K.L.N College of Information Technology, Pottapalayam

Department of

Electronics and communication engineering

Sub.Code & Sub.Name: HX 8001 & Professional Readiness for Innovation, Employability and Entrepreneurship

"Project Report"

"Fertilizers-Recommendation-System-For-Disease-Prediction

Team ID: PNT2022TMID52506

Guided By

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1)Introduction

1.1.Project Overview

Plant disease prediction helps in the detection and recognition of the plant diseases. The images of plants are captured and analyzed for certain symptoms using Computer vision and image processing. By identifying the disease, the deficit nutrients that lead to the disease are found. Based on the available data on fertilizers, the necessary nutrient rich fertilizers are recommended.

1.2.Purpose

The plant diseases may lead to abnormal functionalities which may end up with the death of the plant. The project aims at recognizing the symptoms at the early stages. The project also aims at guiding the farmers with the proper choice of the fertilizers that are required to counter the deficiency of the nutrients that cause the disease.

2) Literature Survey

2.1.Existing Problem

Title	Technique	Links
Soil Based Fertilzer Recommendation System for Crop Disease Prediction System – P.Pandi Selvi,P.Poornima	Long or Short Term Memory Algorithm	http://www.ijetajournal.org/vloume-8/issue-2/IJETA-V812P1
IOT based Crop Recommendation,Crop Disease Prediction and Its Solution – Rani Holambe, Pooja Patil, Padmaja Pawar Hrushikesh Joshi,Saurabh Salunkhe	Crop Recommendation System,Crop Disease Predicition,Internet of things,Machine Learning	https://arxiv.org/pdf/2204.11340
Farmer's Assitant:A Machine Learning Based Application for Agricultural Solutions-Shloka Gupta,Aparna Bhonde,Akshay Chopade,Nishit Jain	Image Analysis,Deep Learning,Machine Learning	https://www.irjet.net/archives/V7/i10/IRJET-V7I1004
R. Neela, P. Fertilizers Recommendation System For Disease Prediction In Tree Leave International journal of scientific & technology research volume 8, issue 11, november 2019	Adding a CNN(Convolutional neural network) and SVM(Support Vector Machine)	http://www.ijstr.org/final-print/nov2019/
Plant Disease Detection Using Image Processing and Machine Learning	Random Forest classifier, a combination of multiple decision trees is used where each tree is trained by using different subsets of the whole dataset to reduce the overfitting and improves the accuracy of the classifier.	https://arxiv.org/abs/2106.10698
Fertilizers Recommendation System for Disease Prediction in Tree Leaves	Support Vector Machine (SVM) algorithm classifies the leaf image as normal or affected. And it is used to identify a function Fx which obtain the hyper-plane.	https://www.semanticscholar.org/paper/Fertilizers-Recommendatio Disease-In-Neela-Nithya/495379d3ef2b461fabd2de8d0605c16

2.2) References

[1] Semi-automatic leaf disease detection and classification system for soybean culture IET Image Processing, 2018

[2] Cloud Based Automated Irrigation And Plant Leaf Disease Detection System Using An Android Application. International Conference on Electronics, Communication and Aerospace Technology, ICECA 2017.

[3] Ms. Kiran R. Gavhale, Ujwalla Gawande, Plant Leaves Disease detection using Image Processing Techniques, January 2014. https://www.researchgate.net/profile/UjwallaGawande/publication/314436486_An_Overview_of_the_Research_on_Plant_Leaves_Disease_detection_using_Image_Proce ssing_Techniques/links/5d3710664585153e591a3d20/An-Overview of-the-ResearchonPlant-Leaves-Diseae detection-using-ImageProcessing Techniques.pdf

[4] Duan Yan-e, Design of Intelligent Agriculture Management Information System Based on IOT‖, IEEE,4th, Fourth International reference on Intelligent Computation Technology and Automation, 2011 https://ieeexplore.ieee.org/document/5750779

[5] R. Neela, P. Fertilizers Recommendation System For Disease Prediction In Tree Leave International journal of scientific & technology research volume 8, issue 11, november 2019
http://www.ijstr.org/final-print/nov2019/Fertilizers-RecommendationSystem-ForDiseasePrediction In-Tree-Leave.pdf .

[6] Swapnil Jori1, Rutuja Bhalshankar2, Dipali Dhamale3, Sulochana Sonkamble , Healthy Farm: Leaf Disease Estimation and Fertilizer Recommendation System using Machine Learning,International Journal of All Research Education and Scientific Methods (IJARESM), ISSN: 2455-6211

[7] Detection of Leaf Diseases and Classification using Digital Image Processing International Conference on Innovations in Information, Embedded and Communication Systems(ICIIECS), IEEE, 2017.

[8] Shloka Gupta ,Nishit Jain ,Akshay Chopade, Farmer's Assistant: A Machine Learning BasedApplication for Agricultural Solution

2.3 Problem Statement Definition

This project aims at providing a system to support the cultivators in choosing the right fertilizers for their plants to counter the deficiency of nutrients that cause various infections and diseases. The below blocks define the problems faced by the different users and the solutions that are provided by the system.

I am	Describe customer with 3-4 key characteristics - who are they?	Describe the customer and their attributes here
I'm trying to	List their outcome or "job" the care about - what are they trying to achieve?	List the thing they are trying to achieve here
but	Describe what problems or barriers stand in the way – what bothers them most?	Describe the problems or barriers that get in the way here
because	Enter the "root cause" of why the problem or barrier exists – what needs to be solved?	Describe the reason the problems or barriers exist
which makes me feel	Describe the emotions from the customer's point of view – how does it impact them emotionally?	Describe the emotions the result from experiencing the problems or barriers

Reference: https://miro.com/templates/customer-problem-statement/ **Example:**

3. Ideation and Proposed Solution

3.1 Empathy Map Canvas

Agriculture is the main aspect of the economic development of a country. Agriculture is the heart and life of most Indians.

Byunderstanding their feelings and problems, we can create a better product and contribute to their lives. For our project,we are getting surveys from farmers to understand what they truly require and desire.

What do they think and feel?

- It makes farmer as smart as possible
- Improving productivity and efficiency
- Increasing your knowledge about plant diseases and fertilizers

- It unlocks a new level of modern agriculture
- It can reduce a man’s power
- It has accelerated the agricultural process
- Assisting in making better farm management decisions
- It replaces the agricultural experts
- It improves quality and quatity

What do they hear?

- It is far better than traditional analysis techniques
- Easy and user friendly
- Making revolutionary changes in farming industry
- We get a clear report that gives us a better understanding of the problem
- If it makes a wrong prediction, it leads to a huge loss.
- Fix Our Problems from Early Stages With This Application
- It reduces the complexity of disease prediction
- It will save us time What do they say and do?
- How can I trust a machine for my business?
- Can you guarantee the accuracy of this application?
- Can this application take responsibility for the losses that may happen due to this application
- I will try this and compare with actual outcome and Predicted one What do they see?
- User-Friendly Application
- Sleek User Interface
- promoting a healthy lifestyle for the former
- The reduction of human risk by ensuring that
- multilingual application
- reducing pests and diseases

- Instant Solution
- It eliminates a time-consuming process. • Upgradion of the Industry with this Application
- providing data security.

What do they see?

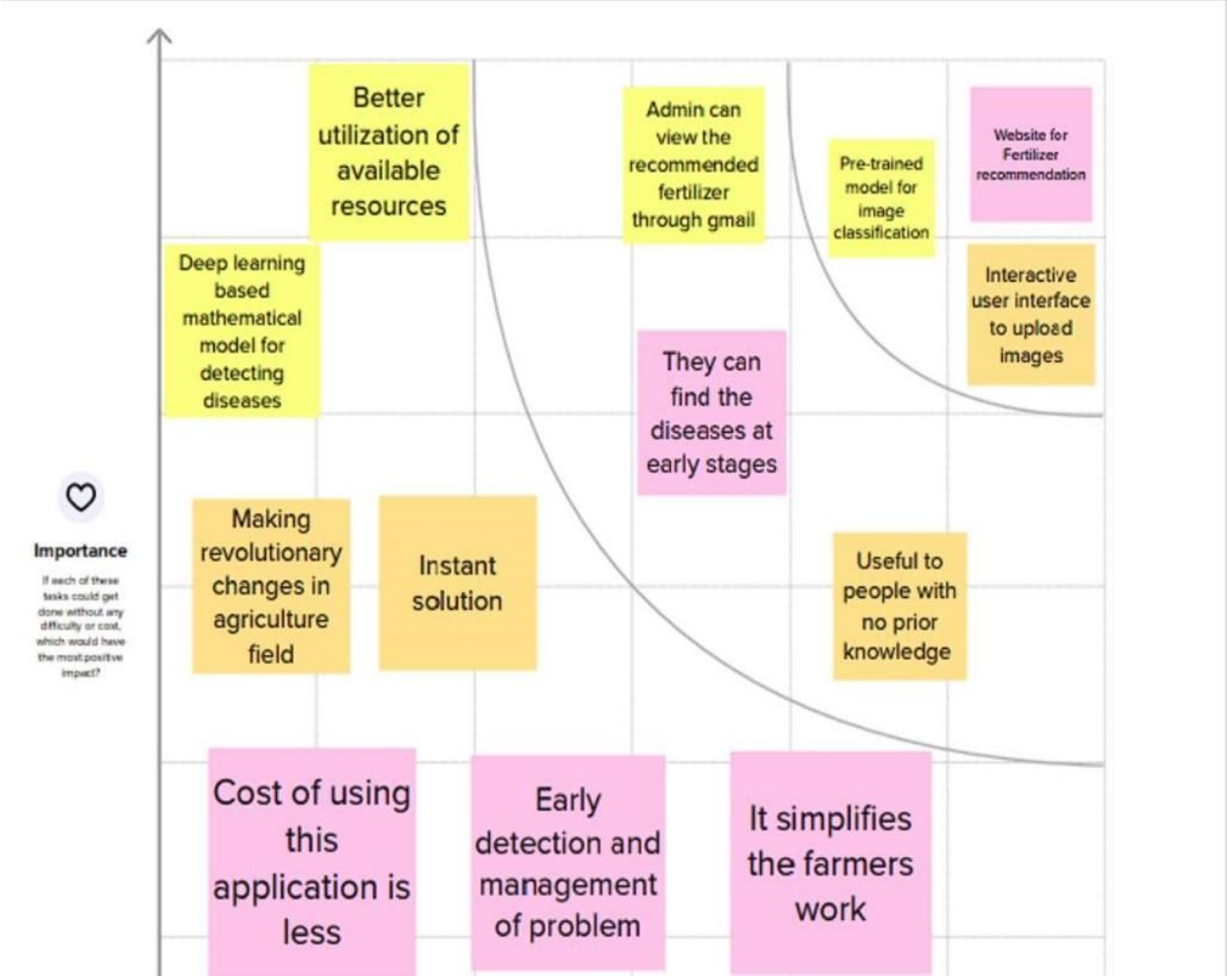
- People with no prior knowledge can access Pain:
- It reduces the intraction between humans • Not Accurate at All the time Due to Lack of Data • It may lead to the wrong prediction.
- Not all people trust the recommendation systems.
- Is it reliable ?
- Crop prediction accuracy, disease and correct fertilizer recommendations
- Some people's fears about "is it actually works
- A small error in the algorithm or data results in a large amount of loss.
- Is Recommended Fertilizer Available in the Users' Location?

Gain:

- Better Utilization of Available Resources
- constancy of constant work
- self-working environment
- One of the most efcient and rapid methods of disease detection
- reduce the likelihood of a loss.
- available around the clock
- time efficient
- Early detection & management of problems
- Improves Productivity

3.2 Ideation & Brainstorming

Ideation and Brainstorming are performed to generate ideas and solutions. Brainstorming is a group activity unlike ideation.



Dinesh

Website for fetilizer recommendation	Identify the disease	Determining best fertilizer
User friendly website	It reduces man power	Smart solution to solve the problem

Aparna

Pre-trained model for image classification	Build keras image classification model	Making revolutionary changes in agriculture field
It simplifies the farmers work	Cost of sing this application is less	They can find the diseases at early stages

Kanteepan

Deep learning based mathematical model for detecting diseases	Early detection and management of problem	Better utilization available resources
Interactive user interface to upload images	Improves produtivity	Interactive user interface to upload images

Muthusamy

Fertilizer Recommendation	Instant solution	Useful to people with no prior knowledge
Admin can view the recommended fertilizer through gmail	It will save time	Portal for famers

Balaji

Useful to Farmers	Recommends Fertilizers	Utilizing of resources
Simple UI	Reduces the cost	Improves Profit

Praveenraj@sankaran

fungal diseases	Bactariel	major threat
food security	high quantity	low quantity

3.3 Proposed Solution

An automated system that takes the images of plant parts as input identifies different diseases on plants by checking the symptoms shown on the leaves of the plant is built . Deep learning techniques are used to identify the diseases and suggest the fertilizes that can help cure the disease. The user need not consult any specialist for identification of diseases that affected the leaves or for the recommendation of the fertilizers.

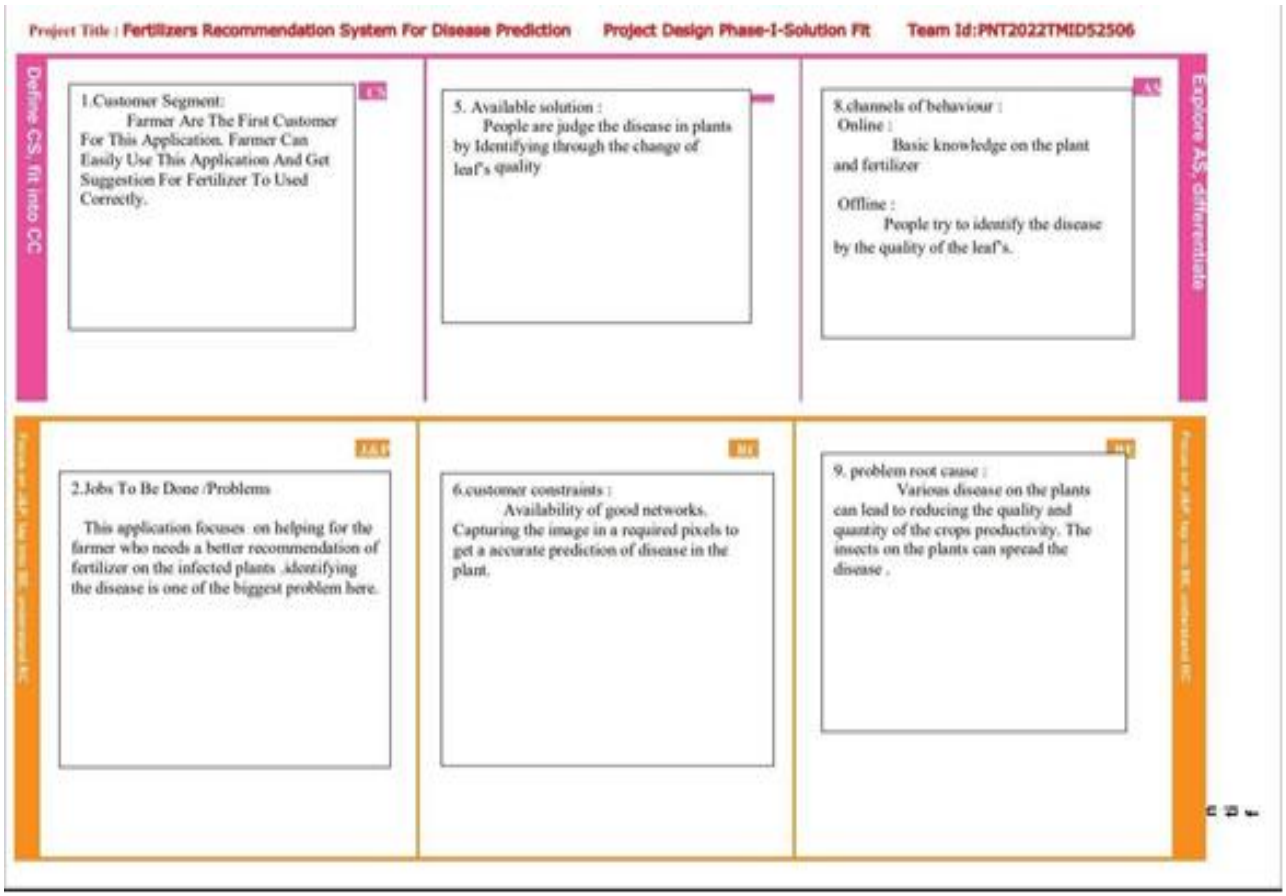
Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Agriculture is having a great impact on the country's economy.Different diseases effect plant that reduces their production and is a major threat to food security.The major problems that the farmers of our country are currently facing includes Crop Failure, Lack of adequate knowledge, Crop damage due to ignorance/carelessness, Lack of professional assistance, Inaccessibility to agro-tech solutions.Most of the diseases are detected in later stage that to manually which is time consuming and results in heavy loss so it is important to build an automated system that detects disesase at early stage and provides fertilizer recommendation accordingly.
2.	Idea / Solution description	An automated system is built that takes the input as picture of leaves which is uploaded by the user,identifies different diseases on plants by checking the symptoms shown on the leaves of the plant. Deep learning techniques are used to identify the diseases and suggest the fertilizer needed for the plant.
3.	Novelty / Uniqueness	It doesnot require user to consult any specialist for identification of diseases that affected the leaves and the fertilizers that is required for the same.It detects Plant disease at their early stage.
4.	Social Impact / Customer Satisfaction	The whole process of identifying disease and recommendation of fertilizer happens just by uploading image so it is user friendly.It helps farmers to get good yield out of the crop.People will get good quality food products.
5.	Business Model (Revenue Model)	Social media is the best way to spread the word about our application. And with the influencers we can reach out to people.Clustering and targeting the farmers for identifying diseases on their plants and recommending them fertilizers for the same
6.	Scalability of the Solution	It can be used in research areas to study about the diseases in plant and the best fertilizer that can be recommended for it among the list of fertilizers available .It can be used by anyone in the world

3.4 Problem Solution fit:

The Problem-Solution Fit means that the solution that is realized can actually solve the problem that the customer faces.



4 Requirement Analysis

Functional requirement

Functional requirement :

Following are the functional requirements of the proposed solution .

Fr.no	Functional requirement	Sub requirement (story/subtask)
Fr-1	User registration	Registration through form Registration through Gmail
Fr-2	User confirmation	Confirmation via OTP Confirmation via Email
Fr-3	Capturing image	Capture the image of the leaf And check the parameter of the captured image .
Fr-4	Image processing	Upload the image for the prediction of the disease in the leaf.
Fr-5	Leaf identification	Identify the leaf and predict the disease in leaf.
Fr-6	Image description	Suggesting the best fertilizer for the disease .

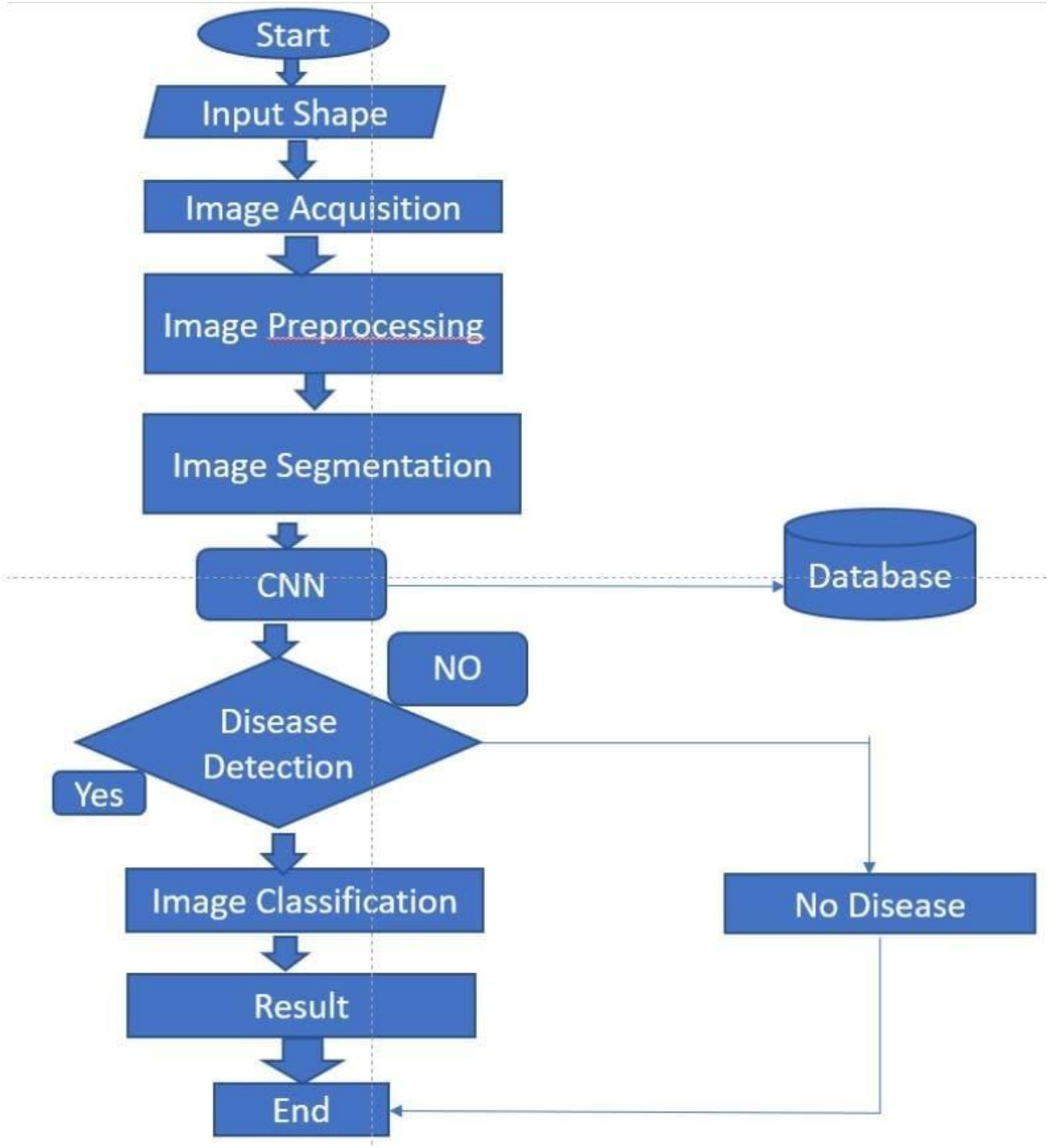
Following are the non-functional requirement of the proposed solution

NFr.no	Non-functional requirement	Description
Nfr-1	Usability	Datasets of all the leaf is used to detecting the disease that present in the leaf.
Nfr-2	Security	The information belongs to the user and leaf are secured highly.
Nfr-3	Reliability	The leaf quality is important for the predicting the disease in leaf.
Nfr-4	Performance	The performance is based on the quality of the leaf used for disease prediction
Nfr-5	Availability	It is available for all user to predict the disease in the plant
Nfr-6	Scalability	Increasing the prediction of the disease in the leaf

5 Project Design

5.1 Data Flow Diagrams

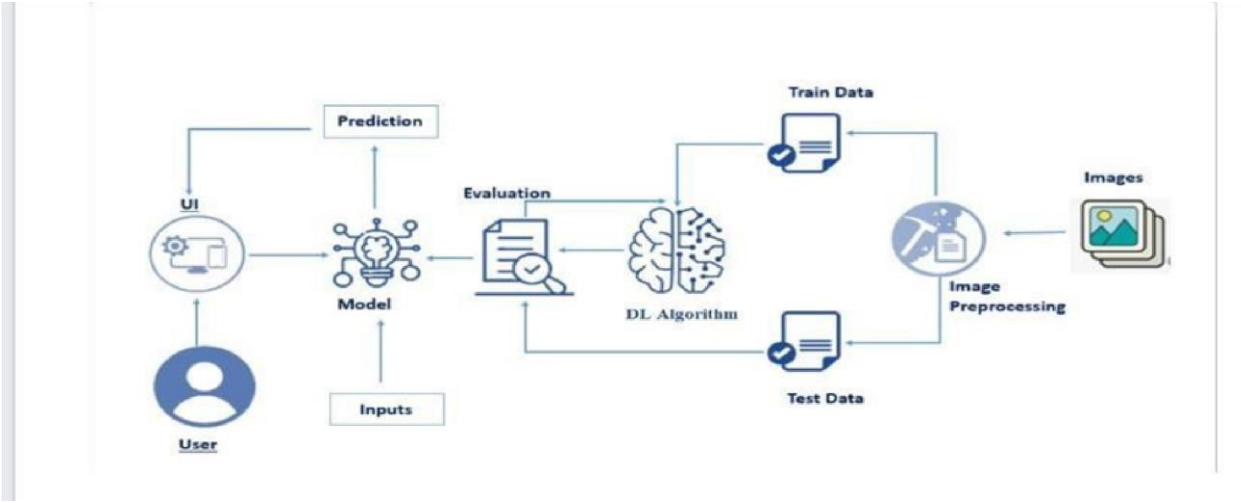
A data flow diagram or DFD(s) maps out the flow of information for any process or system. DFDs help you better understand process or system operation to discover potential problems, improve efficiency, and develop better processes**.**



5.1Solution & Technical Architecture

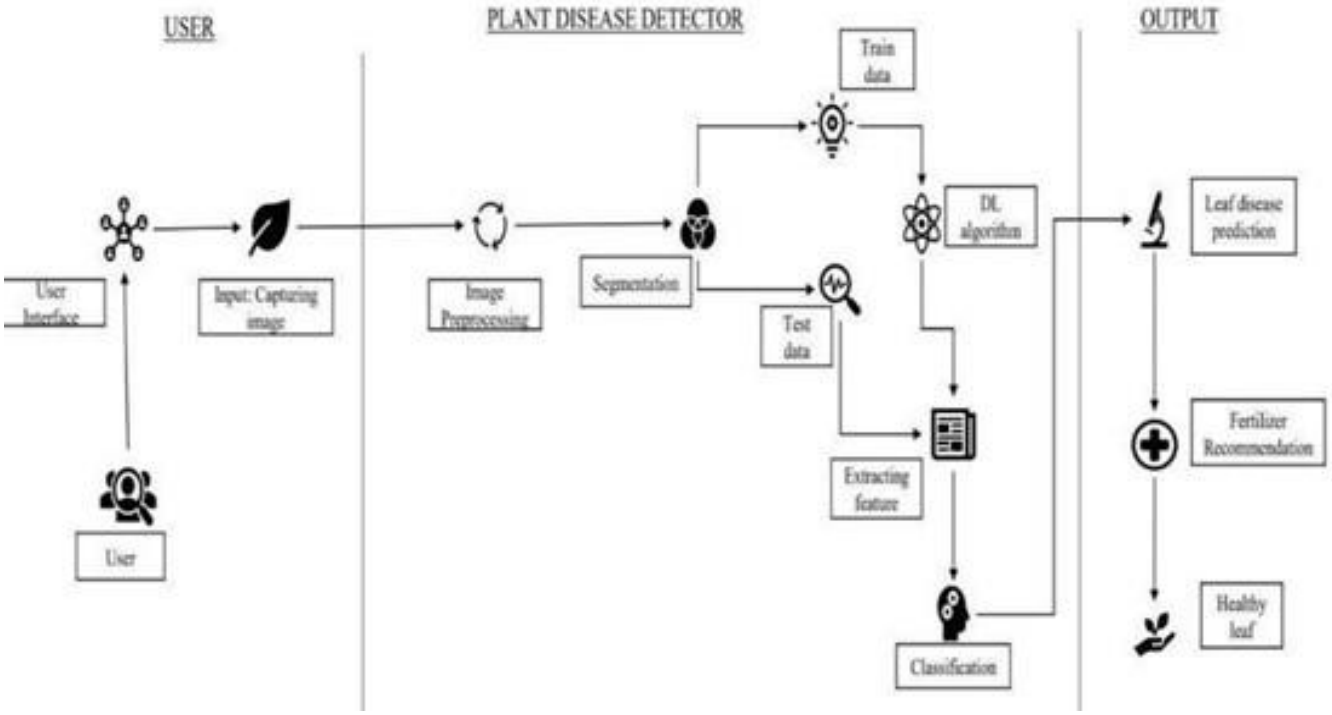
Solution Architecture:

Solution architecture is the process of developing solutions based on predefined processes, guidelines and best practices with the objective that the developed solution fits within the enterprise architecture in terms of information architecture, system portfolios, integration requirements, etc.



5.2 Technical Architecture:

Technical architecture involves the development of a technical blueprint regarding the arrangement, interaction, and interdependence of all elements so that system-relevant requirements are met.


USER
PLANT DISEASE DETECTOR
OUTPUT
Train data
DL algorithm
Leaf disease prediction
User Interface
Input: Capturing image
Image Preprocessing
Segmentation
Test data
Fertilizer Recommendation
Extracting feature
User
Healthy leaf
Classification

5.3 User Stories

An informal, generic explanation of a software feature written from the viewpoint of the end user is known as a user story. Its objective is to explain how a software feature will benefit the user

Table -1: Components & Technologies :

S.NO	Component	Description	Technology
1,	User Interface	How user interacts with the website.	HTML,CSS, etc,.
2,	Disease Prediction	Here the disease in the leaf is predicted	Keras,CNN.
3.	Fertilizer Recommendation	The fertilizer is recommended for the predicted disease	User interface, HTML, CSS.
4.	Dataset	The training and testing data are collectively stored	Kaggle.com, data.gov, UCI machine learning repository, etc.
5.	File Storage	File storage requirements	IBM, Local File system.
6,	Modules	Purpose of deep learning modules	Image Recognition Modules,etc.

Table – 2: Application Characteristics:

S.NO	Characteristics	Description	Technology
1.	Opensource Framework	List of the opensource framework used	Open source-PyCharm, anaconda navigator, flask framework.
2.	Login	List of the access control implementation	Security - OWASP
3.	Scalable Architecture	Justify the scalable architecture	PyCharm
4.	Availability	Justify the availability of website	Web application access to all.
5.	Performance	Design consideration for the performance of the website	Convolutional Neural Networks.

6. Project Planning and Scheduling

6.1 Sprint Planning & Estimation

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Image Processing.	USN-1	As a user, I can retrieve useful information about the images.	1	Low	C.J.Dinesh kumar T.R.S.Praveenraj@ioankaran T.S.Balaji S.Aparna A.Muthusamy P.Kanteepan
Sprint-2	Model Building for Fruit Disease Prediction.	USN-2	As a user, I can able to predict fruit disease using this model.	1	Medium	C.J.Dinesh kumar T.R.S.Praveenraj@ioankaran T.S.Balaji S.Aparna A.Muthusamy P.Kanteepan
Sprint-2	Model Building for Vegetable Disease Prediction.	USN-3	As a user, I can able to predict vegetable disease using this model.	2	Medium	C.J.Dinesh kumar T.R.S.Praveenraj@ioankaran T.S.Balaji S.Aparna A.Muthusamy P.Kanteepan
Sprint-3	Application Building.	USN-4	As a user, I can see a web page for Fertilizers Recommendation System for Disease Prediction	2	High	C.J.Dinesh kumar T.R.S.Praveenraj@ioankaran T.S.Balaji S.Aparna A.Muthusamy P.Kanteepan
Sprint-4	Train The Model on IBM Cloud.	USN-5	As a user, I can save the information about Fertilizers and crops on IBM cloud	2	High	C.J.Dinesh kumar T.R.S.Praveenraj@ioankaran T.S.Balaji S.Aparna A.Muthusamy P.Kanteepan

Project Tracker, Velocity & Burndown Chart: (4 Marks)

