Project Design Phase-I
Solution Architecture

Date	1st October 2022
Team ID	PNT2022TMID52690
Project Name	Detecting Parkinsons Disease Using Machine Learning
Maximum Marks	4 Marks

Problem Statement:

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.

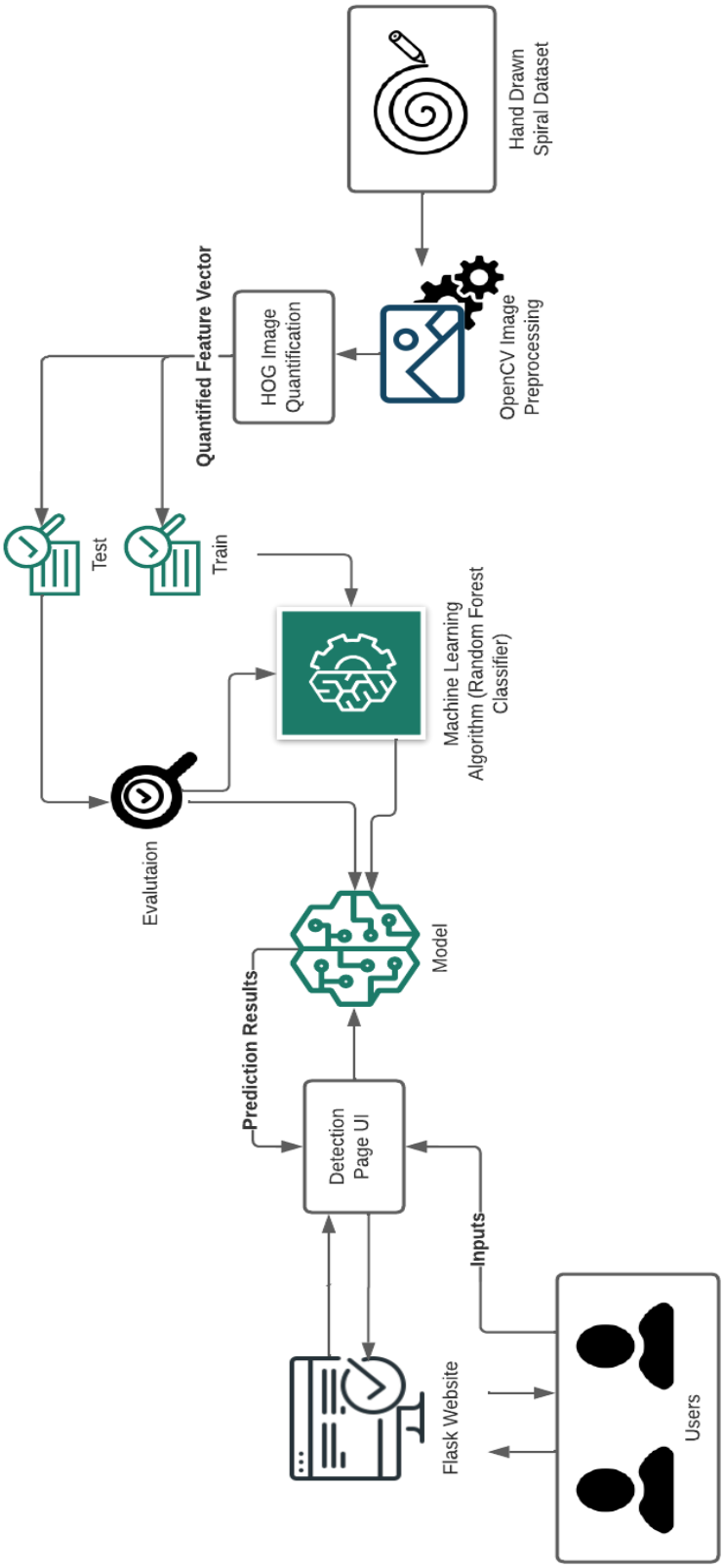

Figure 1: Architecture of Parkinson's Disease Detection Application.