Ideation Phase
Define the Problem Statements

Project Name	Project - Detecting Parkinson's Disease using Machine Learning
Maximum Marks	2 Marks

Problem Statement:

- Parkinson disease (PD) is a progressive neuro degenerative disorder that impacts more than 6 million people around the world. Parkinson's disease is non-communicable, early-stage detection of Parkinson's can prevent further damages in humans suffering from it.
- Nonetheless, non-specialist physicians still do not have a definitive test for PD, similarly in the early stage of the diseased person where the signs may be intermittent and badly characterized. It resulted in a high rate of misdiagnosis (up to 25% among non-specialists) and many years before treatment, patients can have the disorder. A more accurate, unbiased means of early detection is required, preferably one that individuals can use in their home setting.
- However, it has been observed that PD's presence in a human is related to its hand-writing as well as hand-drawn subjects. From that perspective, several techniques have been proposed by researchers to detect Parkinson's disease from hand-drawn images of suspected people. But the previous methods have their constraints.

How to solve?

- In this investigation, an approach to predict Parkinson's disease from hand-drawn wave and spiral images using computer vision and machine learning techniques has been recommended.
- Decision Tree, Gradient Boosting, K-Nearest Neighbour, Random Forest, and some other classification algorithms with the HOG feature descriptor algorithm was applied.
- 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.

Example: