Project Title: Detecting Parkinson's Disease Using Machine Learning **Project Design Phase-I - Solution Fit Template** **Team ID:** PNT2022TMID11558

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

- Person with Parkinson Disease Symptoms
- Those over 65 who are in the high-risk zone for the illness.

6. CUSTOMER CONSTRAINTS CC

- appropriate Internet connectivity is available.
- Power supply when using a desktop computer
- Does not require the cost for treatment
- No requirement to visit a hospital for their checkup

5. AVAILABLE SOLUTIONS AS

- **Solution available :** By using ML,we can detect early stage of PD and accurate result by checking with voice changes dataset and integrating with spiral drawing dataset
- **Past techniques :** PD is generally diagnosed by MRI(it can't detect early stage of PD),SPECT(can reveal in brain chemistry, such as a decrease in dopamine) and PET(it detect brain regions involvement) Scan .This result in high Misdiagnosis rate
- **Pros :** As a result of using ML, the physician can determine whether anything is normal or aberrant and then provide medication in accordance with the afflicted stage.
- **Cons :** The current approach only detects PD at the secondary stage.Diagnosis suggestion also difficult

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS J&P

- Spread Awareness about the Disease
- Since I-DOPA and co-careldopa therapy are most effective when started when Parkinson's disease (PD) is still in its early stages, early diagnosis of PD is essential.
- clinical evaluation is done in online.
- Treatment records are update according to their changes.
- It will calculate the treatment date and set the alarm for remembering purpose.

9. PROBLEM ROOT CAUSE RC

- Lack of knowledge about the illness, which allowed people to ignore early signs.Additionally, this may result in people not knowing where to seek medical attention or what their best course of action is.
- A lot of people are uncertain about the condition.
- People are reluctant to get testing because of the expense and travel considerations.
- Many comparable symptoms can lead people to make faulty judgments.

7. BEHAVIOUR BE

- Participate in studies on the disease, its symptoms, and possible cures.
- The topic or consumer could inquire of friends and family of any diagnosing facilities or request general assistance in finding the appropriate personnel.
- After visiting multiple web pages online, the buyer could develop confirmation bias and begin to feel anxious.
- Look for measures to stop the spread of the illness.
- Prepare for a crisis situation.

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

3. TRIGGERS TR

- Publications on social media that promote awareness.
- The platform's self-intuitive, simple design that is free and encourages interaction
- Specified symptom-focused advertisements.

4. EMOTIONS: BEFORE / AFTER EM

- Following diagnosis in the absence of the condition: Joy, the elimination of confirmation bias, Peace, and Calmness.
- After receiving a diagnosis: Fear, Overwhelmed, Vulnerable, and Depressed.
- Before: Uncertainty, stress, and anxiety.

10. YOUR SOLUTION SL

Machine learning methods can be used to tackle the issue with a low error rate. The input is the Parkinson's disease voice dataset from the UCI Machine learning library. Additionally, our suggested technique yields precise results by combining the spiral drawing inputs of Parkinson's patients and healthy individuals. We suggest a method that accurately analyses patient data from spiral drawings and voice recordings. Combining both data, the doctor can determine whether something is normal or abnormal and then give the appropriate medication for the affected stage. we are using the following analysis

1. Voice Dataset Analysis
   - K-means Clustering
   - Decision Tree Classification
   - Prediction of Output
2. Spiral Drawing Analysis(uning HOG method)
   - Pre-Processing
   - Feature Extraction
   - random Forest classification
   - Prediction of output

8. CHANNELS of BEHAVIOR CH

a. ONLINE

- Browse physician profiles and schedule visits.
- Online prediction is simple and cost-free.
- A user-interactive website that is available at all times to anyone.

b. OFFLINE

- Make an appointment and go to the doctor.
- Consult with professionals and get recommendations for treatments.
- Diagnosis Suggestion is difficult
- Prediction of early stage of PD is impossible.

Identify strong TR & EM