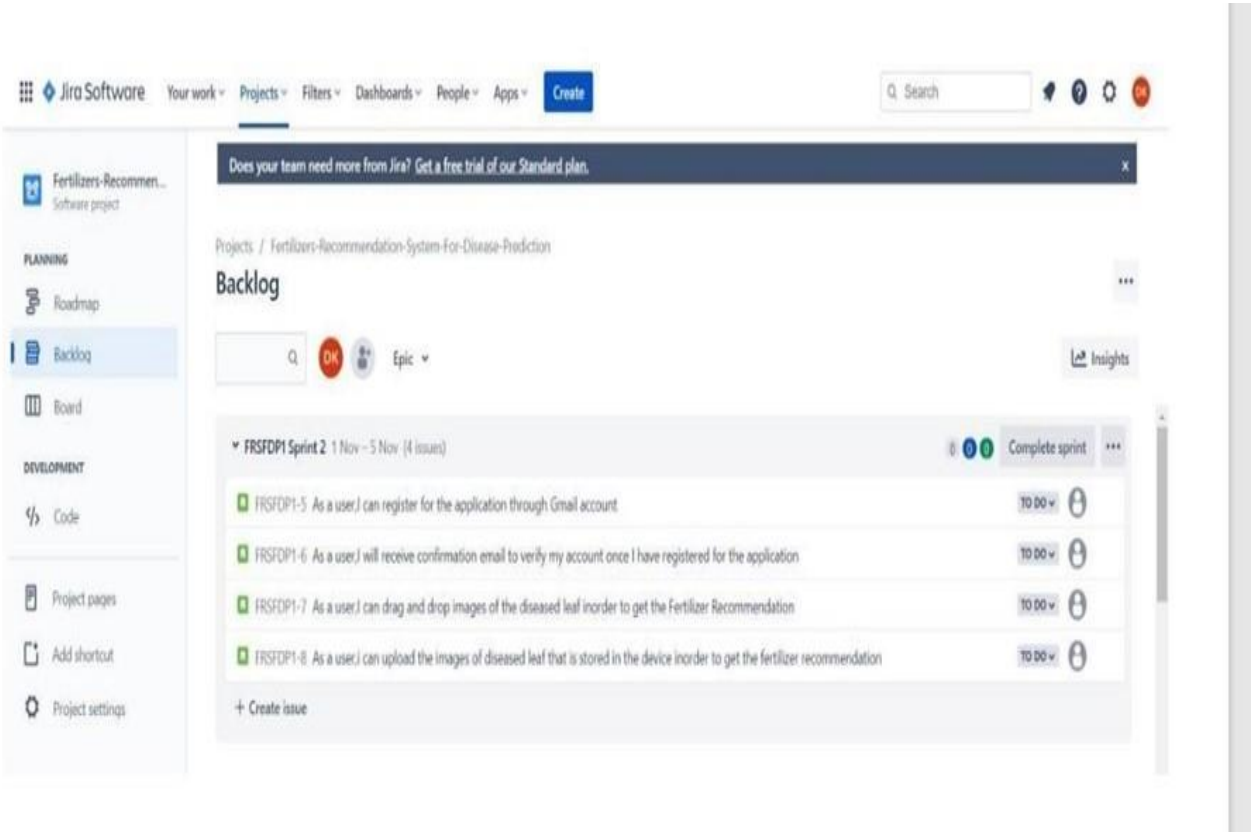
6.2 Sprint Delivery Schedule

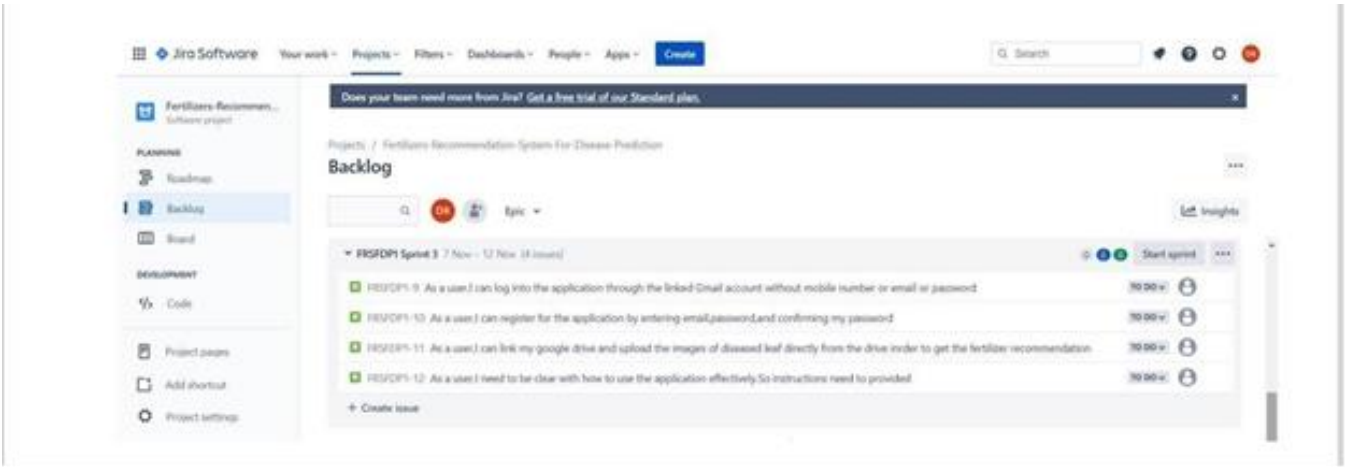
Agile sprints typically last from one week to one month. The goal of sprints is to put pressure on teams to innovate and deliver more quickly, hence the shorter the sprint, the better

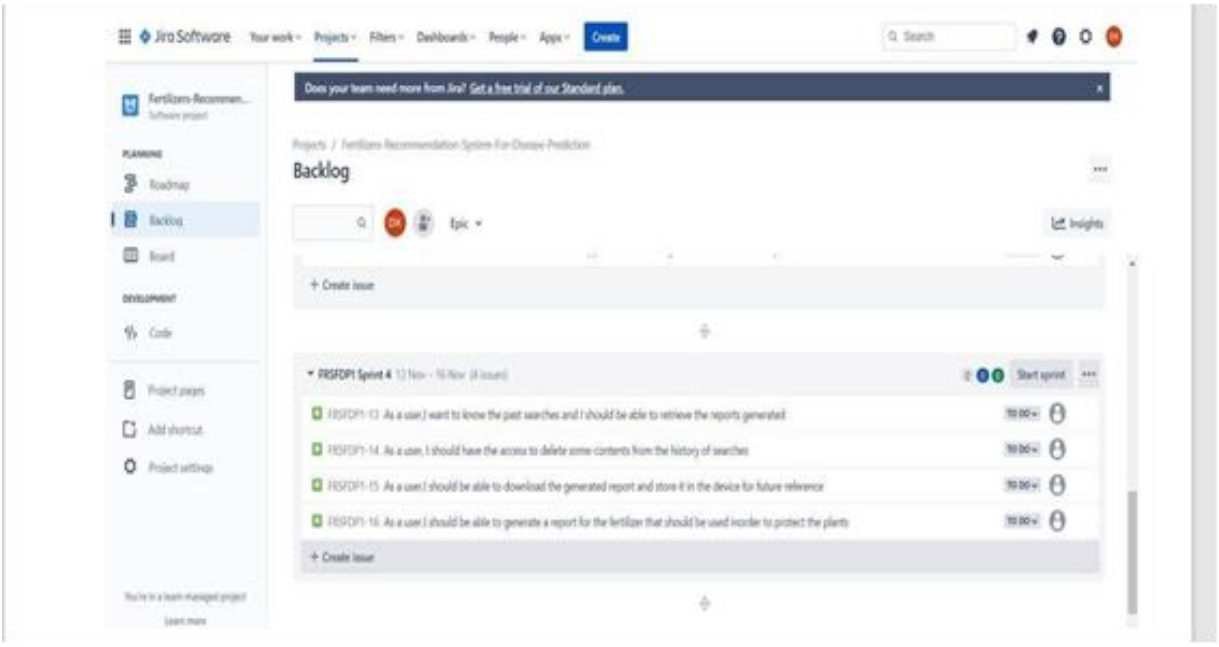
Project Tracker, Velocity & Burndown Chart: (4 Marks)

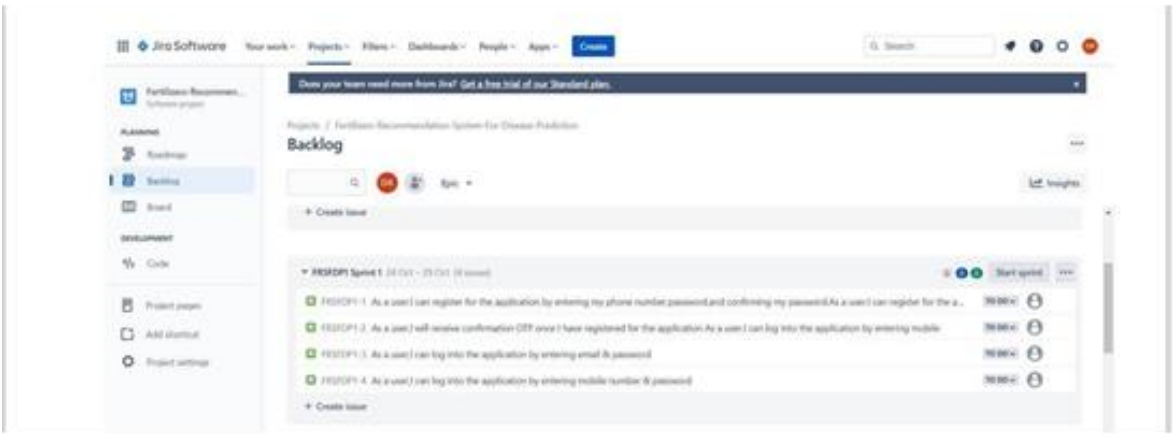
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	26 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	30 Oct 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	05 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	10 Nov 2022

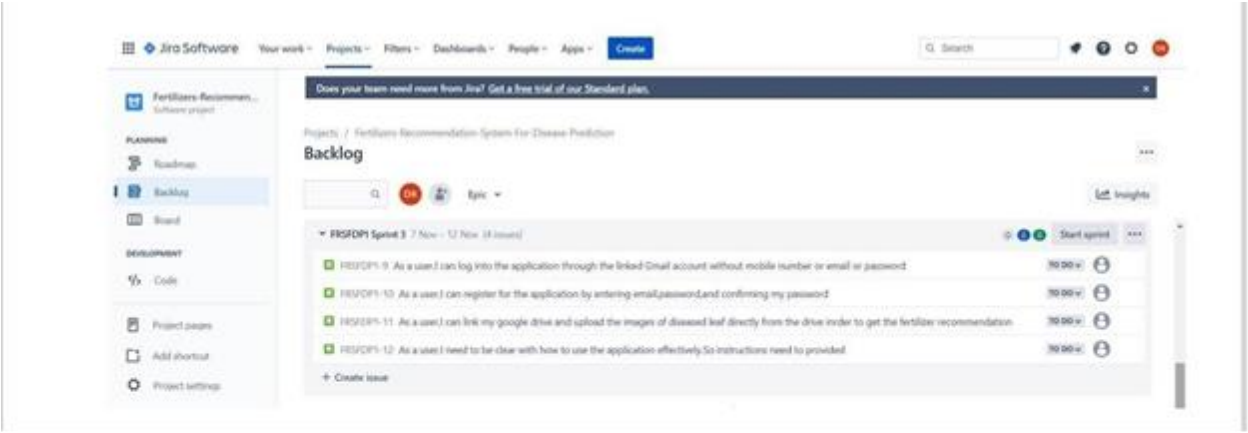
6.3 Reports from JIRA :Backlog

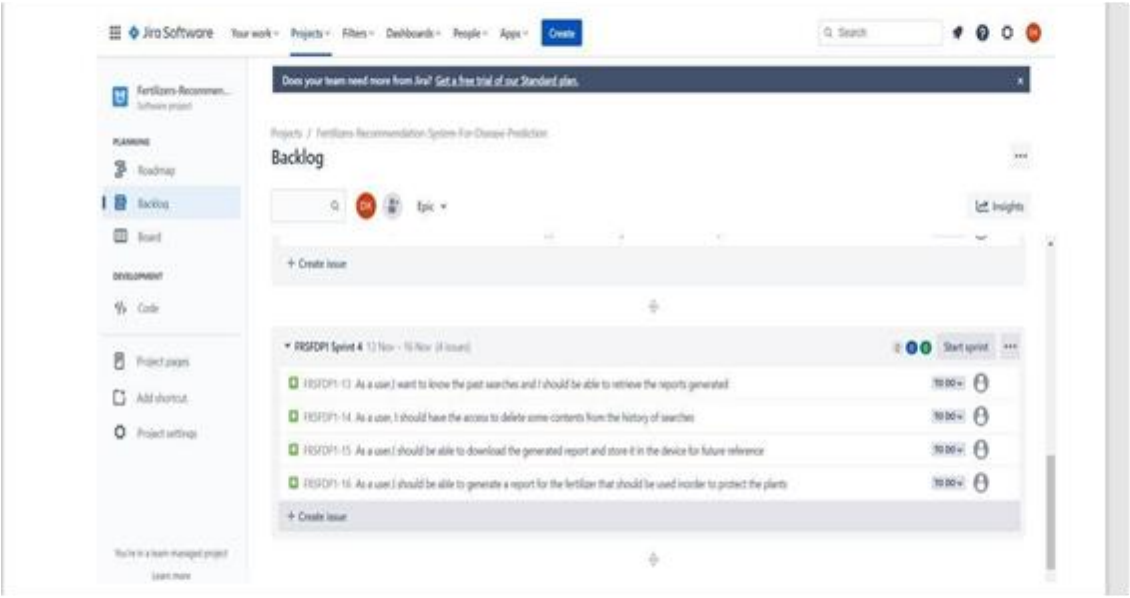



Jira Software
Backlog
Start sprint


Jira Software
Backlog
Start sprint


Jira Software
Backlog

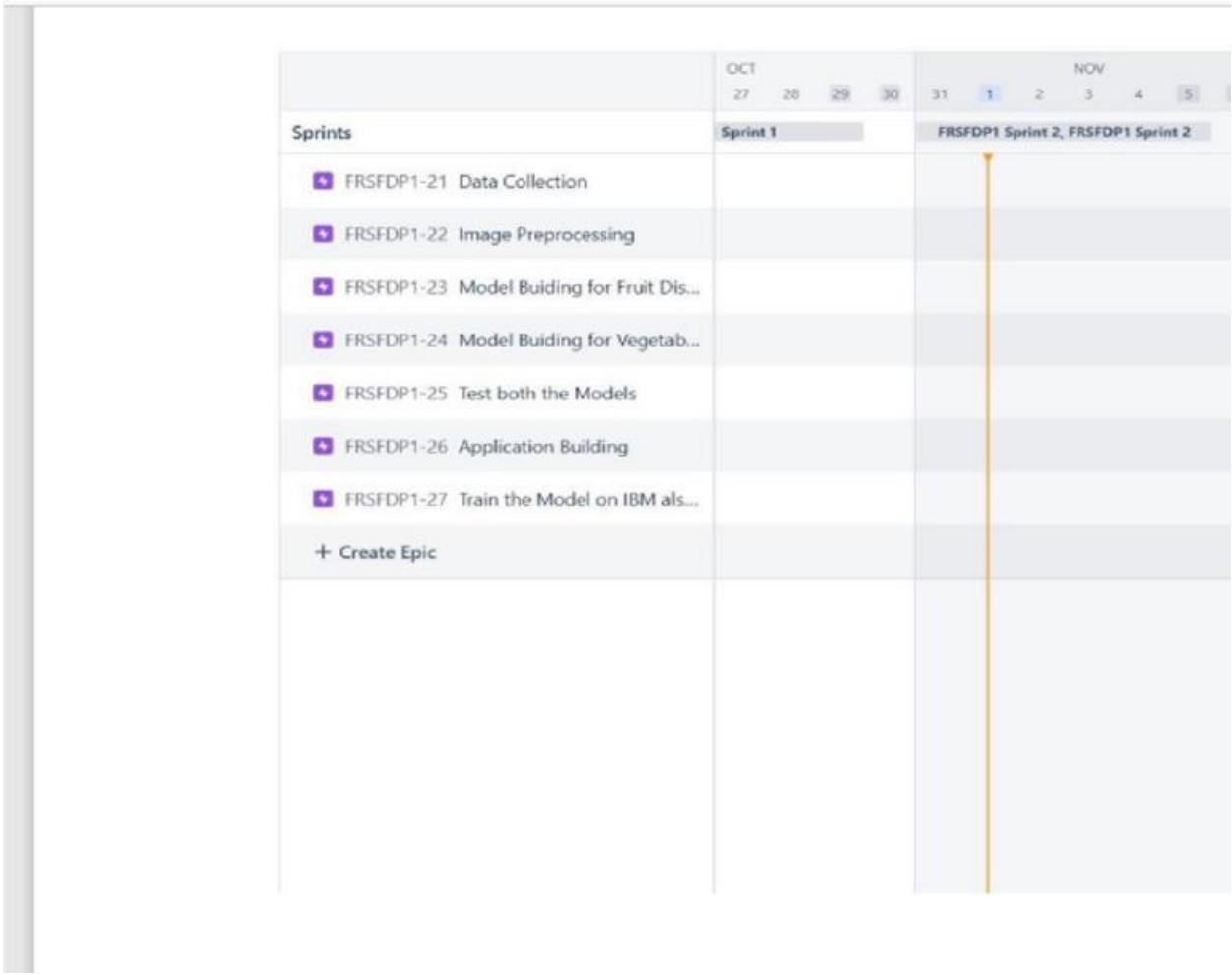




Board:

A board reflects your team's process, tracking the status of work. The columns on the board represent the status of your team's issues. The

visual representation of the work helps in discussing and tracking of the progress of the project from start to finish.



