Project Design Phase – I

Solution Architecture

Date	01-10-2022
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Project Name	Detecting Parkinson's Disease using Machine Learning

Objective:

Diagnosis of Parkinson's Disease (PD) is commonly based on medical observations and assessment of clinical signs, including the characterization of a variety of motor symptoms. However, traditional diagnostic approaches may suffer from subjectivity as they rely on the evaluation of movements that are sometimes subtle to human eyes and therefore difficult to classify, leading to possible misclassification. In the meantime, early non-motor symptoms of PD may be mild and can be caused by many other conditions. Therefore, these symptoms are often overlooked, making diagnosis of PD at an early stage challenging. To address these difficulties and to refine the diagnosis and assessment procedures of PD, machine learning methods have been implemented for the classification of PD and healthy controls or patients with similar clinical presentations.

Requirements:

Functional Requirements:

1. The home page should be rendered as any user visits the site.
2. The info page must display information about the webpage.
3. The predict page should predict if the given image is of a healthy or diseased person.

Non-Functional Requirements:

1. The response time of home and info page should not exceed 2 seconds.
2. The processing time of the predict request should not exceed 10 seconds.

Decision and Assumptions:

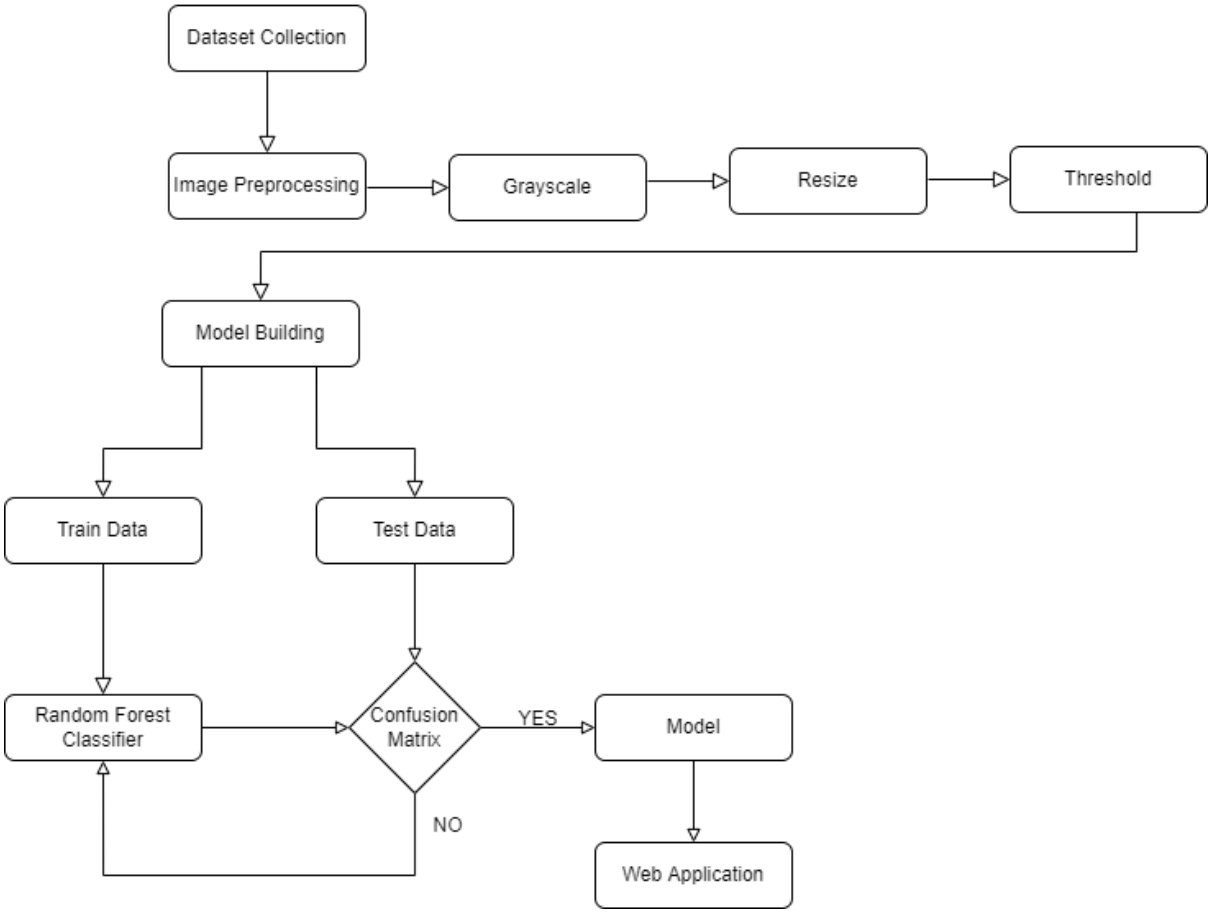
Decision: The solution must be a web application built using flask framework and the prediction must be done using OpenCV.

