# Ideation Phase
# Brainstorm & Idea Prioritization Template

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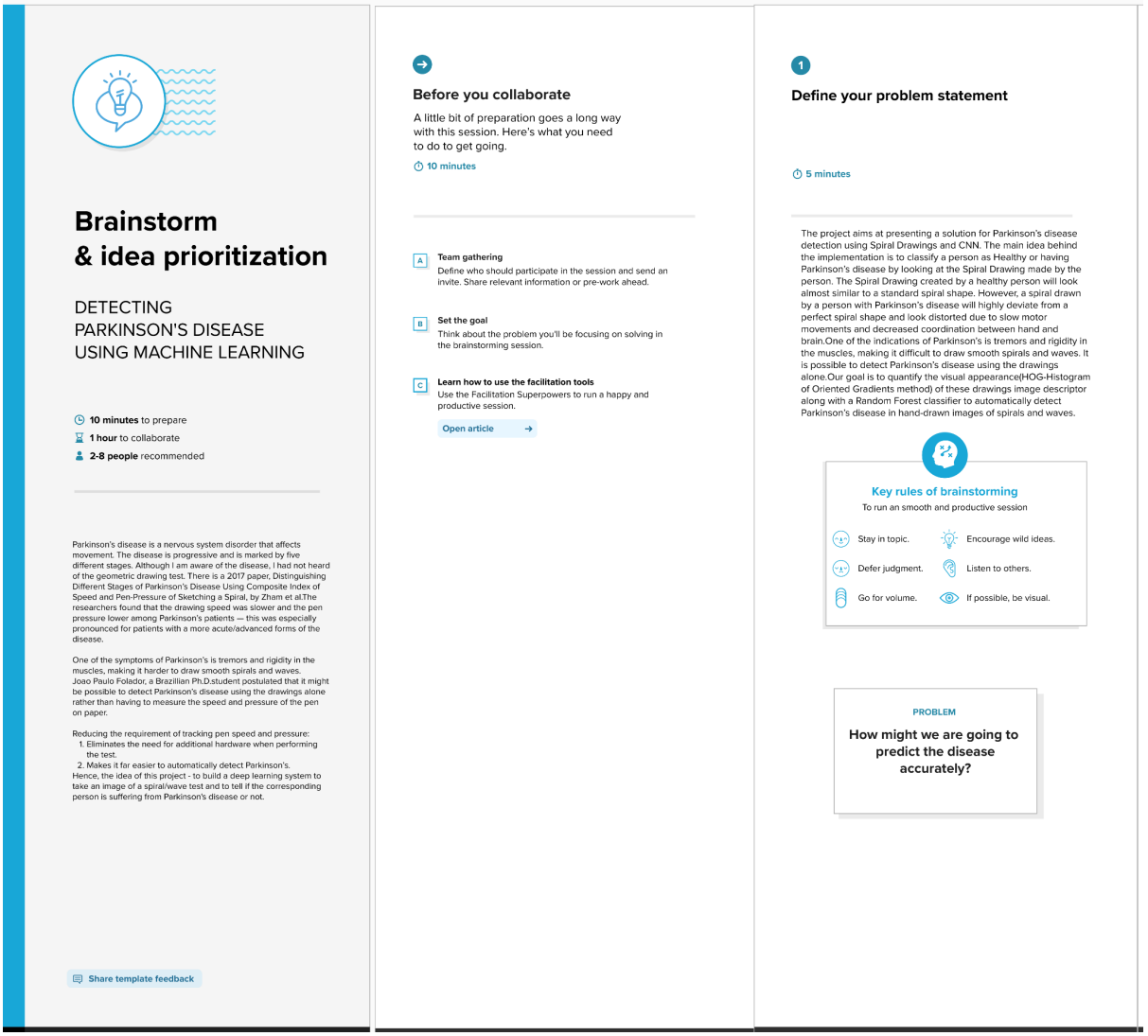
| Team ID | PNT2022TMID24632 |
| Project Name | Project - Detecting Parkinson's Disease using Machine Learning |
| Maximum Marks | 4 Marks |

## Step-1: Team Gathering, Collaboration and Select the Problem Statement



**Brainstorm & idea prioritization**

DETECTING PARKINSON'S DISEASE USING MACHINE LEARNING

**10 minutes** to prepare
**1 hour** to collaborate
**2-8 people** recommended

Parkinson's disease is a nervous system disorder that affects movement. The disease is progressive and is marked by five different stages. Although I am aware of the disease, I had not heard of the geometric drawing test. There is a 2017 paper, Distinguishing Different Stages of Parkinson's Disease Using Composite Index of Speed and Pen-Pressure of Sketching a Spiral, by Zham et al.The researchers found that the drawing speed was slower and the pen pressure lower among Parkinson's patients — this was especially pronounced for patients with a more acute/advanced forms of the disease.

One of the symptoms of Parkinson's is tremors and rigidity in the muscles, making it harder to draw smooth spirals and waves. Joao Paulo Folador, a Brazilian Ph.D.student postulated that it might be possible to detect Parkinson's disease using the drawings alone rather than having to measure the speed and pressure of the pen on paper.