7. Coding and Solutioning Python - App.py:

```
import os
import numpy as np
import pandas as pd
from tensorflow.keras.models import load_model
# from tensorflow.keras.preprocessing import image
from werkzeug.utils import secure_filename

from flask import Flask, render_template, request

app = Flask(__name__)

#load both the vegetable and fruit models
model = load_model("vegetable.h5")
model1=load_model("fruit.h5")

#home page
```

```python
@app.route('/')
def home():
    return render_template('home.html')

#prediction page
@app.route('/prediction')
def prediction():
    return render_template('predict.html')

@app.route('/predict',methods=['POST'])
def predict():
    if request.method == 'POST':
        # Get the file from post request
        f = request.files['image']

        # Save the file to ./uploads
        basepath = os.path.dirname(__file__)
        file_path = os.path.join(
            basepath, 'uploads', secure_filename(f.filename))
        f.save(file_path)
        img = image.load_img(file_path, target_size=(128, 128))

        x = image.img_to_array(img)
        x = np.expand_dims(x, axis=0)

        plant=request.form['plant']
        print(plant)
        if(plant=="vegetable"):
            preds = model.predict(x)
            preds=np.argmax(preds)
            print(preds)
            df=pd.read_excel('precautions - veg.xlsx')
            print(df.iloc[preds]['caution'])
        else:
            preds = model1.predict(x)
            preds=np.argmax(preds)
            df=pd.read_excel('precautions - fruits.xlsx')
            print(df.iloc[preds]['caution'])


        return df.iloc[preds]['caution']

if __name__ == "__main__":
    app.run(debug=False)
s
```

Feature 1: home.html

```
<!DOCTYPE html>
<html >

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <title> Plant Disease Prediction</title>
  <link href='https://fonts.googleapis.com/css?family=Pacifico' rel='stylesheet'
type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet'
type='text/css'>
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FUsOMkixjxYP6hu0wwi7yv1E2rei3GHtPl5YwHkWioQIPqvAmrlmaPtFZmF-
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wvdGEnbUxY18p9Db6jC6FVKRhqdMBianq63qv-
zZRMZbEpjzQT0DQAH3Yho4o4A00FIW2004q8Q80xt2kV928P_nBgS9HOgHI5EZxenbjfqANTs1rh8GGhB
d7RJaE8-
2AaqT6zbLf2tILJ8j4fk3bV1qsdw0fPmp6foJbDu4343XH36a0VGHsMLeVqcc30PSsE1pJbGE4_C_ExQd
0_uRSA40mRjnFwHdLo9SJc1qghyc5YGQil_utG48olMy9cC6z-iyKg1EeLKB43u-
q4SlUimRnuUsZW7drNWaijSfJPDmkm7lUJ0POwQXPfnLa2_spc3FisWCOZ7dFuIgDciIu0yF8rio2X0Pz
6pZkGQW4Fwl6vWKrLplmHagJElKXg58YSWwAT2DILilBjuSPiTwCHR9Ya_mAXW4C03v7xzJlaSK9jneEC
qctvKnH3RFgDS8ocfDcY65lXNRkq6v1hrcdv5sM2ek4Kjq4OFgX-wijr-0JdpSDpZlbIK00sPb4-
u1B8c7MaCqBcbJAhfmg4utLU67fn5GLoCX_-5TAWV0ID-_sC1Vs9glWRPkKmmktJMbVy98XqC5-
DhtE3yd5I9ZM1SEH1gGYLlRjxwzPjWwHE-YH1Nx9lm-
Esq27TK7M86uT8iAe7LgtviO2YsCB0buShHWmjh3RzwMGqNqevmESxPRK_sDmTEoVjcaYpGa0kaMwhmmF
```

```
9AtPwGmFaGglv3rryVg0X0bGoXRetnrPpDG7jUoq5zQuXQSedBf9hmNwEqWsSZtI4zNTxjiEkxU0djhPX
qByZbnelp_3z6pqqniLzqj9jzAkvX6wDOW7ZycfDzOt-
zNgTxWdtf41P6ZjVu8EWSf65Wqgen5jD4IPXgXGtxkjrSbrqiX-
NxxxfKVJUOoOcEO0F6n3DWD0BMWS8UGOQO8gZZeXCfpuTIGYTD6okyD91kLk5AmhaNTJVKjkHO-
dHZqMHxikVhdK6C2PIfg4lEY0yuE3Fjj_5NNX5ZalIpOl3LN6YQ8Jqis_UmC_OXmjW2F5Y4p8VRRKc1HW
2DFaUxBrEgfSwe_keyaofodrjde_pfPuDQDryEgGy9DNIhpGUV_bQJ8jlPxRL7WSpmPU7-
IZ1mVN_onhqq2oI-WTl7ep-8w0GsJH3OhSRyyJC0XC9xtetqVjIHzcbKYFsxOaXT-
LLe7U9oHaXHzjDK3hn-ZNFYwzV_aoq8180eb" charset="UTF-8"></script><style>
.header {
      top:0;
      margin:0px;
      left: 0px;
      right: 0px;
      position: fixed;
      background-color: #28272c;
      color: white;
      box-shadow: 0px 8px 4px grey;
      overflow: hidden;
      padding-left:20px;
      font-family: 'Josefin Sans';
      font-size: 2vw;
      width: 100%;
      height:8%;
      text-align: center;
    }
    .topnav {
  overflow: hidden;
  background-color: #333;
}

.topnav-right a {
  float: left;
  color: #f2f2f2;
  text-align: center;
  padding: 14px 16px;
  text-decoration: none;
  font-size: 18px;
}

.topnav-right a:hover {
  background-color: #ddd;
  color: black;
}

.topnav-right a.active {
```

```
  background-color: #565961;
  color: white;
}

.topnav-right {
  float: right;
  padding-right:100px;
}

body {

  background-color:#ffffff;
  background-repeat: no-repeat;
  background-size:cover;
  background-position: 0px 0px;
  }
  .button {
  background-color: #28272c;
  border: none;
  color: white;
  padding: 15px 32px;
  text-align: center;
  text-decoration: none;
  display: inline-block;
  font-size: 16px;
  border-radius: 12px;
}
.button:hover {
  box-shadow: 0 12px 16px 0 rgba(0,0,0,0.24), 0 17px 50px 0 rgba(0,0,0,0.
}
form {border: 3px solid #f1f1f1; margin-left:400px;margin-right:400px;}

input[type=text], input[type=password] {
  width: 100%;
  padding: 12px 20px;
  display: inline-block;
  margin-bottom:18px;
  border: 1px solid #ccc;
  box-sizing: border-box;
}

button {
  background-color: #28272c;
  color: white;
  padding: 14px 20px;
```

```
  margin-bottom:8px;
  border: none;
  cursor: pointer;
  width: 15%;
  border-radius:4px;
}

button:hover {
  opacity: 0.8;
}

.cancelbtn {
  width: auto;
  padding: 10px 18px;
  background-color: #f44336;
}

.imgcontainer {
  text-align: center;
  margin: 24px 0 12px 0;
}

img.avatar {
  width: 30%;
  border-radius: 50%;
}

.container {
  padding: 16px;
}

span.psw {
  float: right;
  padding-top: 16px;
}

/* Change styles for span and cancel button on extra small screens */
@media screen and (max-width: 300px) {
  span.psw {
     display: block;
     float: none;
  }
  .cancelbtn {
```

```
}

.home{
  margin:80px;

  width: 84%;
  height: 500px;
  padding-top:10px;
  padding-left: 30px;

}
.login{
  margin:80px;
  box-sizing: content-box;
  width: 84%;
  height: 420px;
  padding: 30px;
  border: 10px solid blue;
}
.left,.right{
 box-sizing: content-box;
 height: 400px;
 margin:20px;
 border: 10px solid blue;
}

.mySlides {display: none;}
img {vertical-align: middle;}

/* Slideshow container */
.slideshow-container {
  max-width: 1000px;
  position: relative;
  margin: auto;
}

/* Caption text */
.text {
  color: #f2f2f2;
  font-size: 15px;
  padding: 8px 12px;
  position: absolute;
  bottom: 8px;
  width: 100%;
  text-align: center;
```

```
}
/* The dots/bullets/indicators */
.dot {
  height: 15px;
  width: 15px;
  margin: 0 2px;
  background-color: #bbb;
  border-radius: 50%;
  display: inline-block;
  transition: background-color 0.6s ease;
}

.active {
  background-color: #717171;
}

/* Fading animation */
.fade {
  -webkit-animation-name: fade;
  -webkit-animation-duration: 1.5s;
  animation-name: fade;
  animation-duration: 1.5s;
}

@-webkit-keyframes fade {
  from {opacity: .4}
  to {opacity: 1}
}

@keyframes fade {
  from {opacity: .4}
  to {opacity: 1}
}

/* On smaller screens, decrease text size */
@media only screen and (max-width: 300px) {
  .text {font-size: 11px}
}
</style>
</head>

<body style="font-family:'Times New Roman', Times, serif;background-
color:#C2C5A8;">

<div class="header">
```

```
 <div style="width:50%;float:left;font-size:2vw;text-align:left;color:white;
padding-top:1%">Plant Disease Prediction</div>
  <div class="topnav-right"style="padding-top:0.5%;">

    <a class="active" href="{{ url_for('home')}}">Home</a>
    <a href="{{ url_for('prediction')}}">Predict</a>
  </div>
</div>

<div style="background-color:#ffffff;">
<div style="width:60%;float:left;">
<div style="font-size:50px;font-family:Montserrat;padding-left:20px;text-
align:center;padding-top:10%;">
<b>Detect if your plant<br> is infected!!</b></div><br>
<div style="font-size:20px;font-family:Montserrat;padding-left:70px;padding-
right:30px;text-align:justify;">Agriculture is one of the major sectors worls
wide. Over the years it has developed and the use of new technologies and
equipment replaced almost all the traditional methods of farming. The plant
diseases effect the production. Identification of diseases and taking necessary
precautions is all done through naked eye, which requires labour and laboratries.
This application helps farmers in detecting the diseases by observing the spots
on the leaves, which inturn saves effort and labor costs.</div><br><br>
</div>
</div>
<div style="width:40%;float:right;"><br><br>
<img src="{{url_for('static',filename='images/12456.png')}}" style="max-
height:100%;max-width:100%;">

</div>
</div>

<div class="home">

<br>

</div>

<script>
var slideIndex = 0;
showSlides();

function showSlides() {
  var i;
  var slides = document.getElementsByClassName("mySlides");
  var dots = document.getElementsByClassName("dot");
```

```
  for (i = 0; i < slides.length; i++) {
    slides[i].style.display = "none";
  }
  slideIndex++;
  if (slideIndex > slides.length) {slideIndex = 1}
  for (i = 0; i < dots.length; i++) {
    dots[i].className = dots[i].className.replace(" active", "");
  }
  slides[slideIndex-1].style.display = "block";
  dots[slideIndex-1].className += " active";
  setTimeout(showSlides, 2000); // Change image every 2 seconds
}
</script>
</body>
</html>
```

Feature 2: Predict.html

```
<!DOCTYPE html>
<html >

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <title> Plant Disease Prediction</title>
  <link href='https://fonts.googleapis.com/css?family=Pacifico' rel='stylesheet'
type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet'
type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Hind:300' rel='stylesheet'
type='text/css'>
<link href="https://cdn.bootcss.com/bootstrap/4.0.0/css/bootstrap.min.css"
rel="stylesheet">
    <script type="text/javascript" src="https://gc.kis.v2.scr.kaspersky-
labs.com/FD126C42-EBFA-4E12-B309-
BB3FDD723AC1/main.js?attr=3wvf44XdejigWHFj22ANQmgfA-L5oa67wZhZwPtEITSot6t8o-
DPZwNcHRFhpa2tgGpDJGis4-1IHYyxyIAN2GE0-kSZKkCLRkbKttCLVN9mKhGFVtGJ3auoiiByn_jJ-
mA447x4TmdjGgz8XvMdLSPF4Gu5xwt0joGxWDXuOEF18Sa5usZGgj4TdDiTfDHpElX3P1eH-
lsevFhUJQEZe3981VXjRKYRn2FrxsYwXGSMBn0sRR9IYup35XYNQkvA6DLQV1lwLc4XuAo0BlJYAfI75R
4O5LwTWuT-uaft0DEQeuV_f3rKvkrcBkalcpWnyXVLeLyjMz5CqpZ1aSCy1MgVAzWxGb-
GX3eQb0F5qOksANddV_vhz1Ai4RgptuAfB8mVyuz0nWZzpmwam34lc4NL4tfyWGncKz2taMyGfsK4Mrn0
zfPlY9_n9FP0lMlAX0IQ8TfbVp4B1vbwnA-
```

```
RVJq8mxoTjgMgqhKhp6NQY_8gZULkbqqA0pqUMvfL3_fZC1PFipLNjCyCGe9YOaU9L7QF4CXeKsRhJXmI
898FhpxB1oI7z0xvndsDLPRsqbNuse_eGL9tz0Te5HLGhtoXSn5O8pHC99_XHYofrlismcByzZlmVqVkC
NfmbnMjaD9IQf6xAACyjkQ927AOvyDVCZKr-
tV6wRZyv_z7Z1J9AG7SGSLoB34AkMytkYXvpgGn21pGFNhvl3YSmyKYc2XJs89zHbp5fSyXsfasogSEYL
bpxCmuvzZKO4haaqouKDcLwBGMFp_Br095f-
AlhhWOdPDx1ezvTMx1NgS4QO97OmbyQCqHUFWWZLYNgjQ8zpfdBXB17L_v_lfmrUWhUiUVc9tRcJy-
lpchFJe8Gz7TUOKCRDjbIWtiqXryDeENrJgQ31laXp-
VVYpOI1L55pek2fgk5OCGNzVges5oG4PpMyCIXtJpv32E5rlPTktG4hD8eXmYQECVU1HvSmEiKvuY6T6i
9wdpqg_AnycRzUXmYdahFT3W7zToIn2RXzNfdOU0zbYBvtJ70TpR4PjfU75lJ0FsnphDuCnero3UYOak7
vYvGYD9YV2md5v-3AmP-eOor2m55JZRH_Hxpn28x-nDNCOHqVBC6leYuYFBVV_vL5l-
E8n92uWUqwMEzdZPZtAyRaCfz3D2Y0IYn-
ZrnfNTg2M_zVJePmUu1xdjYh7d1dx7nwclm7wJrBPb3JnX2kvEGYs9SM17MlwzoY1VJq4UzJ2D6oEvhQw
HvG4e1etlS6iLWzhy8RVMfBlTa4DPDOHmTlHhsKbn0UaMyFFCppe79rtIVRctcomnVmQysUwUOhjzlAq3
0-hXJCTqdCWJe2xnxjAuUHVqHSiHiZllZaoOWNCV5Ypx_eqzn-KyZS3u-
2_hGLHHNA2AVBWn_hF3Gz16dw6zA4QSmWZSfDUcNObLJGOSTaDS3Z8jPTloYPFmu8oES6TL1dLlEK5Yhc
SGaX4iv6o95drsZGb6bBcWgT7sNFHW6dVE9wdjoDFuBergPIAm0sKaZQ2Ex6j15OWCbE6UaPg-
VNfziA2FEPpJaI9hEPI2gdaSuHqovlEOt5mjuFBBOxpK0t8kOZRtsVzqUuJw3VcLjaP6SfG_KZfgX_g8T
Ps6CcFhlLRz63oXMQFPW6AA7eudWfygndazedq5B-
6DqSkOT04GTUJNqLcElg6KEEWqxd88BzoQoK28jrAf-xWHNIZv5HmQQYEnyX0U_cW8HX-
hde54TuY_fY3e5QYu4be-JxTkA4JxWLEagSa7-zs" charset="UTF-8"></script><script
src="https://cdn.bootcss.com/popper.js/1.12.9/umd/popper.min.js"></script>
    <script src="https://cdn.bootcss.com/jquery/3.3.1/jquery.min.js"></script>
    <script
src="https://cdn.bootcss.com/bootstrap/4.0.0/js/bootstrap.min.js"></script>
<link href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300'
rel='stylesheet' type='text/css'>
<link href='https://fonts.googleapis.com/css?family=Merriweather'
rel='stylesheet'>
<link href='https://fonts.googleapis.com/css?family=Josefin Sans'
rel='stylesheet'>
<link href='https://fonts.googleapis.com/css?family=Montserrat' rel='stylesheet'>
<link href="{{ url_for('static', filename='css/final.css') }}" rel="stylesheet">
<style>
.header {
            top:0;
            margin:0px;
            left: 0px;
            right: 0px;
            position: fixed;
            background-color: #28272c;
            color: white;
            box-shadow: 0px 8px 4px grey;
            overflow: hidden;
            padding-left:20px;
            font-family: 'Josefin Sans';
```

```
            font-size: 2vw;
            width: 100%;
            height:8%;
            text-align: center;
        }
        .topnav {
  overflow: hidden;
  background-color: #333;
}

.topnav-right a {
  float: left;
  color: #f2f2f2;
  text-align: center;
  padding: 14px 16px;
  text-decoration: none;
  font-size: 18px;
}

.topnav-right a:hover {
  background-color: #ddd;
  color: black;
}

.topnav-right a.active {
  background-color: #565961;
  color: white;
}

.topnav-right {
  float: right;
  padding-right:100px;
}

.login{
margin-top:-70px;
}
body {

  background-color:#ffffff;
  background-repeat: no-repeat;
  background-size:cover;
  background-position: 0px 0px;
  }
.login{
```

```
    margin-top:100px;
}

.container {
  margin-top:40px;
  padding: 16px;
}
select {
    width: 100%;
    margin-bottom: 10px;
    background: rgba(255,255,255,255);
    border: none;
    outline: none;
    padding: 10px;
    font-size: 13px;
    color: #000000;
    text-shadow: 1px 1px 1px rgba(0,0,0,0.3);
    border: 1px solid rgba(0,0,0,0.3);
    border-radius: 4px;
    box-shadow: inset 0 -5px 45px rgba(100,100,100,0.2), 0 1px 1px
rgba(255,255,255,0.2);
    -webkit-transition: box-shadow .5s ease;
    -moz-transition: box-shadow .5s ease;
    -o-transition: box-shadow .5s ease;
    -ms-transition: box-shadow .5s ease;
    transition: box-shadow .5s ease;
}


</style>
</head>

<body style="font-family:Montserrat;overflow:scroll;">

<div class="header">
 <div style="width:50%;float:left;font-size:2vw;text-align:left;color:white;
padding-top:1%">Plant Disease Prediction</div>
  <div class="topnav-right" style="padding-top:0.5%;">


  </div>
</div>
<div class="container">
       <div id="content" style="margin-top:2em">
       <div class="container">
```

```
          <div class="row">
            <div class="col-sm-6 bd" >

              <br>
                <img src="{{url_for('static',filename='images/789.jpg')}}"
style="height:450px;width:550px"class="img-rounded" alt="Gesture">
            </div>
            <div class="col-sm-6">
                <div>
                    <h4>Drop in the image to get the prediction  </h4>
            <form action = "" id="upload-file" method="post"
enctype="multipart/form-data">
                <select name="plant">

                    <option value="select" selected>Select plant type</option>
                    <option value="fruit">Fruit</option>
                    <option value="vegetable">Vegetable</option>
        </select><br>
                <label for="imageUpload" class="upload-label" style="background:
#28272c;">
                    Choose...
                </label>
                <input type="file" name="image" id="imageUpload" accept=".png,
.jpg, .jpeg">
            </form>


            <div class="image-section" style="display:none;">
                <div class="img-preview">
                    <div id="imagePreview">
                    </div>
                </div>
                <div>
                    <button type="button" class="btn btn-info btn-lg " id="btn-
predict" style="background: #28272c;">Predict!</button>
                </div>
            </div>

            <div class="loader" style="display:none;"></div>

            <h3>
                <span id="result" style="font-size:17px; "> </span>
            </h3>

        </div>
```

```
            </div>

          </div>
        </div>
        </div>
    </div>
</body>

<footer>
    <script src="{{ url_for('static', filename='js/main.js') }}"
type="text/javascript"></script>
</footer>
</html>
```

