Project Design Phase-I
Proposed Solution Template

Date	24 September 2022
Team ID	PNT2022TMID52690
Project Name	Detecting Parkinsons Disease Using Machine Learning
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
•	Problem Statement (Problem to be solved)	Parkinson's disease (PD) is a chronic, progressive neurodegenerative ailment that begins with injury to a specific region of the brain. One in every 500 people is affected by Parkinson's disease. Most patients with Parkinson's disease have symptoms after the age of 50, with one in every twenty developing symptoms before the age of 40. .Early detection of Parkinson's disease is critical for patient survival.
•	Idea / Solution description	In the case of the aforementioned condition, it has been noticed that drawing speed is slower and pen pressure is lower among Parkinson's patients - this was notably noticeable in individuals with more acute/advanced forms of the disease. Tremors and muscular stiffness are signs of Parkinson's disease, making it difficult to draw smooth spirals and waves. The usage of machine learning model that is hosted over a web framework shall allow the user to upload pictures of drawings to the said website to enable easy identification and pave way for further treatments. Using Histogram of Oriented Gradients for Human Detection (HOG), a structural descriptor that measures variations in local gradient in the input image, the picture will be quantified. The resultant characteristics consist of a feature vector (list of integers) with a length of 12,996 that quantifies the

		wave or spiral. A Random Forest classifier will be trained using the characteristics from each image in the dataset.
•	Novelty / Uniqueness	• Instead of measuring the speed and pressure of the pen on paper, the drawings may be able to diagnose Parkinson's disease preventing the need for complex devices and reduction in complexity in terms of usage and hardware cost. • The use of OpenCV techniques to eliminate even the use of paper for the drawing test also contributes to the novelty factor. • The application in case of a prediction leaning to a confirmation of the condition can provide awareness and various information about the condition including location and other details of treatment centers and specialists. • Since the application must work with the patients physical and personal information, the security factor is of paramount importance. The usage of OTP verified authentication means is a novelty factor.
•	Social Impact / Customer Satisfaction	• The application can be the first step to eradicate the confirmation bias that is based on mere symptoms experienced by the subjects. • Since it is based on the mere drawing of the subject/customer the hassle of taking several long tests is prevented. • The secure and user-friendly platform makes the self-intuitive process of identification hassle free. • It provides free detection and saves time and money on journey.
•	Business Model (Revenue Model)	• The platform is free. • It can used by people pertaining to all age groups with limited technical knowledge and can be prescribed to others.

•	Scalability of the Solution	Any additional functionality, such as the employment of a chatbot to assist consumers, may be introduced at anytime and anyplace. It may be accessed simultaneously by any number of people.