Project Design Phase-I
Solution Architecture

Date	19 September 2022
Team ID	PNT2022TMID11558
Project Name	**Project -** *Detection of Parkinson's Disease using machine learning*

Definition :

Movement, posture, and agility are all impacted by Parkinson's Disease (PD), a neurological condition. Fine motor movement, posture, muscular dexterity, and strength are all adversely impacted by the gradual loss of dopamine producing neurons in the substantia nigra of the brain. A wide range of symptoms begin to manifest long before Parkinson's is formally diagnosed. The youngest children struggle with fne motor movements like sketching shapes and fgures. The "Spiral Test" is a scientifcally created diagnostic tool that assists the neurologist in estimating the degree of Parkinsonian symptoms displayed by the test taker by analysing the drawing pattern and applying artifcial intelligence to generate a better estimate.

Solution Description :

Drawing speed and pen pressure have been observed to be slower and lower in Parkinson's patients in the aforementioned condition; this was particularly evident in people with more severe/advanced forms of the disease. Parkinson's disease symptoms such as tremors and muscle rigidity make it challenging to draw smooth spirals and waves. In order to facilitate quick identification and open the door to additional treatments, the user will be able to upload photographs or drawings to a website that uses a machine learning model that is hosted over a web framework. The image will be quantified using the Histogram of Oriented Gradients for Human Detection (HOG), a structural descriptor that analyses variations in local gradient in the input image. A feature vector (list of integers) with a length of 12,996 that defines the wave or spiral makes up the outcome characteristics. Using the traits from each image in the collection, a Random Forest classifier will be trained. And we Testing the voice dataset with PD.

Train
data

Random Forest
Classifier Algorithm

Image
Preprocessing

Hand - drawn
spiral Dataset

UI

Predicted
Output

Detection of
UI page

Model

Evaluation

Test
data

Input

user

K-means
Clustering

Decision Tree
Classification

Voice Dataset