final.css

```css
.img-preview {
    width: 256px;
    height: 256px;
    position: relative;
    border: 5px solid #F8F8F8;
    box-shadow: 0px 2px 4px 0px rgba(0, 0, 0, 0.1);
    margin-top: 1em;
    margin-bottom: 1em;
}

.img-preview>div {
    width: 100%;
    height: 100%;
    background-size: 256px 256px;
    background-repeat: no-repeat;
    background-position: center;
}

input[type="file"] {
    display: none;
}

.upload-label{
    display: inline-block;
    padding: 12px 30px;
    background: #28272c;
    color: #fff;
    font-size: 1em;
```

```
    transition: all .4s;
    cursor: pointer;
}

.upload-label:hover{
    background: #C2C5A8;
    color: #39D2B4;
}

.loader {
    border: 8px solid #f3f3f3; /* Light grey */
    border-top: 8px solid #28272c; /* Blue */
    border-radius: 50%;
    width: 50px;
    height: 50px;
    animation: spin 1s linear infinite;
}

@keyframes spin {
    0% { transform: rotate(0deg); }
    100% { transform: rotate(360deg); }
}
```

```
    $("#imageUpload").change(function () {
        $('.image-section').show();
        $('#btn-predict').show();
        $('#result').text('');
        $('#result').hide();
        readURL(this);
    });

    // Predict
    $('#btn-predict').click(function () {
        var form_data = new FormData($('#upload-file')[0]);

        // Show loading animation
        $(this).hide();
        $('.loader').show();

        // Make prediction by calling api /predict
        $.ajax({
            type: 'POST',
            url: '/predict',
            data: form_data,
            contentType: false,
            cache: false,
            processData: false,
            async: true,
            success: function (data) {
                // Get and display the result
                $('.loader').hide();
                $('#result').fadeIn(600);
                $('#result').text('Prediction: '+data);
                console.log('Success!');
            },
        });
    });

});
```

main.js

```
$(document).ready(function () {
    // Init
    $('.image-section').hide();
    $('.loader').hide();
    $('#result').hide();

    // Upload Preview
    function readURL(input) {
        if (input.files && input.files[0]) {
            var reader = new FileReader();
            reader.onload = function (e) {
                $('#imagePreview').css('background-image', '
e.target.result + ')');
                $('#imagePreview').hide();
                $('#imagePreview').fadeIn(650);
            }
            reader.readAsDataURL(input.files[0]);
        }
    }
```

```
    $("#imageUpload").change(function () {
        $('.image-section').show();
        $('#btn-predict').show();
        $('#result').text('');
        $('#result').hide();
        readURL(this);
    });

    // Predict
    $('#btn-predict').click(function () {
        var form_data = new FormData($('#upload-file')[0]);

        // Show loading animation
        $(this).hide();
        $('.loader').show();

        // Make prediction by calling api /predict
        $.ajax({
            type: 'POST',
            url: '/predict',
            data: form_data,
            contentType: false,
            cache: false,
            processData: false,
            async: true,
            success: function (data) {
                // Get and display the result
                $('.loader').hide();
                $('#result').fadeIn(600);
                $('#result').text('Prediction: '+data);
                console.log('Success!');
            },
        });
    });

});
```

8. Testing

8.1 Test Cases

Test cases are a set of actions performed on a system to determine if it satisfies software requirements and functions correctly as it claimed to perform

				Date	03-Nov-22								
				Team ID	PNT2022TMID51566								
				Project Name	Project - Fertilizers Recommendation System For Disease Prediction								
				Maximum Marks	8 marks								
Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
HomePage_TC_OO1	Functional	Home Page	Verify user is able to see the home page or not		1.Enter URL and click go 2.verify whether the user is able to see the home page	Enter URL and click go	User able to see the home page	Working as expected	Pass	Nil	N	-	Balaji T S
HomePage_TC_OO2	UI	Home Page	Verify the UI elements in Home Page		1.Enter URL and click go 2. Verify the UI elements in Home Page	Enter URL and click go	Application should show below UI elements: Home Tab & Product Tab	Working as expected	pass	Nil	N	-	C.J.Dinesh kumar
ProductPage_TC_OO3	Functional	Product page	Verify user is able to redirect to product page or not		1.Enter URL and click go 2.Click on Product button 3.Verify whether the user is redirect to product page or not	Click the product button in home page	User should navigate to Product page	Working as expected	pass	Nil	N	-	S.Aparna
ProductPage_TC_OO4	UI	Product page	Verify the UI elements in Product Page		1.Enter URL and click go 2. Verify the UI elements in Product Page	Click the product button and redirect to product page	Application should show below UI elements: Dropdown List , Upload file Button, Product button.	Working as expected	pass	Nil	N	-	C.J.Dinesh kumar
ProductPage_TC_OO5	Functional	Product page	Verify user is able to select the dropdown value or not		1.Enter URL and click go 2.Click on Product button 3.Verify whether the user is redirect to product page or not 4.Verify user is able to select the dropdown value or not	Fruit or Vegetable	Application should shows user to choose fruit or vegetable options in dropdown list	Working as expected	pass	Nil	N	-	P.Karthaayani
ProductPage_TC_OO6	Functional	Product page	Verify user is able to upload the images or not		1.Enter URL and click go 2.Click on Product button 3.Verify whether the user is redirect to product page or not 4.Verify user is able to select the dropdown value or not 5.Verify user is able to upload the images or not	Images to be Uploaded	Application should shows the uploaded images	Working as expected	pass	Nil	N	-	A.Mathusoorya
ProductPage_TC_OO7	Functional	Product page	Verify whether the image is predicted correctly or not		1.Enter URL and click go 2.Click on Product button 3.Verify whether the user is redirect to product page or not 4.Verify user is able to select the dropdown value or not 5.Verify user is able to upload the images or not 6. Verify whether the image is predicted correctly or not	Click the Product Button	Application shows the predicted output	Working as expected	pass	Nil	N	-	S.R.S.Praveenkajaj,Karthikeyan

8.2 User Acceptance Testing

Before deploying the software application to a production environment the end user or client performs a type of testing known as user acceptance testing, or UAT to ensure whether the software functionalities serve the purpose of development.

Acceptance Testing
UAT Execution & Report Submission

Date	03 November 2022
Team ID	PNT2022TMID52506
Project Name	Fertilizers recommendation system for disease prediction
Maximum Marks	4 Marks

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the [Fertilizer r system for disease prediction] project at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resc

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
Yellow Leaves	10	4	5	15	34
Blights	1	5	2	4	12
Fruit rots	3	1	0	2	6
Leaf spots	9	2	4	18	33
Mosaic leaf pattern	3	9	6	6	24
Fruit Spots	3	1	5	1	10
Leaves misshapen	0	7	2	1	10
Totals	29	29	24	47	129

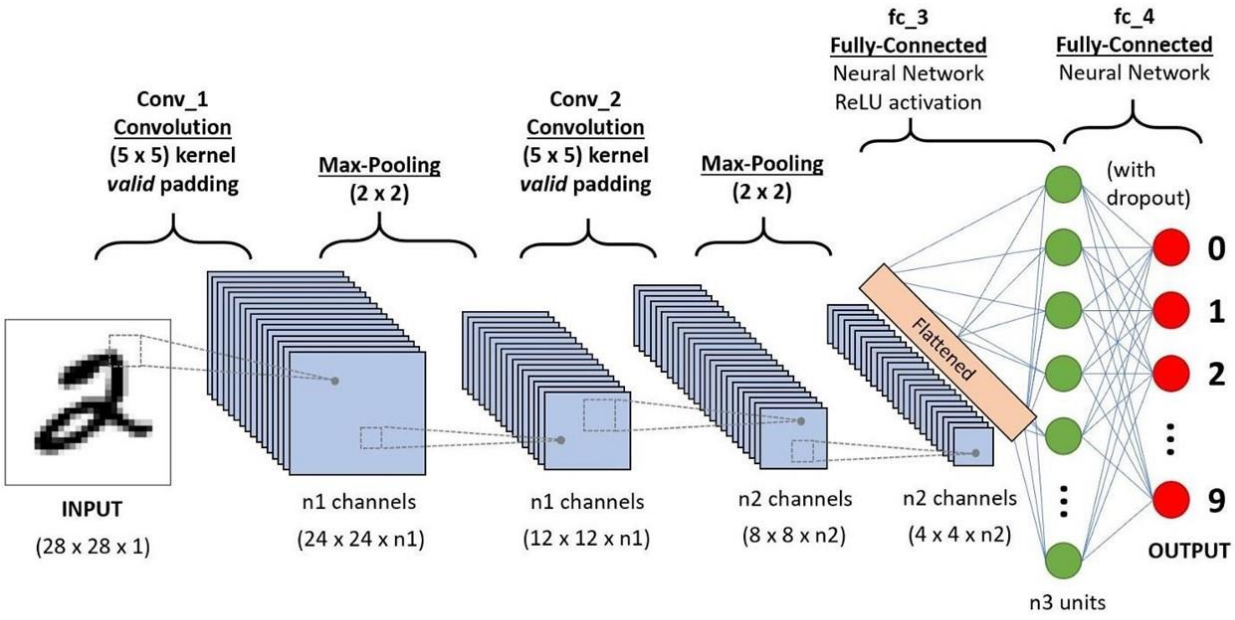
3. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested.

Section	Total Cases	Not Tested	Fail	Pass
Yellow Leaves	20	0	0	20
Blights	43	0	0	43
Fruit rots	9	0	0	9
Leaf spots	5	0	0	5
Mosaic leaf pattern	19	0	0	19
Fruit Spots	2	0	0	2
Leaves misshapen	4	0	0	4

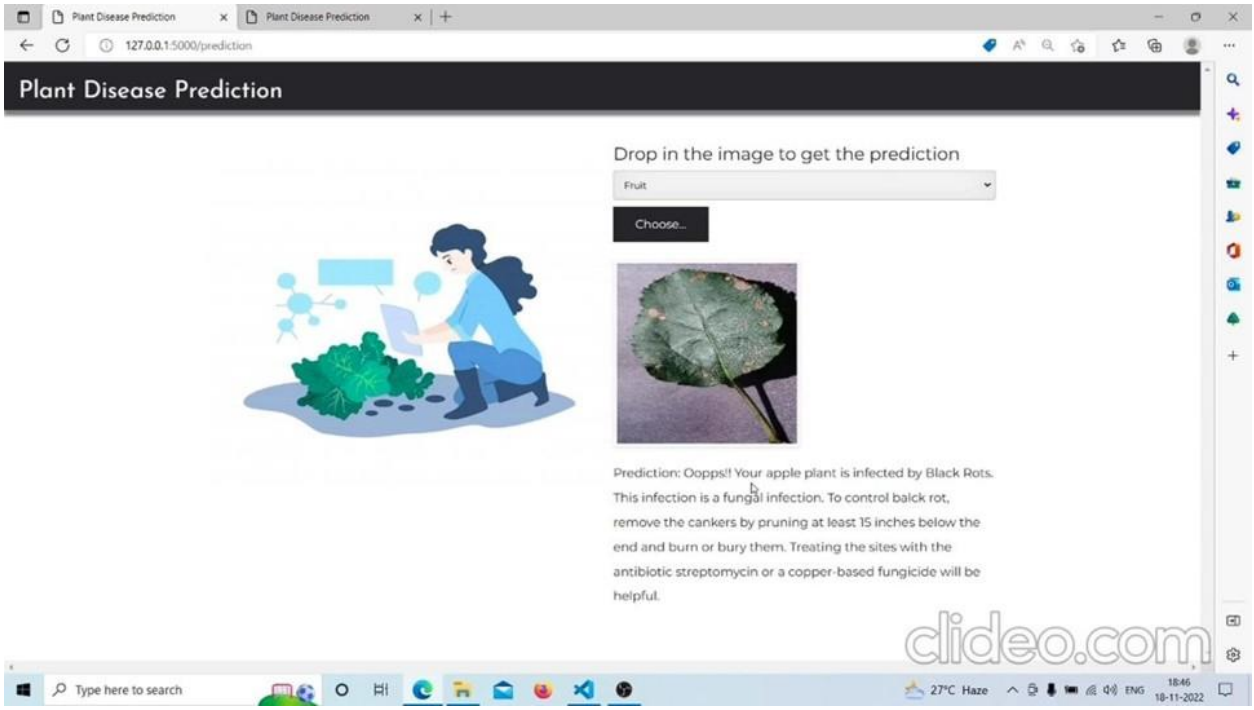
CNN:

A convolutional neural network (CNN or convnet) is a subset of machine learning. It is one of the various types of artificial neural networks which are used for different applications and data types. A CNN is a kind of network architecture for deep learning algorithms and is specifically used for image recognition and tasks that involve the processing of pixel data.There are other types of neural networks in deep learning, but for identifying and recognizing objects, CNNs are the network architecture of choice. This makes them highly suitable for computer vision (CV) tasks and for applications where object
recognition is vital, such as self-driving cars and facial recognition



9. Results

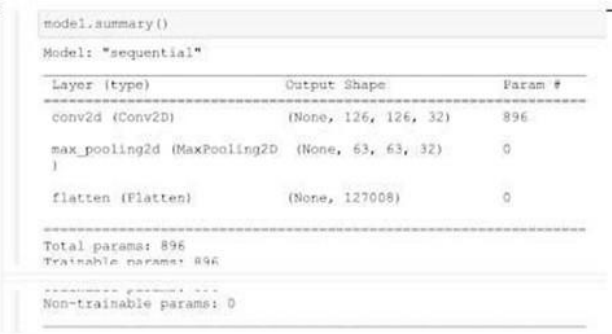
Performance Metrics: metrics are a baseline for performance tests.Monitoring the correct parameters will help you detect areas that require increased attention and find ways to improve them.

