters into consideration, an MLP model was generated, postural instability, are observed and non-motor symptoms trained and tested, the Fig. 2 represents the above data. like dementia,depression and sleep disturbances are observed. Also, one of the major symptoms observed is change in voice C. Siddharth Arora et al and speech. The person tends to talk slowly in a low volume After fishing the data, feature extraction is sued to extract and slurs or stutters and mumbles while talking.The cause of more than enough features from the data. Some of the features this disease is still unknown. Research shows that there is a includes Mean. Standard deviation, Pitch, Vocal tract etc. role of genetics,environmental factors and aging in causing Random classifier is selected and bidded which provides good this disease. sensitivity and specificity in the range of 95% - 98%. 10- Studies have shown that a huge number of patients show the fold cross validation is unremitted to forge prediction more symptom of change in vocal speech which can be observed accurate. The above figures are represented in Fig. 1. D. Zoltan Galaz et al Feature extraction phase comes into picture after data collection is done which makes use of multiple tools like NDAT(Neutrological Disease Analysis Tools) and PRAAT acoustic s/w analysis tools using which about 715 features can be extracted. After this phase embedded methods are used by feature selection phase. Fig. 2 shows relevant data.Among classifications, Guided Regularized Random Forest(GRRF) is used. After this, 100 times cross validation is done with 10 folds and comparison is done between true UPDRS and predicted UPDRS. E. Vaiciukynas E et al Phonation and text-dependent speech discourse modalities Fig. 3. Comparision Of Various Model's Sensitivity and Specificity braces the information taken to perpetrate the objectives. Phonation marks stamp for articulating short sentence or CONCLUSION vowel. An Acoustic Cardoid(AC) and Smartphone Micro- phones(SM) are used

for articulating short sentence or CONCLUSION vowel. An Acoustic Cardoid(AC) and Smartphone Micro- phones(SM) are used to record vouice. The MLP loom used The survey paper includes various approaches to detect here is RF(Random Forest). For identification of execution and Parkinson's disease using Machine Learning. In our survey expense of probability praportioin, EER(Equal Error Rate) is we came across many methodologies implemented by various utilized. Above text is tantamount with Fig. 3. researchers to detect PD. We have summarised the work done till now in this field. III. FIGURES AND TABLES By the literature survey done by us we conclude that the change in vocal speech symptom is best for the detection of PD. The future work of our study is to design a better approach of predicting PD using machine learning. REFERENCES [1] Patrick Schwab,Walter Karlen "PhoneMD:Learning to Diagnose Parkin- son's Disease from Smartphone Data" Published in AAAI 2018 DOI:10.1609/aaai.v33i01.33011118. [2] Monica Giuliano,Alfonsa Garc´ıa-Lopez,Silvia P ´ erez,Fransisco D ´ ´ıaz Perez,Osvaldo Spositto,Julio Bossero "Selection of voice parameters for ´ Parkinson s disease prediction from collected mobile data" 2019 XXII Symposium on Image, Signal Processing and Artificial Vision (STSIVA). [3] Siddharth Arora, Vinayak Venkataraman, Sean Donohue, Kevin M. Biglan5, Earl R. Dorsey, Max A. Little, "HIGH ACCURACY Fig. 1. RMSE Values of Various Tasks Performed DISCRIMINATION OF PARKINSON'S DISEASE PARTICIPANTS FROM HEALTHY CONTROLS USING SMARTPHONES" 2014 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP). Fig. 2. Comparision Of Model Accuracies

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