# PROJECT DESIGN PHASE-I

# PROBLEM SOLUTION FIT

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| Date | 29 September 2022 |
| Team ID | PNT2022TMID28464 |
| Project Name | Detecting Parkinson's Disease Using Machine Learning |
| Maximum Marks | 2 Marks |


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## PROBLEM STATEMENT:

More than 10 million people are living with Parkinson's Disease worldwide, according to the Parkinson's Foundation. While Parkinson's cannot be cured, early detection along with proper medication can significantly improve symptoms and quality of life. Parkinson's disease disorder is a brain disorder that causes unintended or uncontrollable movements, such as shaking, stiffness, and difficulty with balance and coordination

## PROBLEM SOLUTION FIT:

Problem-solution fit is a term used to describe the point validating that the base problem resulting in a business idea really exists and the proposed solution actually solves that problem.

# **Problem-Solution fit** canvas 2.0

Purpose / Vision

Define CS, fit into CC

### 1. CUSTOMER SEGMENT(S) — CS

Persons with symptoms similar to parkinson's

People above the age of 60 are more prone to parkinson's can predict

Prediction for a cost-free diagnosis

People who does a full body check up

Patients already suffering from parkinson's can detect the level of it

### 6. CUSTOMER CONSTRAINTS — CC

Availability of the device to predict it

Proper network connection

Availability of power supply

Availability of time

Interest of an individual

Social and environment factors

### 5. AVAILABLE SOLUTIONS — AS

Prediction by speech:
Can get confused with dysarthria

Prediction by writing speed:
myasthenia gravis can be similar to parkinson for it's neural disordering

Prediction by impaired posture/balance:
not very accurate on alcoholic

Prediction by drawings:
hand drawn spirals and waves can access it more accurately. easy use

Explore AS, differentiate

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

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

Making an accurate diagnosis of Parkinson's disease can be complicated.

The standard diagnosis of Parkinson's disease is clinical but prediction can be made
Symptoms and neurological examination that ultimately determine the correct diagnosis

Can cost money, time and effort

Prediction can be made which can save time, cost and easy early detection

It can be found in more than 10 million people early detection can cause a lesser damage

### 9. PROBLEM ROOT CAUSE — RC

Clinical diagnosis can cause money and so many can not use it.
Waste of effort and time for non-patients.
Many similar symptoms can cause confusion to diagnose for parkinson's disease.
Early prediction can help to avoid worsening of the situation.
As it is a free platform both people and the organization can get benefited.
More than 10 million people can get to know about the presence of the disorder.
It can help to save the status of patients from decreasing further.

### 7. BEHAVIOUR — BE

Patients detected with parkinson's can directly consult with a doctor.
A more accurate clinical tests can be done.
Neurological examination can help in a better analysis of the disorder.
Find ways to reduce the worsening.
Come to know more about the disease from the social media sites or google etc.
Quick steps to rectify the disease.
To plan for a worse case scenario.
Joining physical therapy for better muscle movement.
Consulting speech-language pathologist help improve speech problems.

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

Identify strong TR & EM

### 3. TRIGGERS — TR

Social media platform programs

Anyone can perform and give suggestion to others

Cost-free platform can attract person

### 4. EMOTIONS: BEFORE / AFTER — EM

Before: Nervousness, anxiety, fear, stress

After with parkinson: denial, insecurity, fear, anxiety, depression

After without it: happy, relief, calm, comfort

### 10. YOUR SOLUTION — SL

Detection of Parkinson's disease using the spiral and wave drawings can quantify the visual appearance of these drawings and then train a machine learning model to classify them. We can use the Histogram of Oriented Gradients (HOG) image descriptor along with a Random Forest classifier to automatically detect Parkinson's disease in hand-drawn images of spirals and waves.

### 8. CHANNELS of BEHAVIOUR — CH

8.1 ONLINE

Easy prediction can be made available online

Flexible model and can be accessed by anyone at anytime

8.2 OFFLINE

Customized model can be made

SAS model for betterment of people

Access anytime anywhere

Extract online & offline CH of BE



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