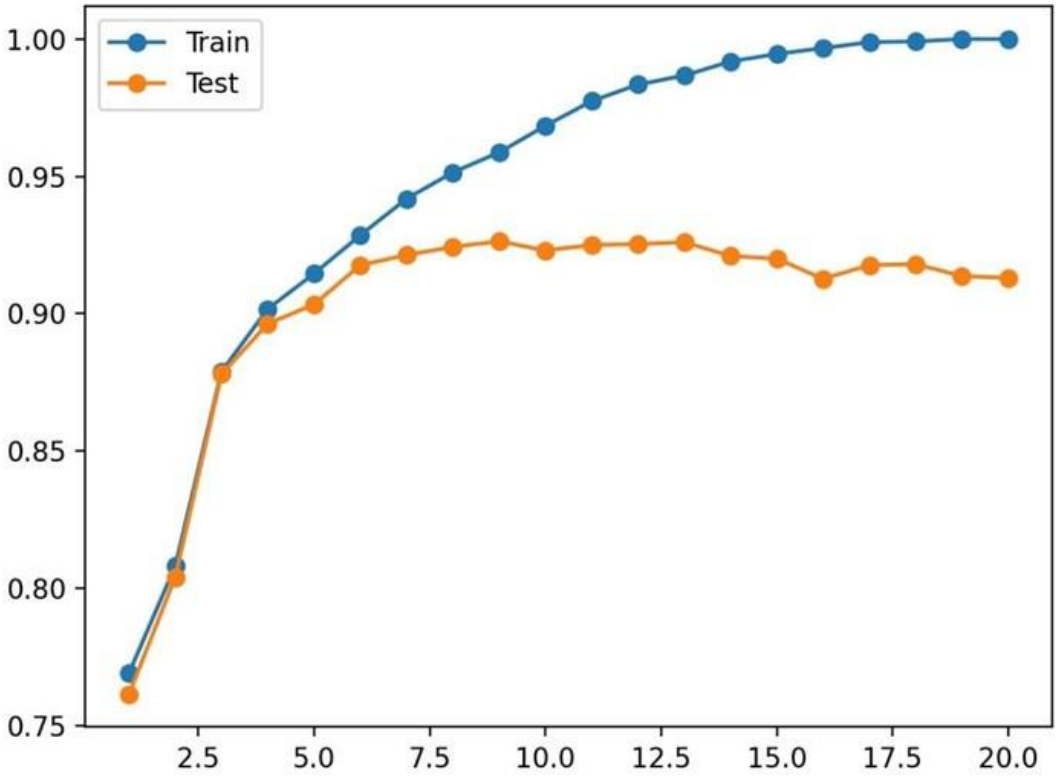

Plant Disease Prediction
Plant Disease Prediction
127.0.0.1:5000/prediction
Plant Disease Prediction
Drop in the image to get the prediction
Fruit
Choose...
Prediction: Oopps!! Your apple plant is infected by Black Rots. This infection is a fungal infection. To control balck rot, remove the cankers by pruning at least 15 inches below the end and burn or bury them. Treating the sites with the antibiotic streptomycin or a copper-based fungicide will be helpful.
clideo.com
Type here to search
27°C Haze
ENG
18:46
18-11-2022

Project Development Phase Model Performance Test

Date	10 November 2022
Team ID	PNT2022TMID52506
Project Name	Fertilizers recommendation system for disease prediction
Maximum Marks	10 Marks

Model Performance Testing:

S.No.	Parameter	Values	Scre
1.	Model Summary	**Total Params:896** Trainable Params:896 Non-Trainable Params:0	
2.	Accuracy	**Training Accuracy = 90.3** Valuation Accuracy = 89.62	
3.	Confidence Score (Only Yolo Projects)	Class Detected - NA Confidence Score - NA	



10) Advantages

•Early detection of plant diseases.

• Proper fertilizer recommendation to prevent or cure the plant infection or disease. •No need to consult any specialists.

•Fully automated system

Disadvantages

•Requires training the system with large dataset.

•Works only on the pretrained diseases.

•When a plant is infected with multiple diseases the system may not predict all the diseases due to the mixed symptoms.

•Requires a good device connected to the internet.

10)Conclusion

Hence a system that takes in images as user input, analyses those for certain symptoms and identifies the disease, recommends the fertilizer to counter the deficiency of the nutrients is built and deployed

11) Future Scope:

The system must be trained with numerous images of plant disease symptoms. In case of presence of multiple diseases, suitable classification must be done to predict each disease accurately and recommend separate fertilizers as a solution to each deficiency or infection.

12) Appendix:Source Code:

home.html

```
<!DOCTYPEhtml>

<html >

<head>

    <meta charset="UTF-8"> <meta name="viewport"
content="width=device-

width, initial-scale=1"> <title> Plant Disease Prediction</title>

   <link href='https://fonts.googleapis. com/css?family=Pacifico'
rel='stylesheet' type='text/css'>

<link href='https://fonts.googleapis. com/css?family=Arimo'

rel='stylesheet' type='text/css'> <link

href='https://fonts.googleapis.
```

com/css?family=Hind:300' rel='stylesheet'type='text/css'> <link href='https://fonts.googleapis.

com/css?family=Open+Sans+C ondensed:300' rel='stylesheet' type='text/css'> <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">

<link href='https://fonts.googleapis.

com/css?family=Merriweather' rel='stylesheet'> <link href='https://fonts.googleapis. com/css?family=Josefin Sans' rel='stylesheet'> <link href='https://fonts.googleapis.

com/css?family=Montserrat' rel='stylesheet'> <script type="text/javascript" src="https://gc.kis.v2.scr.kaspe rskylabs.com/FD126C42-EBFA- 4E12- B309-

BB3FDD723AC1/main.js?attr=A

MFGethlf4Q6r2IdpTrTqcDQGN

LDU5Cbc3diYnUdLkg5mQrVB_t d

22OHUAsBJSd0oo8OR0zM3rIP eFWfnEY4XCxQu4KOxMSqlshE oIBOzvYw0SsMYpyUv4fnvKEjm Joj_Y6cI4ov6AMOkz3Sh3epkfq

0gltfnAPvvQBRdXqRmdqePVjlv

vqL28ONZCiS0Qr5t0XGxJ0bSiW

VTrH3cqaKCk05eP1Dx04mieTcj sA_TtFLx15PUu0ed6soaj-

FOO6-

1d4OQxbJYBXUBefiUhzmOYCp

sGIs1OyQvA0huo8AUYwYB72d vs07U3O2hq8BmYBv98h13sSo

iXKxyKx4FUsOMkixjxYP6hu0w wi7yv1E2rei3GHtPl5YwHkWio

QIPqvAmrlmaPtFZmFjE4_UUCi

9IEKws8IduDiqQIFkxfO3YT_sU

C9gWmxKSpGbiebwCgVwvdGE

nbUxY18p9Db6jC6FVKRhqdMB

ianq63qvzZRMZbEpjzQT0DQAH 3Yho4o4A00FIW2004q8Q80xt2

kV928P_nBgS9HOgHI5EZxenbjf qANTs1r h8GGhBd7RJaE8-

2AaqT6zbLf2tILJ8j4fk3bV1qsd w0fPmp6foJbDu4343XH36a0V

GHsMLeVqcc30PSsE1pJbGE4_C

_E xQd0_uRSA40mRjnFwHdLo9SJ

c1qghyc5YGQil_utG48olMy9cC

6z-

iyKg1EeLKB43uq4SlUimRnuUsZ

W7drNWaijSfJPDmkm7lUJ0PO wQXPfnLa2_spc3FisWCOZ7dFu

IgDciIu0yF8rio2X

0Pz6pZkGQW4Fwl6vWKrLplmHagJElKXg58YSWwAT2DILilBj

uSP iTwCHR9Ya_mAXW4C03v7x

zJlaSK9jneECqctvKnH3RFgDS8o

cfDcY65lXNRkq6v1hrcdv5sM2e

k4Kjq4OFgXwijr0JdpSDpZlbIK00sPb4u1B8c7MaC

qBcbJAhfmg4utLU67fn5GLoCX_-5TAWV0ID-

_sC1Vs9glWRPkKmmktJMbVy9

8XqC5-

DhtE3yd5I9ZM1SEH1gGYLlRjxwzPjWwHE-

YH1Nx9lmEsq27TK7M86uT8iA e7LgtviO2YsCB0buShHWmjh3R

zwMGqNqeymFSxPRK_sDmTFoVjcaYpGa0

kaMwhmmF9AtPwGmFaGglv3r ryVg0X0bGoXRetnrPpDG7jUoq

5zQuXQSedBf9hmNwEqWsSZtI

4zNTxjiEkxU0djhPXqByZbnelp_3z

6pqqniLzqj9jzAkvX6wDOW7ZycfDzOtzNgTxWdtf41P6ZjVu8E

WSf65Wqgen5jD4IPXgXGtxkjrS

brqiXNxxxfKVJUOoOcEO0F6n3

DWD0BMWS8UGOQO8gZZeXC

fpuTIGYTD6okyD91kLk5AmhaNTJVKjkHOdHZqMHxikVhdK6

C2PIfg4lEY0yuE3Fjj_5NNX5ZalIpOl3L

N6YQ8Jqis_UmC_OXmjW2F5Y4p8VR

RKc1HW2DFaUxBrEgfSwe_keyaofodrjde_pfPuDQDryEgGy9D

NIhpGUV_bQJ8jlPxRL7WSpmP

IZ1mVN_onhqq2oIWTl7ep8w0GsJH3OhSRyyJC0X

C9xtetq

VjIHzcbKYFsxOaXTLLe7U9oHaX

HzjDK3hnZNFYwzV_aoq8180eb"charset="UTF-

8"></script><style> .header { top:0; margin:0px; left: 0px; right: 0px; position: fixed; background-color: #28272c; color: white; box-shadow: 0px 8px 4px grey; overflow: hidden; padding-left:20px; fontfamily: 'Josefin Sans'; font-size: 2vw; width:

100%; height:8%; text-align: center;

}

.topnav { overflow: hidden; background-color:

#333;

}

.topnav-right a { float: left; color: #f2f2ftext-align:

center; padding: 14px 16px; text-decoration: none;

fontsize: 18px;

}

.topnav-right a:hover { background-color: #ddd; color: black;

}

.topnav-right a.active { background-color:

#565961; color: white;

}

.topnav-right { float: right; padding-right:100px;

}

body { background-color:#ffffff; backgroundrepeat:no-repeat; backgroundsize:cover;

background-position: 0px 0px; }

.button { background-color: #28272c; border: none; color: white; padding: 15px 32px; text-align: center; text-decoration: none; display: inline-block; font-size: 16px; border-radius: 12px;

}

```
.button:hover { box-shadow: 0 12px 16px 0 rgba(0,0,0,0.24), 0 17px
50px 0 rgba(0,0,0,0.19);
}
form {border:  3px  solid  #f1f1f1;
marginleft:400px;marginright:400px;}  input[type=text],
input[type=password] { width: 100%;  padding: 12px
20px;  display:  inline-block;  marginbottom:18px;
border: 1px solid #ccc;  box-sizing: border-box;
} button {  background-color: #28272c;
color:
white;  padding: 14px 20px;  margin-bottom:8px; border:
none; cursor: pointer;
width: 15%;  border-radius:4px;}  button:hover { opacity: 0.8;}
.cancelbtn {  width:  auto;  padding:  10px
18px; background-color:  #f44336;}  .imgcontainer  {
textalign: center;  margin: 24px 0 12px 0;} img.avatar {  width:
30%;  border-radius: 50%;} .container  { padding:  16px;}
span.psw {  float: right; padding-top: 16px;} /* Change styles for
span and cancel button on extra small screens */@media screen
and (maxwidth: 300px) {  span.psw {
display: block;  float: none;}  .cancelbtn {  width: 100%;}} .home{
margin:80px;  width:  84%; height:  500px;
paddingtop:10px;  padding-left:
30px;}

.login{ margin:80px; box-sizing: content-box;  width:
84%; height: 420px;  padding: 30px;  border: 10px
solid blue;
}
```

```
.left,.right{  box-sizing: contentbox; height: 400px; margin:20px;
border: 10px solid blue;
}
.mySlides {display: none;} img {verticalalign: middle;} /* Slideshow container */ .slideshow-container {  max-width: 1000px; position: relative;  margin: auto;
}
/* Caption text */ .text {  color: #f2f2f2;
font-size:     15px; padding: 8px 12px; position: absolute; bottom: 8px;  width:
100%;  text-align:
center;
}
/* The dots/bullets/indicators
*/ .dot { height: 15px; width: 15px; margin: 0 2px; background-color: #bbb; borderradius: 50%; display:
inline-block;  transition: background-color
0.6s ease;
}
.active

background-color: #717171;
}
/* Fading animation */
.fade {
-webkit-animation-name:  fade;  webkit-animation-duration:
1.5s;  animation-name: fade;  animationduration:
1.5s;
}
```

```
@-webkit-keyframes fade {  from {opacity:
.4}   to {opacity: 1}
}
@keyframes fade {  from
{opacity: .4}   to {opacity: 1}
}
/* On smaller screens, decrease text size */
@media only screen and (maxwidth: 300px) {          .text
{font-size:11px}
}
</style>
</head>
<body style="fontfamily:'Times New Roman',
Times, serif;backgroundcolor:#C2C5A8;">
<div class="header">
<divstyle="width:50%;float:left;fon
tsize:2vw;textalign:left;color:white;paddingtop:1%">Plant
Disease Prediction</div>
<div class="topnavright"style="paddingtop:0.5%;">

<a class="active" href="{{ url_for('home')}}">Home</a>
<a href="{{    url_for('prediction')}}">Predict
</a>
</div>
</div>
<divstyle="backgroundcolor:#ffffff;"><div
style="width:60%;float:left;"><div
```

style="fontsize:50px;fontfamily:Montserrat;paddingleft:20p x;textalign:center;paddingtop:10%;"

>

**Detect if your plant
 is infected!!
 A griculture is one of the major sectors worls wide. Over the years it has developed and the use of new technologies and equipment replaced almost all the traditional methods of farming.**

**The plant diseases effect the production. Identification of diseases and taking necessary precautions is all done through naked eye which requires labour and laboratries. This application helps farmers in detecting the diseases by observing the spots on the leaves, which inturn saves effort and labor costs.

**

** **

** **

**

**

<img src="{{url_for('static',filename= 'images/12456.png')}}" style="max- height:100%;maxwidth:100%;"

>

** **

** **

** **

**
**

** <script> var slideIndex = 0; showSlides(); function showSlides()**

{ var i; var slides

=

document.getElementsByClass Name("mySlides"); var dots =

```
document.getElementsByClass Name("dot");
for (i = 0; i < slides.length; i++)
{ slides[i].style.display
 =
"none";
 } slideIndex++;    if (slideIndex > slides.length) {slideIndex =
1} for (i = 0; i < dots.length; i++) { dots[i].className =
dots[i].className.replace(" active", "");
 } slides[slideIndex1].style.display =
"block"; dots[slideIndex-1].className
+= " active";  setTimeout(showSlides, 2000); //
Change image every 2 seconds
}
</script>     </body>  </html>
```

predict.html

```
<!DOCTYPE html>

<html >

<head>

<meta charset="UTF-8">

      <meta name="viewport" content="width=devicewidth,
initialscale=1">

<title> Plant Disease    Prediction</title>
```

<link href='https://fonts.googlea pis.com/css?fami

=Pacific o' rel='stylesheet' type='text/css'> <link href='https://fonts.googlea pis.com/css?family=Arimo' rel='stylesheet' type='text/css'>

<link href='https://fonts.googlea pis.com/css?family=Hind:300' rel='stylesheet' type='text/css'>

<link href="https://cdn.bootcss. com/bootstrap/4.0.0/css/bootstrap.min.css" rel="stylesheet"> <script type="text/javascript" src="https://gc.kis.v2.scr.kasperskylabs.com/FD126C42EBFA4E12B309BB3FDD723AC1/main.js?a

tr=3wvf44XdejigWHFj22AN QmgfA-

L5oa67wZhZwPtEITSot6t8o

-

DPZwNcHRFhpa2tgGpDJGis41IHYyxyIAN2GE0kSZKkCLRkbKttCLVN9mKh
GFVtGJ3auoiiByn_jJmA447x4TmdjGgz8Xv

MdLS PF4Gu5xwt0joGxWDXuOEF

18Sa5usZGgj4TdDiTfDHpEl
X3P1eHlsevFhUJQEZe3981VXjRKYR
n2FrxsYwXGSMBn0sRR9IY up35XYNQkvA6DLQV1lwLc
4XuAo0B lJYAfI75R4O5LwTWuT-uaft0DEQeuV_f3rKvkrcBkalcpWnyXVLeLyjMz5CqpZ1aS
Cy1MgVAzWxGbGX3eQb0F5qOksANddV_v h
z1Ai4RgptuAfB8mVyuz0nWZzpmwam34lc4NL4tfyW
GncKz2taMyGfsK4Mrn0zfPlY9_n9FP0lMlAX

0IQ8TfbVp4B1vbwnARVJq8mxoTjgMgqhKh p6N

QY_8gZULkbqqA0pqUMvfL

3_fZC1PFipLNjCyCGe9YOa

U9L7QF4CXe

KsRhJXmI898FhpxB1oI7z0x vndsDLPRsqbNuse_eGL9tz
0Te5HLGhtoXSn5O8pHC99 _XHYofrlismc

ByzZlmVqVkCNfmbnMjaD9

IQf6xAACyjkQ927AOvyDVCZKrtV6wRZyv_z7Z1J9AG7SGSL
oB34AkMytkYXvpgGn21pGFNhvl3YSmyKYc2XJs89zHb
p5fSyXsfasogSEYLbpxCmuvzZKO4haa
qouKDcLwBGMFp_Br095fAlhhWOdPDx1ez vTMx1Ng
S4QO97Omby qHUFWW

ZLYNgjQ8zpfdBXB17L_v_lf mrUWhUiUV
c9tRcJylpchFJe8Gz7TUOKCRDjbIW
tiqXryDeENrJgQ31laXpVVYpOI1L55pek2fgk5OCGN
zVges5oG4PpMyCIXtJpv32E5rlPTktG4hD8eXmYQECV
U1HvSmEiKvuY6T6i9wdpqg_AnycRzUX
mYdahFT3W7zToIn2RXzNfdOU0zbYBvtJ70TpR4PjfU7
5 lJ0FsnphDu Cnero3UYOak7vYvGYD9YV
2md5v3AmPeOor2m55JZRH_Hxpn28xnDNCOHqV
BC6leYuYFBVV_

vL5l-

E8n92uWUqwMEzdZPZtAy

RaCfz3D2Y0IYn-
ZrnfNTg2M_zVJePmUu1xdjYh7d1dx7nwclm7wJrBPb3J
nX2kvEGYs9SM17MlwzoY1 VJq4UzJ2D6o

EvhQwHvG4e1etlS6iLWzhy
8RVMfBlTa4DPDOHmTlHhsKbn0UaMyFFCppe79rtIVRc
tcomnVmQy sUwUOhjzlAq30hXJCTqdCWJe2xnxjAuUHV
qHSiHiZllZaoOWNCV5Ypx_ eqzn-KyZS3u-

2_hGLHHNA2AVBWn_hF3

Gz16dw6zA4QSmWZSfDUc

NObLJGOSTaDS3Z8jPTloYP Fmu8oES6T

L1dLlEK5YhcSGaX4iv6o95d
rsZGb6bBcWgT7sNFHW6dVE9wdjoDFuBergPIAm0sKa
ZQ2Ex6j15O

WCbE6UaPg-VNfziA2FEPpJaI9hEPI2gdaS
uHqovlEOt5mjuFBBOxpK0t8kOZRtsVzqUuJw3VcLjaP6S
fG_KZfgX_ g8TPs6CcFhlLRz63oXMQFP

W6AA7eudWfygndazedq5

B- 6DqSkOT04GTUJNqLcElg6K

EEWqxd88BzoQoK28jrAfxWHNIZv5HmQQY EnyX0U_
cW8HXhde54TuY_fY3e5QYu4beJxTkA4JxW
LEagSa7-zs" charset="UTF- 8"></script><script
src="https://cdn.bootcss.c om/popper.js/1.12.9/umd/
popper.min.js"></script> <script src="https://cdn.bootcss.c
om/jquery/3.3.1/jquery.mi n.js"></script>

<script

src="https://cdn.bootcss.c om/bootstrap/4.0.0/js/bo
otstrap.min.js"></script>

<link href='https://fonts.googlea pis.com/css?family=Open+
Sans+Condensed:300' rel='stylesheet' type='text/css'>

<link href='https://fonts.googlea pis.com/css?family=Merri
weather' rel='stylesheet'>

<link href='https://fonts.googlea pis.com/css?family=Josefin Sans'
rel='stylesheet'>

<link href='https://fonts.googlea pis.com/css?family=Monts errat'
rel='stylesheet'>

```
<link href="{{ url_for('static', filename='css/final.css') }}" rel="stylesheet">

<style>
.header {
top:0;
margin:0px;
left: 0px;
right: 0px;
position: fixed;
backgroundcolor: #28272c; color: white; box-shadow: 0px 8px 4px grey;
overflow: hidden;
paddingleft:20px;
font-family: 'Josefin Sans'; font-size: 2vw; width: 100%; height:8%; text-align: center;
}

.topnav { overflow: hidden; backgroundcolor: #333;
}

.topnav-right a { float: left; color:#f2f2f2; text-align: center; padding:
14px 16px; text-decoration: none; font-size: 18px;
```

```
}

.topnav-right a:hover {  background-color:

#ddd;  color: black;

}

.topnav-right a.active {  background-color:

#565961;  color:

white;

}

.topnav-right {   float: right;  padding-right:100px;

}

.login{ margin-top:-70px;

}

body {        background-color:#ffffff;        background-repeat:
norepeat; background-size:cover;  backgroundposition: 0px 0px;

}

.login{ margin-top:100px; }


.container {  margin-top:40px;  padding: 16px;

} select { width: 100%; marginbottom: 10px; background:
rgba(255,255,255,255); border: none; outline: none; padding:
10px; font-size: 13px; color: #000000; text-shadow: 1px 1px 1px
rgba(0,0,0,0.3); border: 1px solid rgba(0,0,0,0.3); border-radius:
4px; box-shadow: inset 0 -5px 45px rgba(100,100,100,0.2), 0 1px
1px rgba(255,255,255,0.2);
```

-webkit-transition: boxshadow .5s ease;

-moz-transition: boxshadow .5s ease;

-o-transition: box-shadow .5s ease;

-ms-transition: boxshadow .5s ease; transition: box-shadow .5s ease;

}

</style>

</head>

<body style="fontfamily:Montserrat;overflo w:scroll;">

** **

** Plant Disease Prediction **

** **

** **

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** **

**
**

<img src="{{url_for('static',filena me='images/789.jpg')}}"

style="height:450px;width: 550px"class="imgrounded"

**alt="Gesture"> **

** **

** **

<h4>Drop in the image to get the prediction </h4>

<form action = "" id="upload-file" method="post" enctype="multipart/formd

ata">

<select name="plant">

<option value="select" selected>Select plant type</option>

<option value="fruit">Fruit</optio n>

<option value="vegetabl

>Vegeta ble</option>

**</select>
 <label for="imageUpload" class="uploadlabel"**

style="background:

#28272c;"> Choose...

</label>

<input type="file" name="image" id="imageUpload"

accept=".png, .jpg, .jpeg">

</form>

** **

** **

** **

** **

** **

** **

<button type="button" class="btn btn-info btn-lg "id="btnpredict" style="background: #28272c;">Predict!</butto n>

** </di v>**

<h3>
<span id="result" style="font-
size:17px; ">
****

</h3>

** **

** **
** **

** **

</body>
<footer>

<script src="{{ url_for('static', filename='js/main.js') }}"
type="text/javascript"></s cript> </footer> </html>

main.js

$(document).ready(function () {
// Init

$('.image-section').hide();

$('.loader').hide();

$('#result').hide(); // Upload Preview function

readURL(input) { if (input.files && input.files[0]) { var reader =
new
FileReader(); reader.onload = function
(e) {

$('#imagePreview').css('ba ckgroundimage', 'url(' +
e.target.result +

$('#imagePreview

.hide();
$('#imagePreview

.fadeIn(650);

}

```
reader.readAsDat
URL(inp
ut.files[0]);
}

}


$("#imageUpload").change
(function () {

$('.image-section').show();

$('#btn-predict').show();

$('#result').text('');  $('#result').hide(
readURL(this);
});

// Predict

$('#btnpredict').click(function () {     var form_data = new
FormData($('#upload- file')[0]);
// Show loading animation
$(this).hide();

$('.loader').show();

// Make prediction by calling api

/predict      $.ajax({      type: 'POST',
url: '/predict',      data: form_data,
contentType: false,      cache: false,
```

```
processData: false,          async: true,
success:



});   ;

relative;  border: 5px solid #F8F8F8; boxshadow: 0px 2px 4px 0px
rgba(0, 0, 0, 0.1);  margin-top: 1em;  margin-bottom:
1em;

}

.img-preview>div {  width: 100%;  height: 100%; background-
size: 256px 256px;  background-repeat:
norepeat;  background-position:
center;

} input[type="file"] {  display:

none;

                                                    }

.upload-label{   display:   inlineblock;   padding:   12px   30px;
background: #28272c; color: #fff; font-size: 1em; transition: all
.4s;  cursor: pointer;

}

.upload-label:hover{  background:

#C2C5A8;  color: #39D2B4;
```

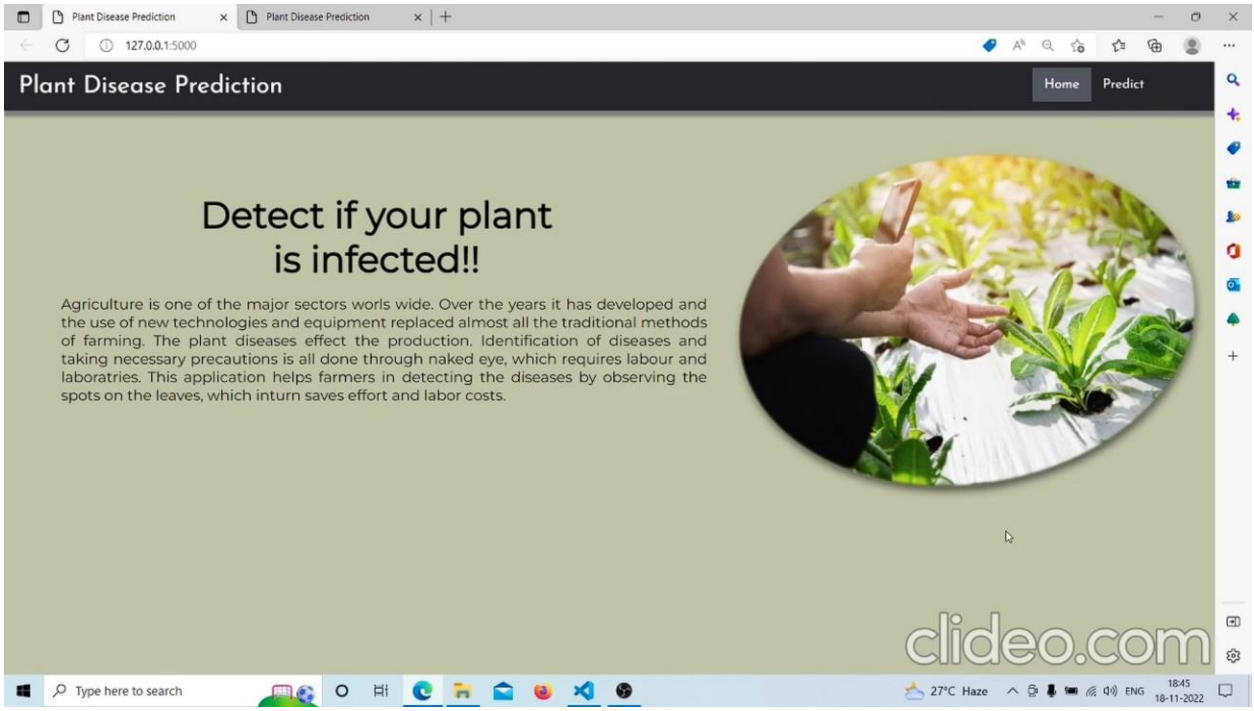
```
}
.loader {   border: 8px solid #f3f3f3; /*
Light grey
*/ border-top: 8px solid #28272c; /* Blue */ border-radius: 50%; width:
50px;  height: 50px;animation: spin
1s linear
infinite;
}

@keyframes spin {

0% { transform: rotate(0deg); }

100% { transform: rotate(360deg);

}
```

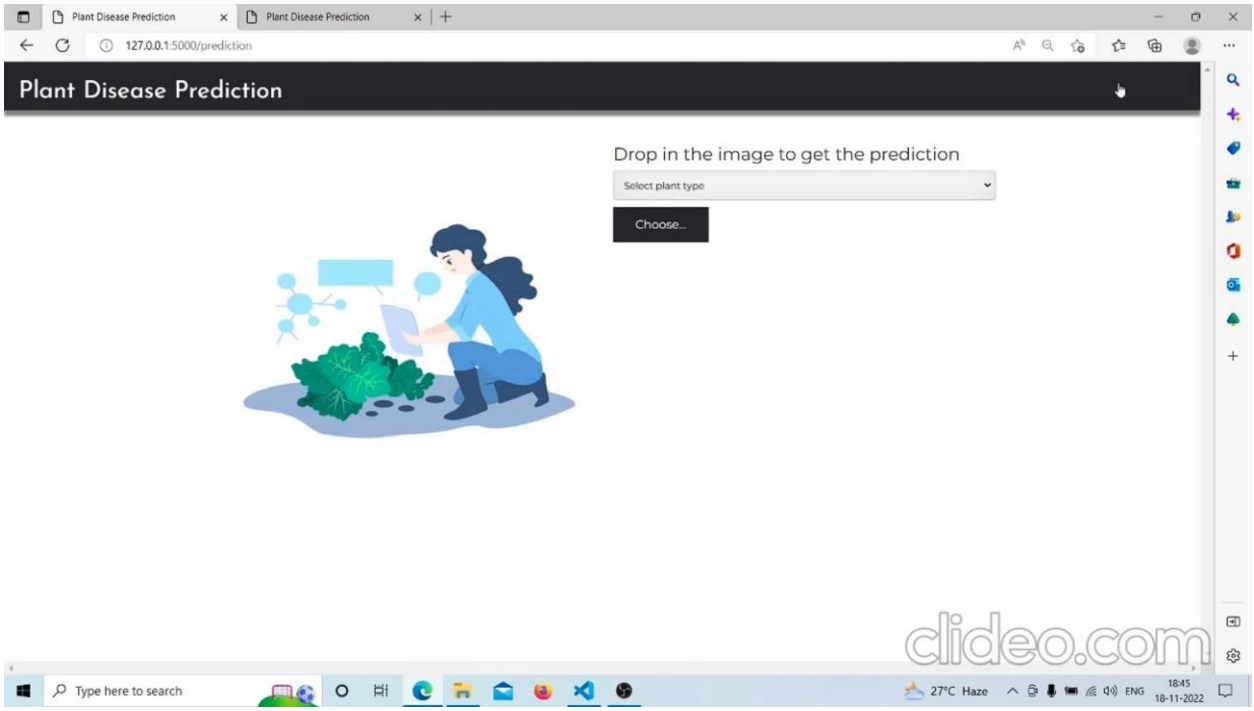
python - app.py

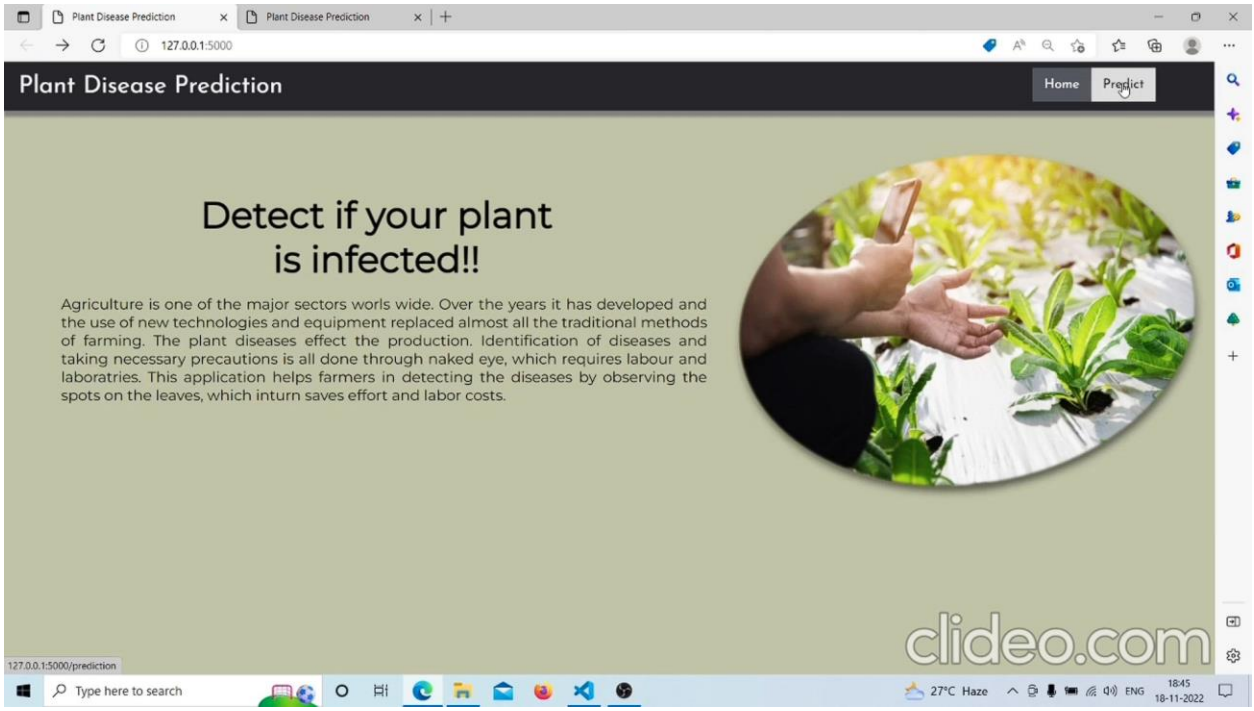
```
import os

import numpy as np import pandas as pd from
tensorflow.keras.mode ls import load_model

# from tensorflow.keras.prepr ocessing import image from
werkzeug.utils import secure_filename from flask

import Flask, render_template, request app =

Flask(__name__)

#load both the vegetable and fruit models model =
load_model("vegetabl e.h5") model1=load_model("
                                        fruit.h5")
```

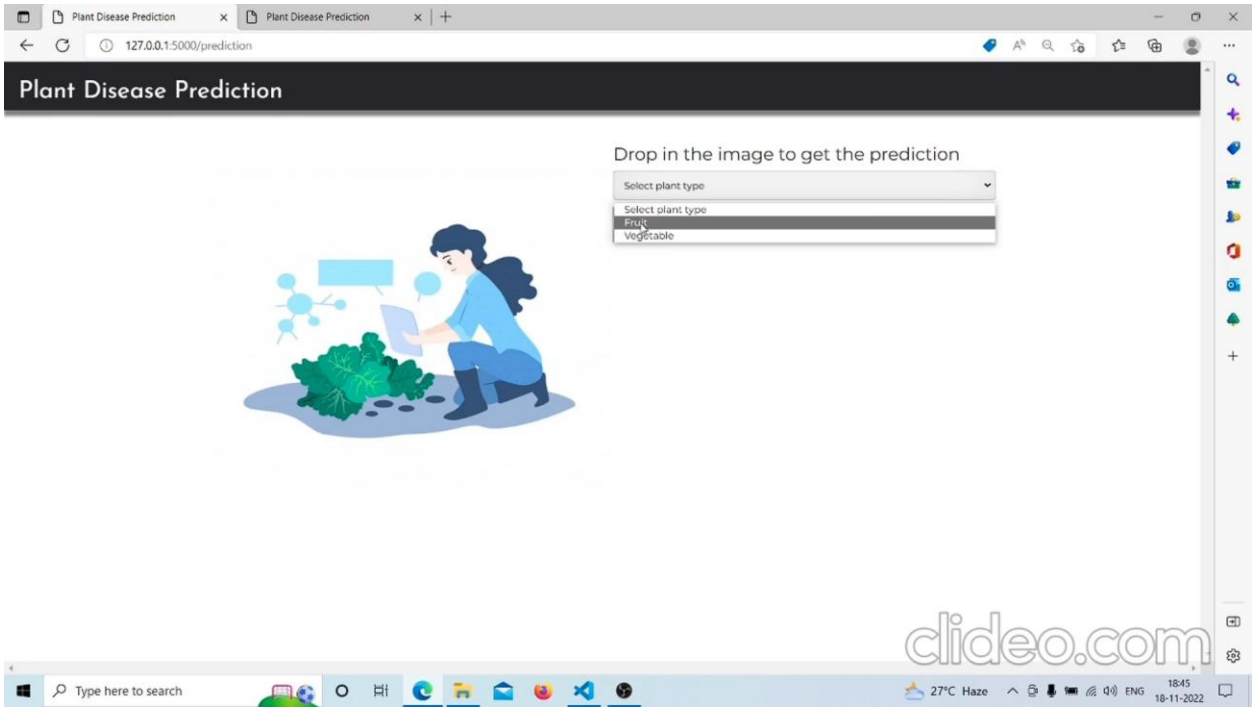
```
#home page @app.route('/') def home(): return
render_template('home.html')
#prediction page
@app.route('/predicti on') def prediction():
return render_template('pred ict.html')
@app.route('/predict', methods=['POST']) def predict():
if request.method == 'POST':
# Get the file from post request
 f =     request.files['image']
# Save the file to ./uploads  basepath = os.path.dirname(__file
__)    file_path    =    os.path.join(basepath,'uploads',
secure_filename(f.filen ame))
f.save(file_path) img =  image.load_img(file_p ath,
target_size=(128, 128))
x = image.img_to_array(i mg)  x = np.expand_dims(x, axis=0)
plant=request.form['pl ant'] print(plant) if(plant=="vegetable"): preds =
model.predict(x)
preds=np.argmax(preds)  print(preds)
df=pd.read_excel('prec autions - veg.xlsx')
```

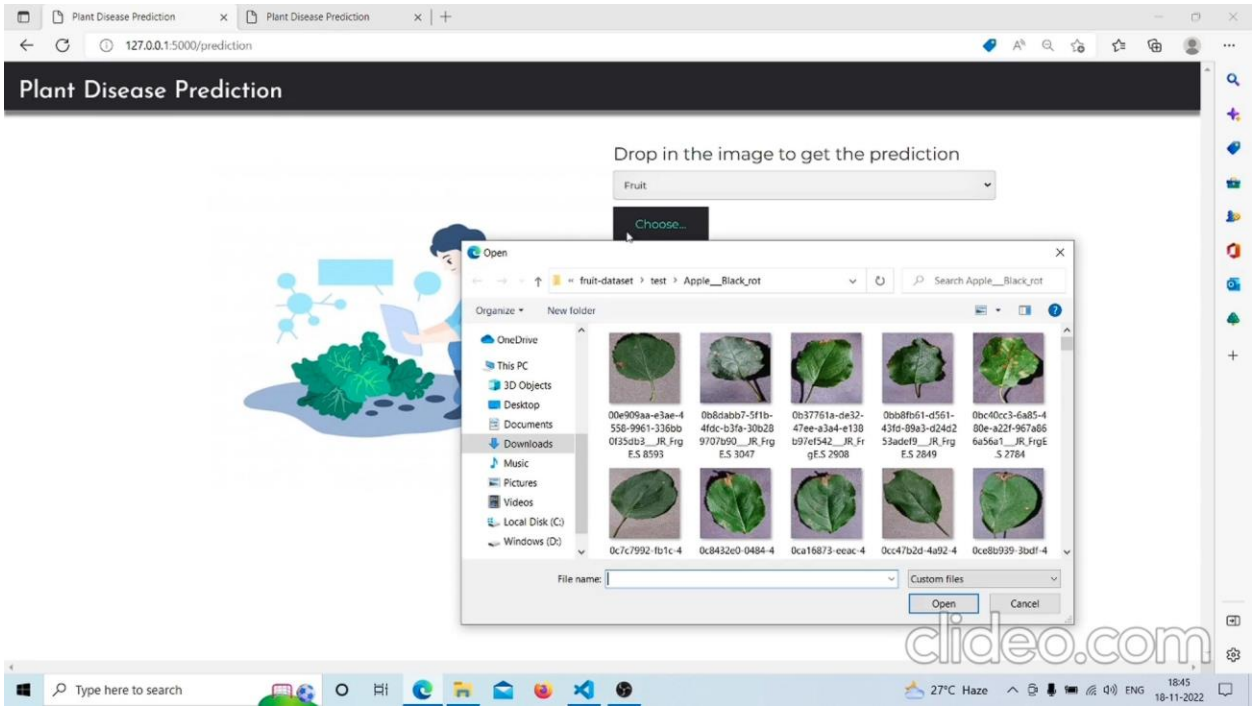
```
print(df.iloc[preds]['ca ution']) else:

preds =
model1.predict(x)


preds=np.argmax(preds)


df=pd.read_excel('precautions -fruits.xlsx')
print(df.iloc[preds]['ca ution'])

return df.iloc[preds]['caution'
]


if __name__ == "__main__":


app.run(debug=False)
```

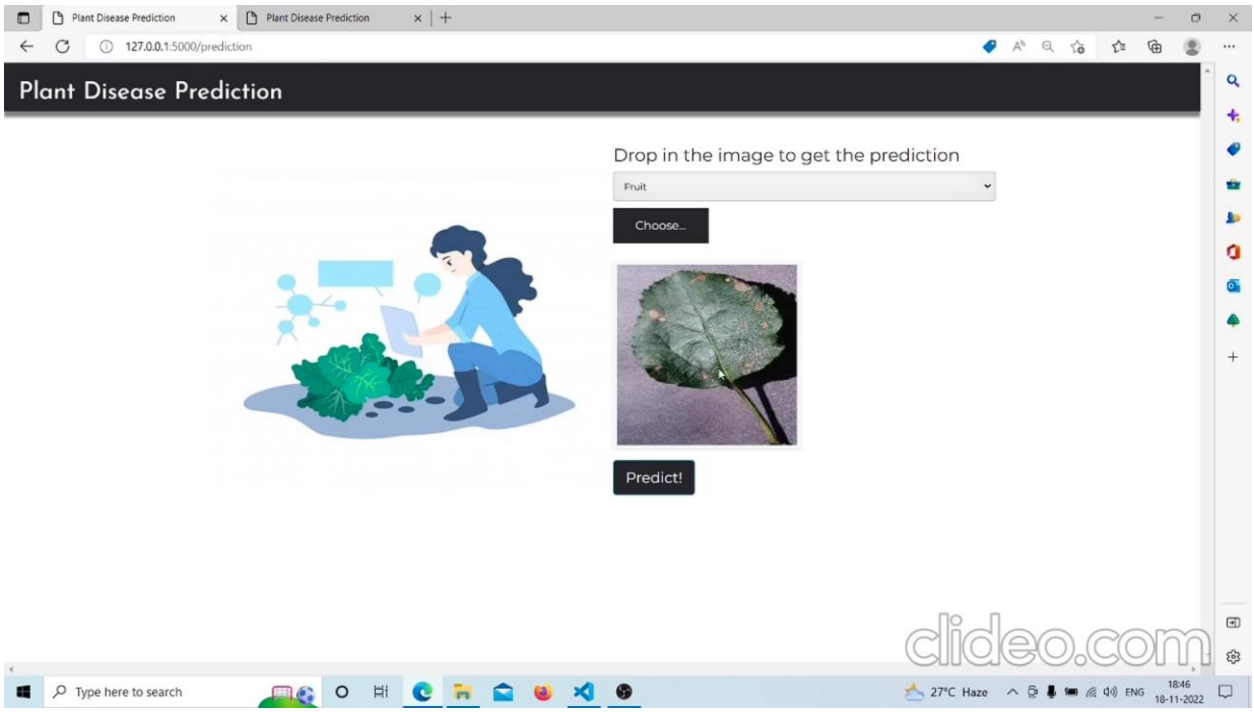

Plant Disease Prediction
Plant Disease Prediction
127.0.0.1:5000
Plant Disease Prediction
Home
Predict
Detect if your plant is infected!!
Agriculture is one of the major sectors worls wide. Over the years it has developed and the use of new technologies and equipment replaced almost all the traditional methods of farming. The plant diseases effect the production. Identification of diseases and taking necessary precautions is all done through naked eye, which requires labour and laboratries. This application helps farmers in detecting the diseases by observing the spots on the leaves, which inturn saves effort and labor costs.
clideo.com
Type here to search
27°C Haze
ENG
18:45
18-11-2022

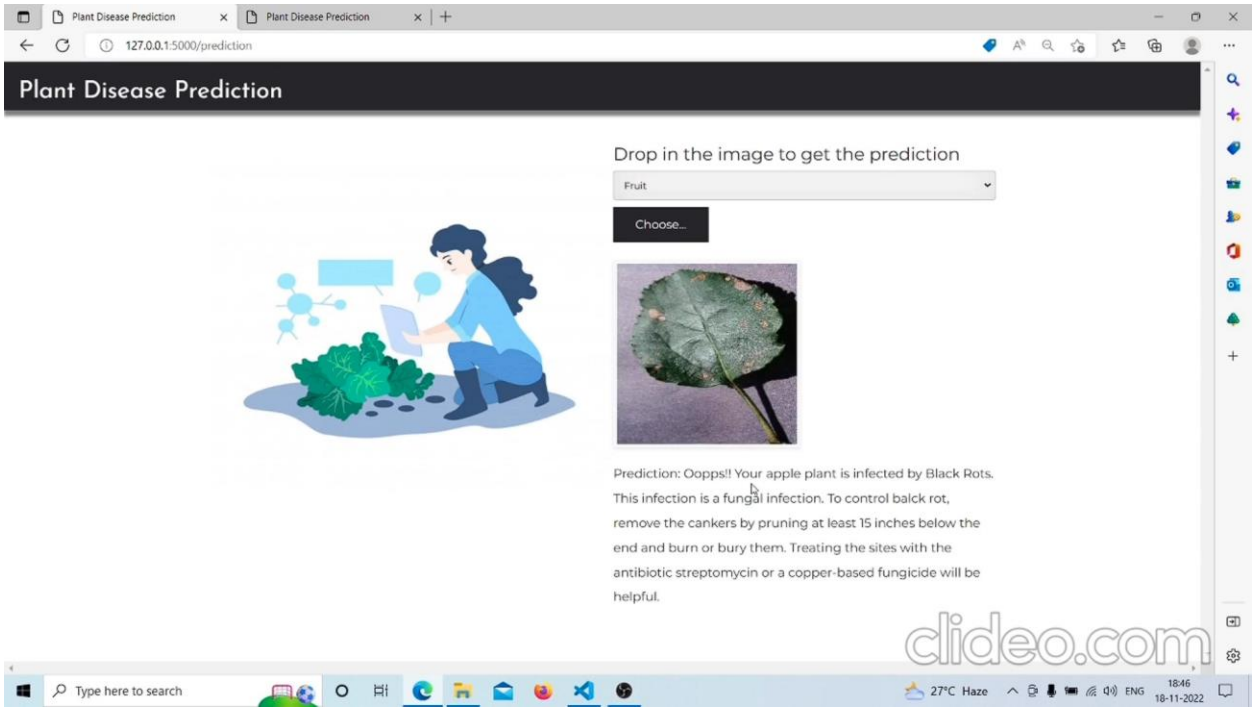

Plant Disease Prediction
Plant Disease Prediction
127.0.0.1:5000/prediction
Plant Disease Prediction
Drop in the image to get the prediction
Select plant type
Choose...
clideo.com
Type here to search
27°C Haze
ENG
18:45
18-11-2022


Plant Disease Prediction
Plant Disease Prediction
127.0.0.1:5000
Plant Disease Prediction
Home
Predict
Detect if your plant is infected!!
Agriculture is one of the major sectors worls wide. Over the years it has developed and the use of new technologies and equipment replaced almost all the traditional methods of farming. The plant diseases effect the production. Identification of diseases and taking necessary precautions is all done through naked eye, which requires labour and laboratries. This application helps farmers in detecting the diseases by observing the spots on the leaves, which inturn saves effort and labor costs.
clideo.com
127.0.0.1:5000/prediction
Type here to search
27°C Haze
ENG
18:45
18-11-2022


Plant Disease Prediction
Plant Disease Prediction
127.0.0.1:5000/prediction
Plant Disease Prediction
Drop in the image to get the prediction
Select plant type
Select plant type
Fruit
Vegetable
clideo.com
Type here to search
27°C Haze
ENG
18:45
18-11-2022


Plant Disease Prediction
127.0.0.1:5000/prediction
Plant Disease Prediction
Drop in the image to get the prediction
Fruit
Choose...
Open
fruit-dataset › test › Apple___Black_rot
Search Apple___Black_rot
Organize
New folder
OneDrive
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
Windows (D:)
File name:
Custom files
Open
Cancel
clideo.com
Type here to search
27°C Haze
ENG
18-11-2022


Plant Disease Prediction
Plant Disease Prediction
127.0.0.1:5000/prediction
Plant Disease Prediction
Drop in the image to get the prediction
Fruit
Choose...
Predict!
clideo.com
Type here to search
27°C Haze
ENG
18:46
18-11-2022


Plant Disease Prediction
Plant Disease Prediction
127.0.0.1:5000/prediction
Plant Disease Prediction
Drop in the image to get the prediction
Fruit
Choose...
Prediction: Oopps!! Your apple plant is infected by Black Rots. This infection is a fungal infection. To control balck rot, remove the cankers by pruning at least 15 inches below the end and burn or bury them. Treating the sites with the antibiotic streptomycin or a copper-based fungicide will be helpful.
clideo.com
Type here to search
27°C Haze
ENG
18:46
18-11-2022

Github Link:

https://github.com/IBM-EPBL/IBM-Project-16875-1667201033

Project Demo Link:

https://drive.google.com/file/d/1MP2nOctJ8VVgRx1_ZFuWcSjs2UUD1706/view?usp=drivesdk