Reducing the requirement of tracking pen speed and pressure:
1. Eliminates the need for additional hardware when performing the test.
2. Makes it far easier to automatically detect Parkinson's.

Hence, the idea of this project - to build a deep learning system to take an image of a spiral/wave test and to tell if the corresponding person is suffering from Parkinson's disease or not.

Share template feedback

**Before you collaborate**

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

A **Team gathering**
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B **Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.

C **Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.

Open article

**1 Define your problem statement**

5 minutes

The project aims at presenting a solution for Parkinson's disease detection using Spiral Drawings and CNN. The main idea behind the implementation is to classify a person as Healthy or having Parkinson's disease by looking at the Spiral Drawing made by the person. The Spiral Drawing created by a healthy person will look almost similar to a standard spiral shape. However, a spiral drawn by a person with Parkinson's disease will highly deviate from a perfect spiral shape and look distorted due to slow motor movements and decreased coordination between hand and brain.One of the indications of Parkinson's is tremors and rigidity in the muscles, making it difficult to draw smooth spirals and waves. It is possible to detect Parkinson's disease using the drawings alone.Our goal is to quantify the visual appearance(HOG-Histogram of Oriented Gradients method) of these drawings image descriptor along with a Random Forest classifier to automatically detect Parkinson's disease in hand-drawn images of spirals and waves.

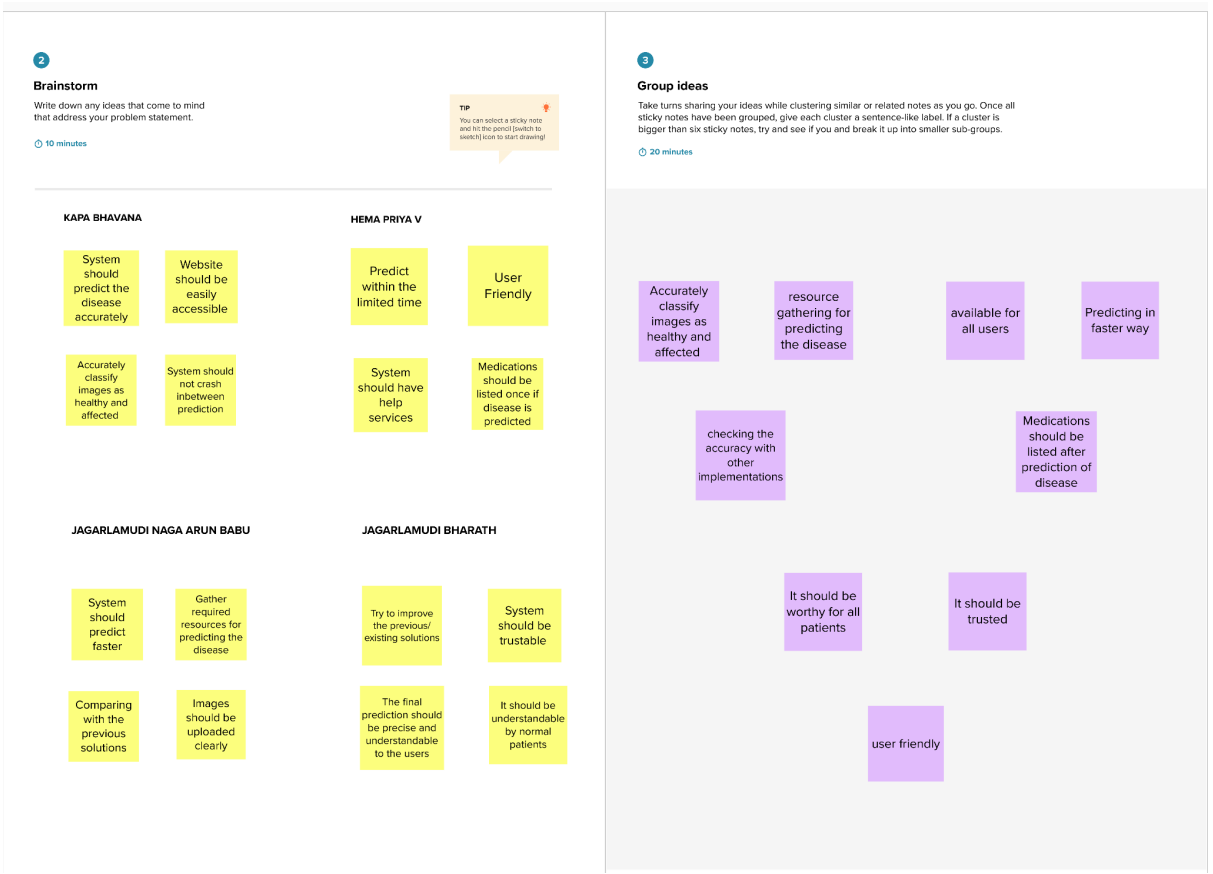
**Key rules of brainstorming**
To run an smooth and productive session

- Stay in topic.
- Encourage wild ideas.
- Defer judgment.
- Listen to others.
- Go for volume.
- If possible, be visual.

PROBLEM

**How might we are going to predict the disease accurately?**

## Step-2: Brainstorm, Idea Listing and Grouping




## Step-3: Idea Prioritization