Assumptions:

The team must have knowledge about:

- Supervised and Unsupervised Learning
- Regression, Classification and Clustering
- Random Forest Classifier and Decision Tree
- Flask - Beginner Level

Context View:



Functional View:

View Home Page

Brief Description: This use case allows user to view the home page of the web application

View Info Page

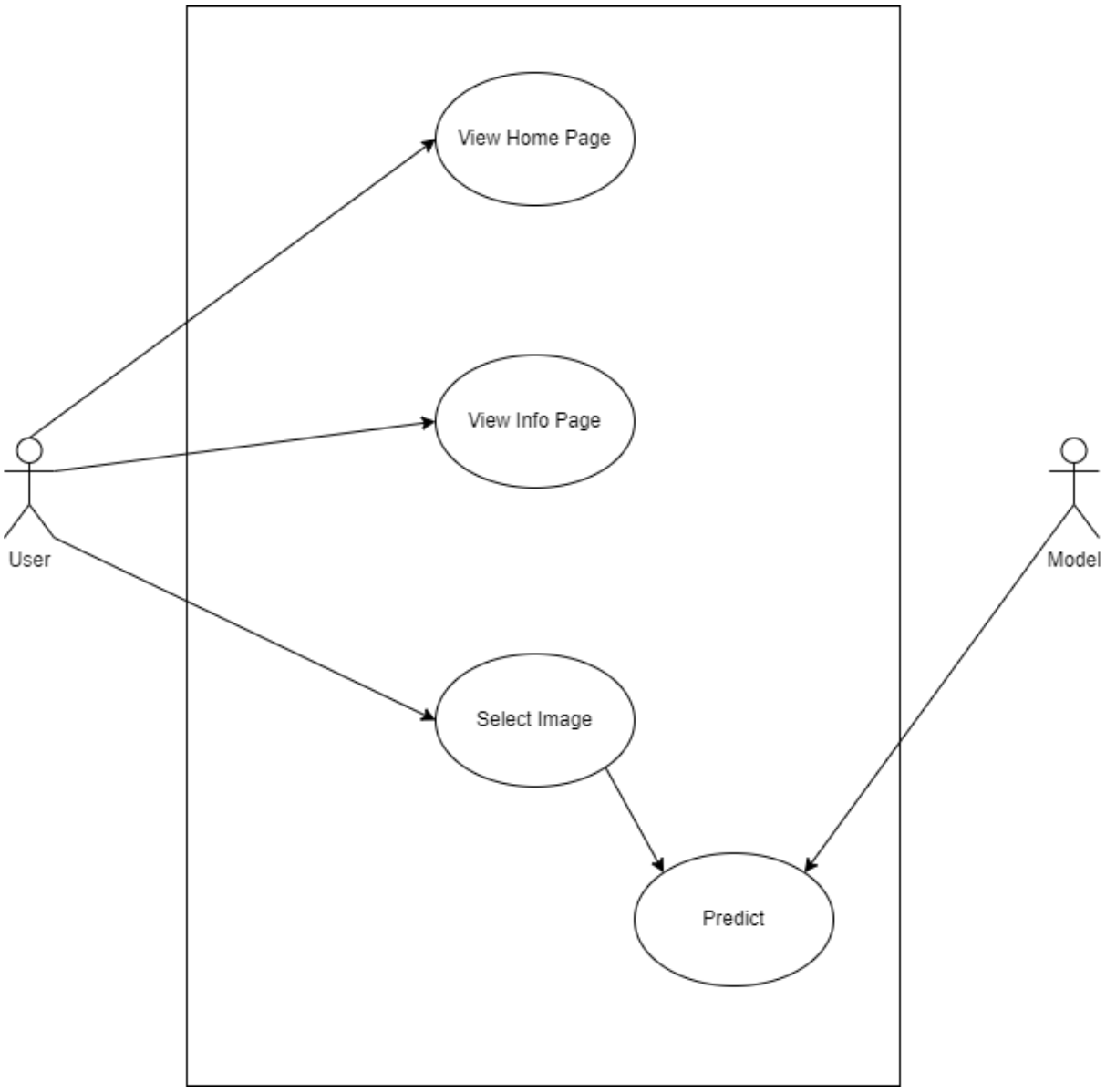
Brief Description: This use case allows user to view the information about the Parkinson's Disease

Select Image

Brief Description: This use case allows user to select the image from his system for which the prediction must be done

Predict

Brief Description: This use case uses the test data given to calculate the prediction


View Home Page
View Info Page
Select Image
Predict
User
Model

Logical View: