Smart Plant Detector

A PROJECT REPORT

Submitted by

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In fulfillment for the award of degree

Of Bachelor of Engineering in Computer Engineering

COMPUTER ENGINEERING DEPARTMENT

L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY

GUJARAT TECHNOLOGICAL UNIVERSITY

AHMEDABAD

YEAR, 2018-19

L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY

COMPUTER ENGINEERING DEPARTMENT

YEAR, 2017-18

CERTIFICATE

This is to certify that the Project entitled ”**Smart Plant Detector”** submitted by **Sahil Shethiya (160323107024)**, towards the fulfillment of the requirements for the degree of Bachelor of Engineering in Computer Engineering of L.J. Institute of Engineering and Technology, Ahmedabad, under the Gujarat Technological University, Ahmedabad is the record of work carried out by her under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for examination. The results embodied in this project, to the best of my knowledge, haven’t been submitted to any other university or institution for award of any degree or diploma.

Assistant Prof. Ms. Shivangni Desai — (Internal Guide) CE-LJIET

Prof. Ms. Shweta Yagnik — (Head of Department - CE) LJIET

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CERTIFICATE

This is to certify that the Project entitled **"Smart Plant Detector"** submitted by **Rahul Meghani (150320107048)**, towards the fulfillment of the requirements for the degree of Bachelor of Engineering in Computer Engineering of L.J. Institute of Engineering and Technology, Ahmedabad, under the Gujarat Technological University, Ahmedabad is the record of work carried out by her under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for examination. The results embodied in this project, to the best of my knowledge, haven't been submitted to any other university or institution for award of any degree or diploma.

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COMPUTER ENGINEERING DEPARTMENT

YEAR, 2017-18

CERTIFICATE

This is to certify that the Project entitled **"Smart Plant Detector"** submitted by **Venish Patel (150320107538)**, towards the fulfillment of the requirements for the degree of Bachelor of Engineering in Computer Engineering of L.J. Institute of Engineering and Technology, Ahmedabad, under the Gujarat Technological University, Ahmedabad is the record of work carried out by her under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for examination. The results embodied in this project, to the best of my knowledge, haven't been submitted to any other university or institution for award of any degree or diploma.

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GUJARAT TECHNOLOGICAL UNIVERSITY

Undertaking about originality of work

We hereby certify that we are the sole authors of this UDP project report and that neither any part of this UDP project report nor the whole of the UDP Project report has been submitted for a degree by other student(s) to any other University or Institution.

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Place: Ahmedabad Date: 28/03/19

(Assistant Prof. Ms. Shivangni Desai)
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Abstract

The invention discloses a smart plant disease detection system. The system comprises image collection, training samples, an on line portal where direct interaction of user and administrator can be done. Identification of the plant diseases is the key to preventing the losses in the yield and quantity of the agricultural product. The studies of the plant diseases mean the studies of visually observable patterns seen on the plant. Health monitoring and disease detection on plant is very critical for sustainable agriculture. It is very difficult to monitor the plant diseases manually. It requires tremendous amount of work, expertize in the plant diseases, and also require the excessive processing time. Detection of plant disease through some automatic technique is beneficial as it reduces a large work of monitoring in big farms of plants, and at very early stage itself it detects the symptoms of diseases i.e. when they appear on plant leaves. Image processing is used for the detection of plant diseases. Disease detection involves the steps like image acquisition, image pre-processing, image segmentation, feature extraction and classification. Convolutional neural networks (CNN) have demonstrated great performance (beating that of humans) in object recognition and image classification problems. This project describes the feasibility of CNN for plant disease classification for leaf images taken under the natural environment. The implemented model achieves 99.32% classification accuracy which show clearly that CNN can extract important features and classify plant diseases from images taken in the natural environment.

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List Of Abbreviation

Abbreviated Forms	Expanded Forms
HTML	Hyper Text Markup Language
CSS	Cascading Style Sheets
JSP	Java Server Pages
JDBC	Java Database Connectivity
API	Application Programming Interface
J2EE	Java Platform, Enterprise Edition
J2SE	Java Platform, Standard Edition
JVM	Java Virtual Machine
JRE	Java Runtime Environment

1. Introduction

1.1 Introduction to System

- The invention discloses a method for detecting pathogens and diseases of plant leaves, stems and roots.
- The method comprises the following steps: acquiring a image of a plant to be detected, uploading the leaf image to an on-line detection platform with a disease image automatic identification function using libraries in python and a professional diagnosis system function.
- Initially for the purpose of experiment we will use our algorithms on images previously provided by Indian government rather than capturing images from field

1.2 Limitation of Existing System

- The previous systems which are developed up till now are mainly made by Chinese. Due to that their centre of attention is to eradicate the pathogens and disease which are mainly cultivated in China. So we are adding the identification of plants which are mainly grown in India.
- As there are different types of viruses, bacteria, pathogens according to several seasons. In this system all the feature are not available for recognition of seasonal diseases. We will try to eradicate this problem.
- In the prior system which were developed, the human interaction was almost negligible. Algorithms and functions were deciding the measure to control pathogens by themselves but in our system we will also interact with farmers to get the better outcome.

1.3 Objective of the New System

- As all the industries and businesses are based on the roots of agriculture in any of the Nation. Farmers are facing many complications from the initial phase when they are depositing the seed into soil up to they earn enough resources. The main loss they have to face when their grown plants are affected by pathogens. So to reduce the cost, make it more efficient, reliable and cost effective we are introducing this system with better features and more compatibility with keeping in mind about the Indian agriculture and cultivation criteria.
- Along with the detection of pathogens the fertility of soil also matters a lot for plants along so the amount of fertilizers are also examined.
- The level of water can also be analyzed in soil in order to check growth of plant.

1.4 Problem Definition

- Currently, the majority of farmers due to the limitations of education and knowledge of the problems encountered in the process of agricultural production such as when plants suffer pest problems usually following settlement are done :-

  I. Be judged according to the traditional experience

  II. Please agriculture expert field trips or other relevant information to determine plant pest information, and to determine treatment approaches. Poor timeliness of the methods used to prevent the diseases to spread

  III. Pest and sharing information in an area cannot accurately determine the date of the occurrence of pests and diseases and easy to miss the best treatment time, thus affecting plant production.

  IV. Buying of pesticide which are affective for the pest control based on the information provided by the wrong source which is basic problem of having less knowledge about cultivation

2. Requirement Analysis

2.1 Feasibility Study

- Occur during plant growth number of diseases, especially diseases of many greenhouses short latency, fast onset. Some farmers can not acquire the relevant knowledge of the disease, thus preventing poor efficiency, weight loss, a serious disease, which led to a substantial cut. Therefore, the disease is an important factor restricting the growth of the plant.
- Traditional plant disease diagnosis generally be determined by experience, prone to human misjudgment. With the rapid development of digital image processing technology, maturing technology widely used in computer vision and pattern recognition techniques variety, using image processing techniques to analyze plant diseases, and diseases accurately given category, non-destructive testing of plant diseases, rapid diagnosis provides new ways and methods.
- Due to the expansion of communications infrastructure in rural areas to 20 Crore people, the Internet and mobile phones for more rapid popularity in I. Based applications to carry out research to identify disease plant images on the phone, so that farmers can get more plant disease diagnosis quickly and easily. With the continuous improvement phone recording pixels, the price of smart phones with a camera to continuously reduce, get live pictures through the field of Camera will become the main low-cost image acquisition mode.

2.2 Requirement of System

- Existing plant pests diagnostic systems require the written description, and disorders known to upload pictures to the background, the background and then manually feedback through the images and description, inefficient and a waste of human resources. Meanwhile, the contrast in the image, the image itself has an important role in the decision, the existing diagnostic systems need to be planted plant pests personl the picture depth treatment after taking a picture, such as plantping, de-noising, etc., the picture processing is not in place, thus affecting Analyzing the subsequent comparison process.

Functional Requirement :

- Functional requirements define the internal workings of the software: that is, the technical details, data manipulation and processing and other specific functionality that show how the use cases are to be satisfied. They are supported by non-functional requirements, which impose constraints on the design or implementation.

1. **Farmer : -**
   A. Login
   B. Uploading of image
   C. Providing relavent information
   D. Communication with system
   E. Search result
2. **System :-**
   A. Processing of Data
   B. Image Processing
   C. Segmentation
   D. Feature Extraction
   E. Classification of Disease
   F. Recommendation of pesticide

- **SOFTWARE REQUIREMENTS**

  Language: Python

  OS: Windows 10 (64 bit)

  IDE: Anaconda Navigator, MATLAB.

- **HARDWARE REQUIREMENTS**

  Processor (GPU): Above 3 GHZ

  Hard Disk: 500GB

  RAM: 8GB

2.2.2 Non-functional Requirement:-

a) **Performance Requirements**

- Performance requirements define acceptable response time for system functionality.
  - Loading time of interface screens shall not take more than 5 seconds.
  - Login information shall be verified within 5 seconds.
  - Display of result within the maximum small time defined by system.

b) **Design constraints**

- Smart plant detector shall be a ML based application which can be accessed from anywhere, anytime regardless of device like mobile or PC. The system shall be developed using MYSQL database.

c) **Standards Compliance**

- There shall be consistency in variable names within the system. The user interface should not have any extensive graphics or too much varying color texts. It should have simple look and feel which increases readability.

d) **Reliability**

- The system should be reliable i.e. it should be able to serve the users efficiently even in hard situations and should perform all tasks satisfactorily in specified time and in a specified environment.

e) **Availability**

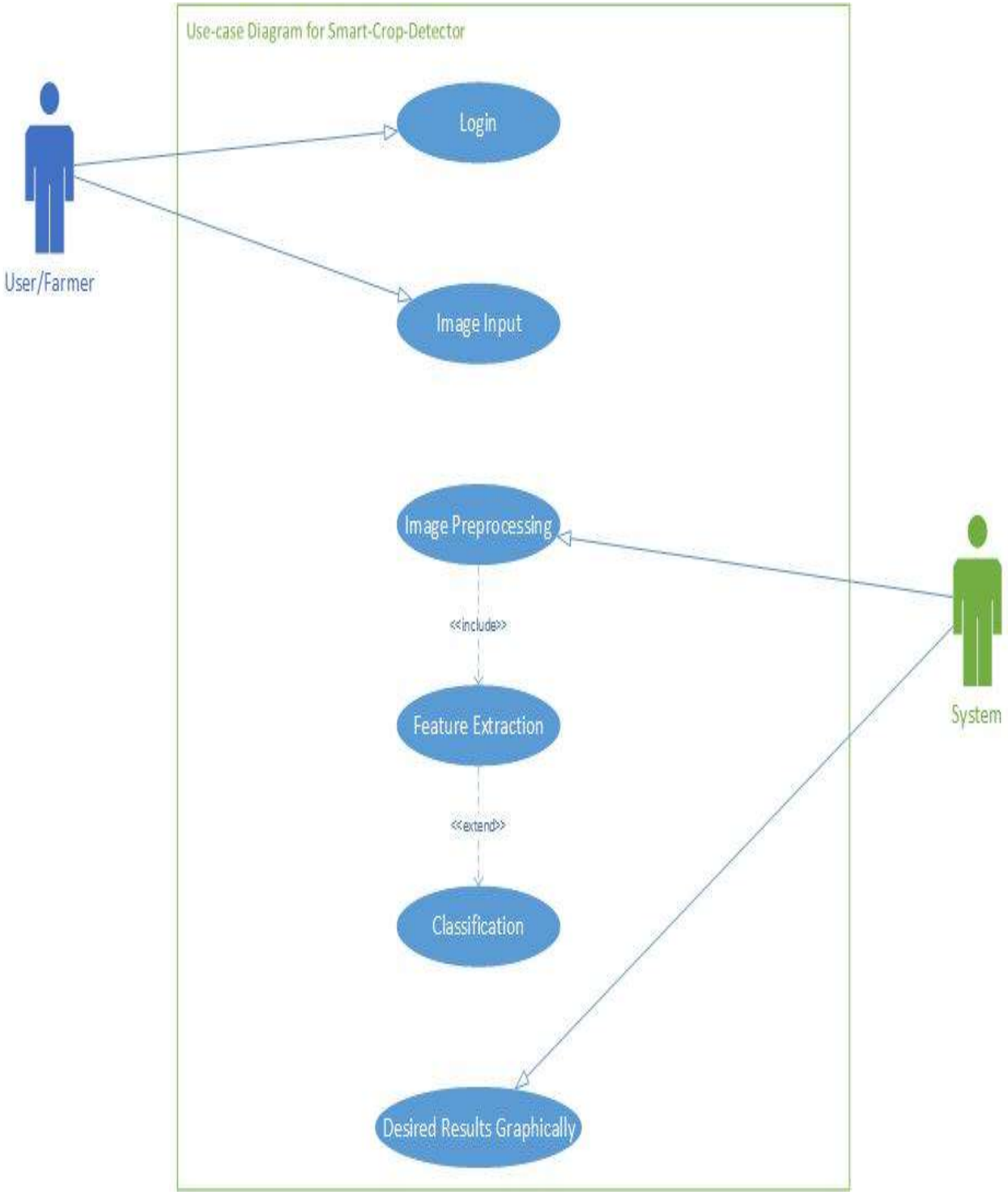
- The system shall be available 24x7 because user can need the system anytime and anywhere so the system must be available anytime.

2.3 Tools and Technology Used

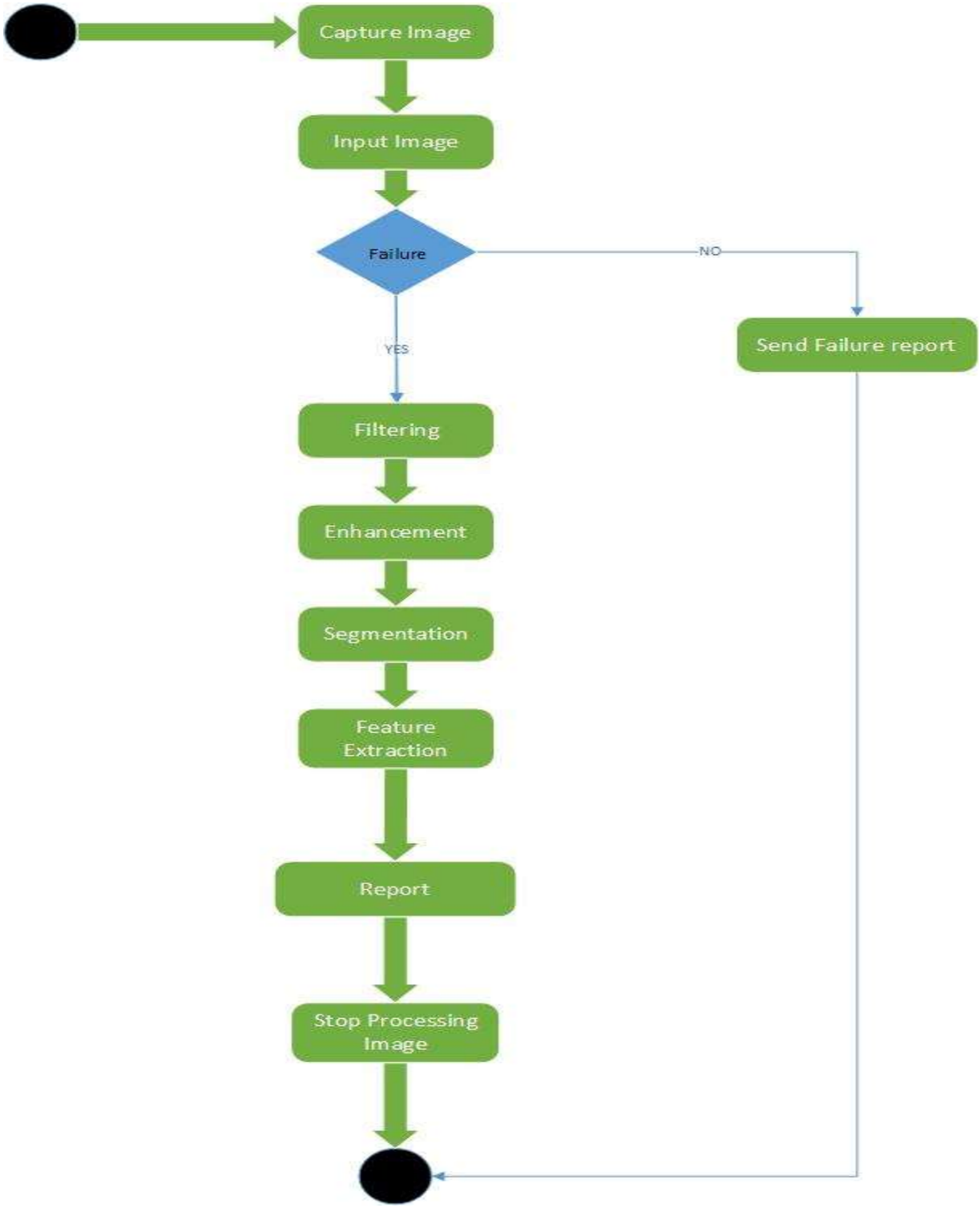
- Application servers such as Apache Tomcat and GlassFish servers
- FTP servers
- Programming language like Python
- Concepts of Machine Learning
- HTML/CSS
- SCIKIT LEARN libraries
- MATPLOTLIB libraries

3. System Design

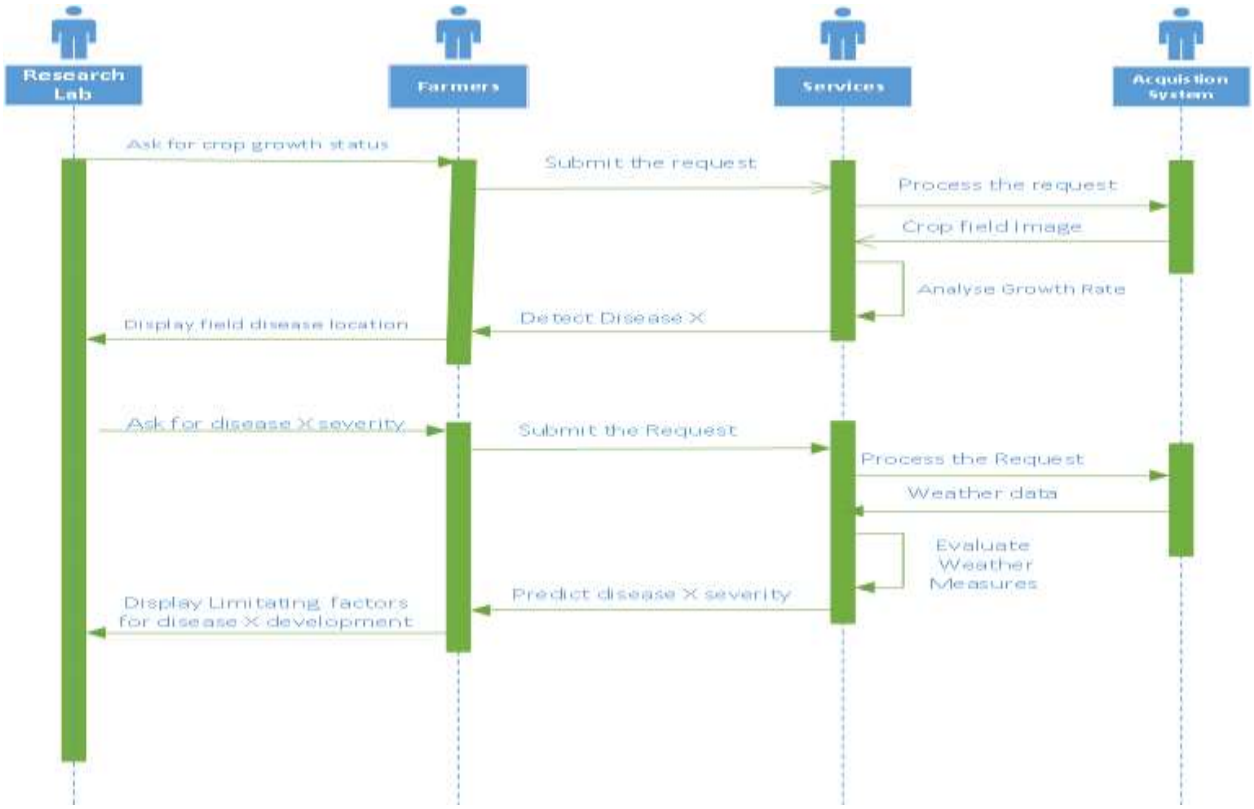
3.1 Use Case Diagram



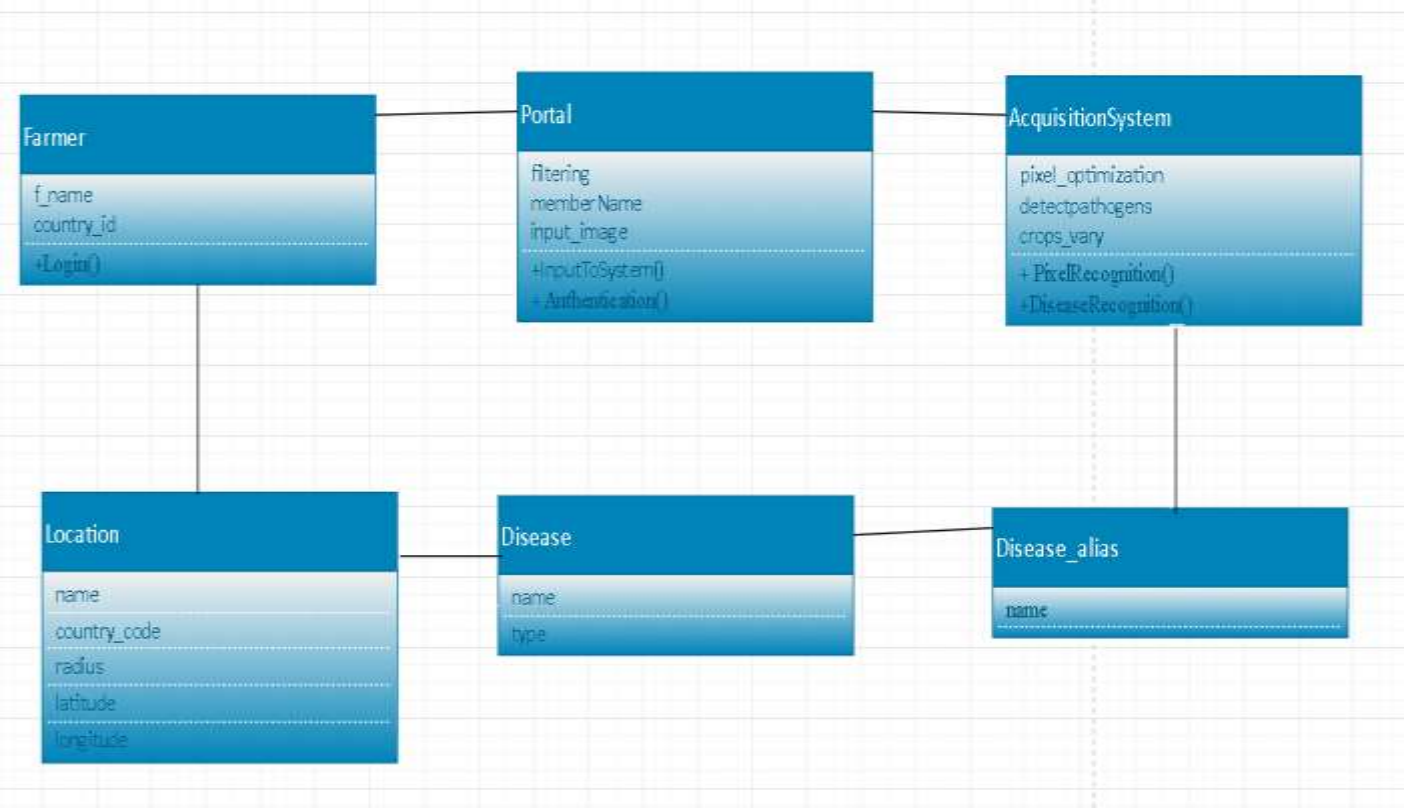
3.2 Activity Diagram



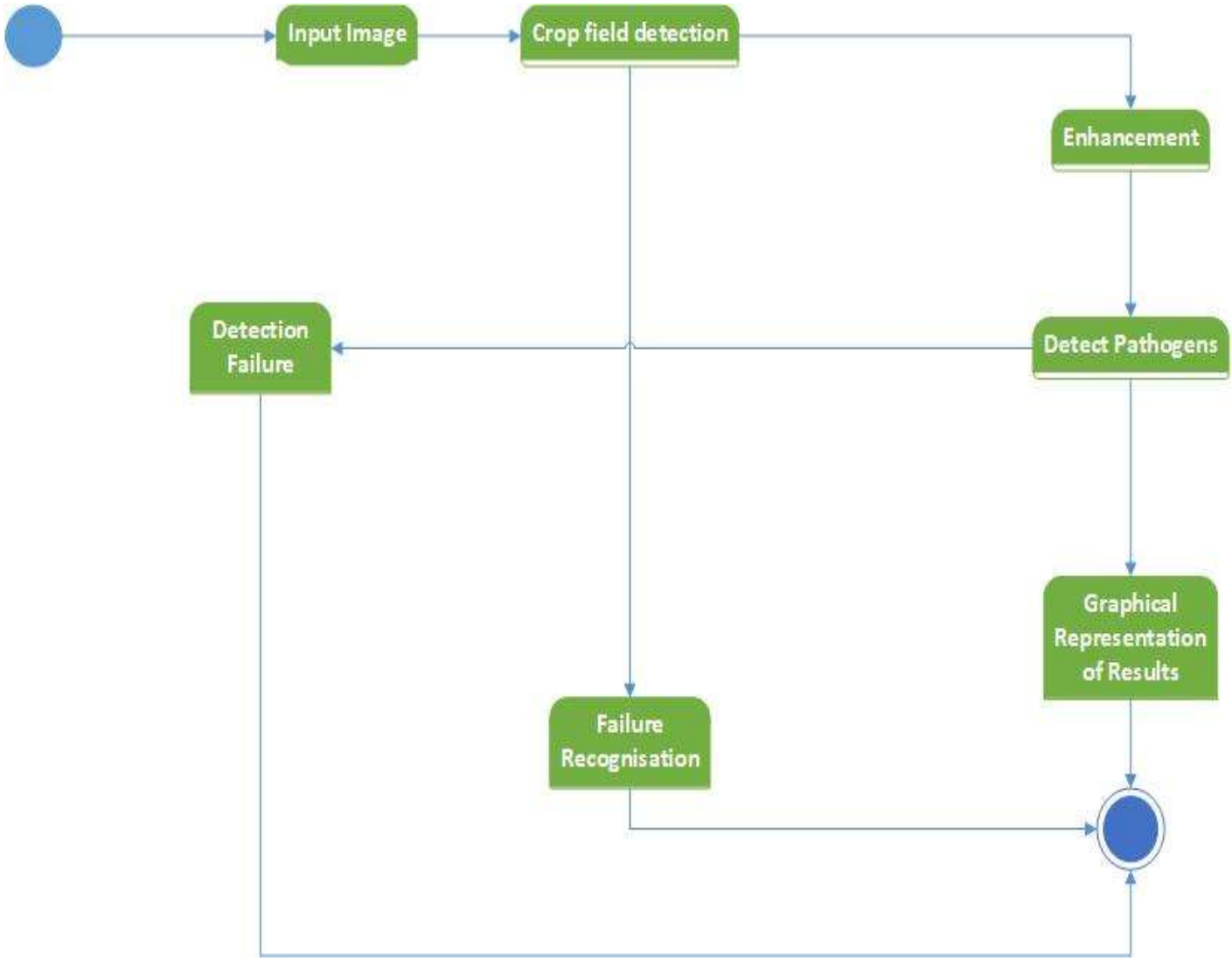
3.3 Sequence Diagram



3.4 Class Diagram



3.5 State Diagram



4. Data Dictionary

1) Farmer:-

FIELD_NAME	DATA-TYPE	CONSTRAINT	DESCRIPTION
FARMER_ID	INT	PRIMARY KEY	TO IDENTIFY FARMER UNIQUELY
FARMER_NAME	VARCHAR	NOT NULL	DETERMINING FARMER NAME
PLANTS GROWN	VARCHAR		PLANTS GROWN IN PARTICULAR GIVEN FIELD OF FARMER
LOSS_DUE_TO_BACTERIA	LONG INT		AMOUNT OF PLANTS LOST DUE TO BACTERIA
STATE	VARCHAR	NOT NULL	NAME OF STATE FARMER BELONGS TO

2) Plant:-

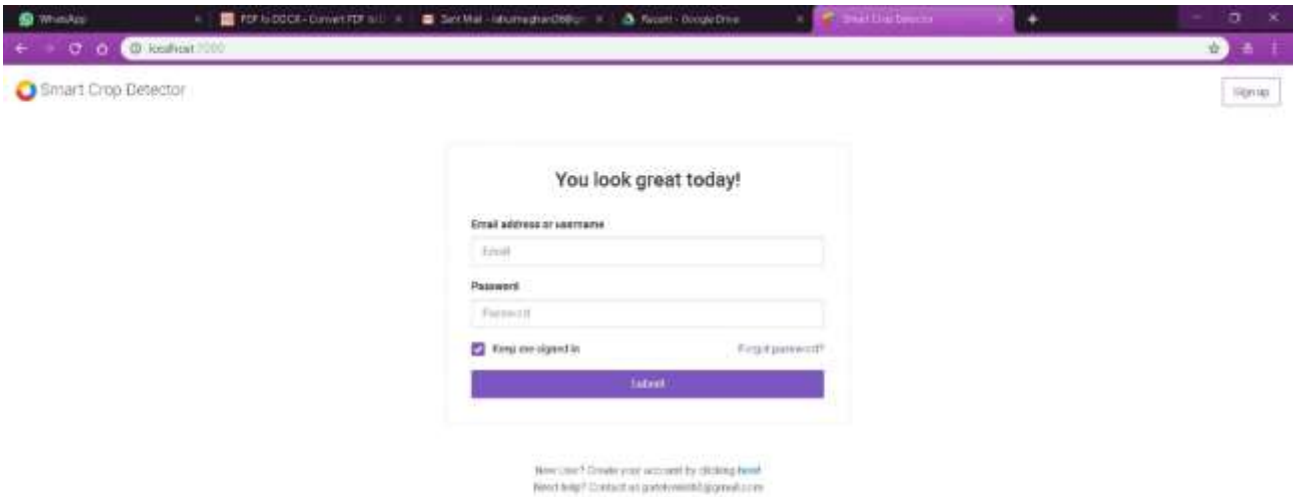
FIELD_NAME	DATA_TYPE	CONSTRAINT	DESCRIPTION
PLANTS_ID	INT	PRIMARY KEY	TO DETERMINE PLANTS UNIQUELY
AFFECTED DISEASE	ENUM		DETERMINING DIFFERENT DISEASES BY WHICH PLANTS ARE AFFECTED
AFFECTED AREA	FLOAT		PERCENTAGE OF AREA AFFECTED
PESTICIDE_ID	INT	FOREIGN_KEY	TO DETERMINE PESTICIDE UNIQUELY
AMOUNT OF PESTICIDE	LONG INT		AMOUNT OF PESTICIDE USED ON PLANT

3) Pesticide :-

FIELD_NAME	DATA_TYPE	CONSTRAINT	DESCRIPTION
PESTICIDE_ID	INT	PRIMARY KEY	TO IDENTIFY PESTICIDE UNIQUELY
PESTICIDE_ NAME	VARCHAR	NOT NULL	DETERMINE NAME OF PESTICIDE
PLANT_TO_PEST	VARHCAR		TO IDENTIFY PESTS USED ON PLANTS
PESTICIDE_ TYPE	VARCHAR	NOT NULL	DIFFERENT TYPES OF PESTS AVAILABLE

5. Snapshots :-

I. Login:-



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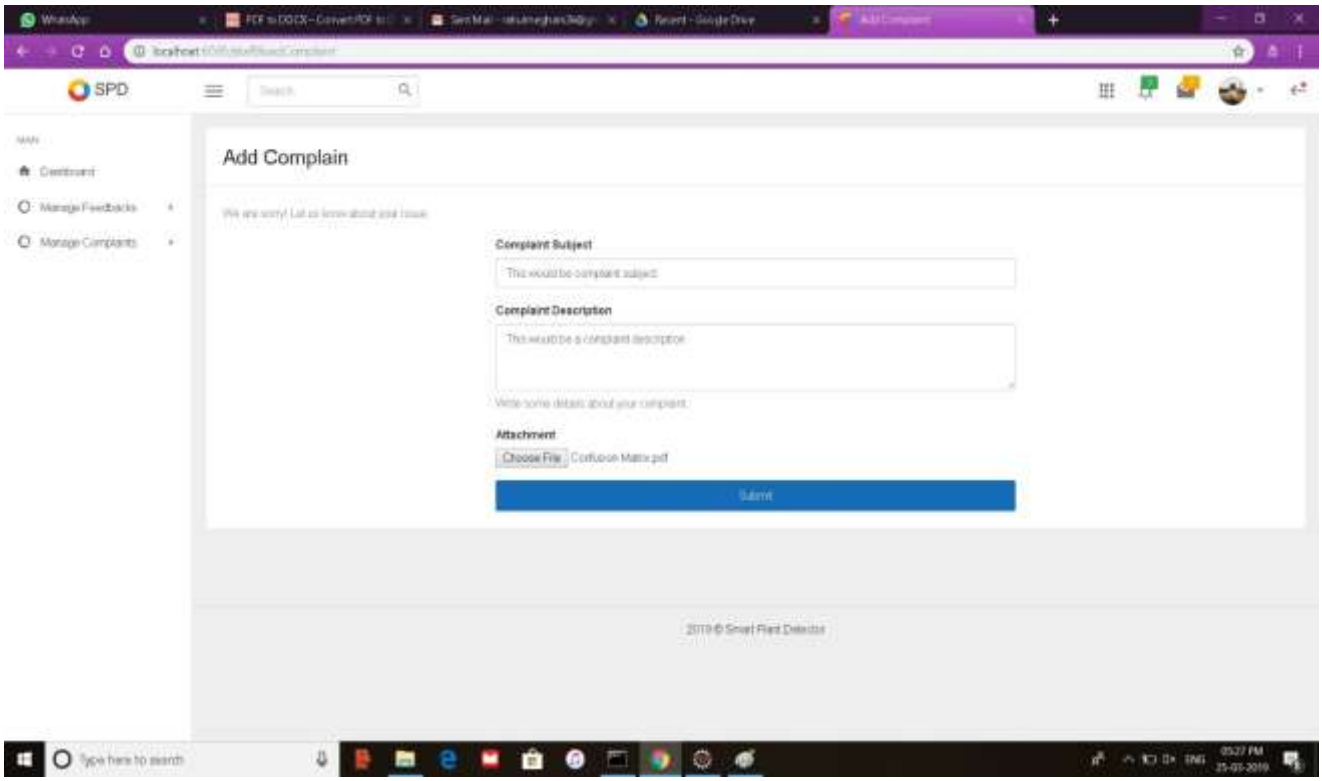
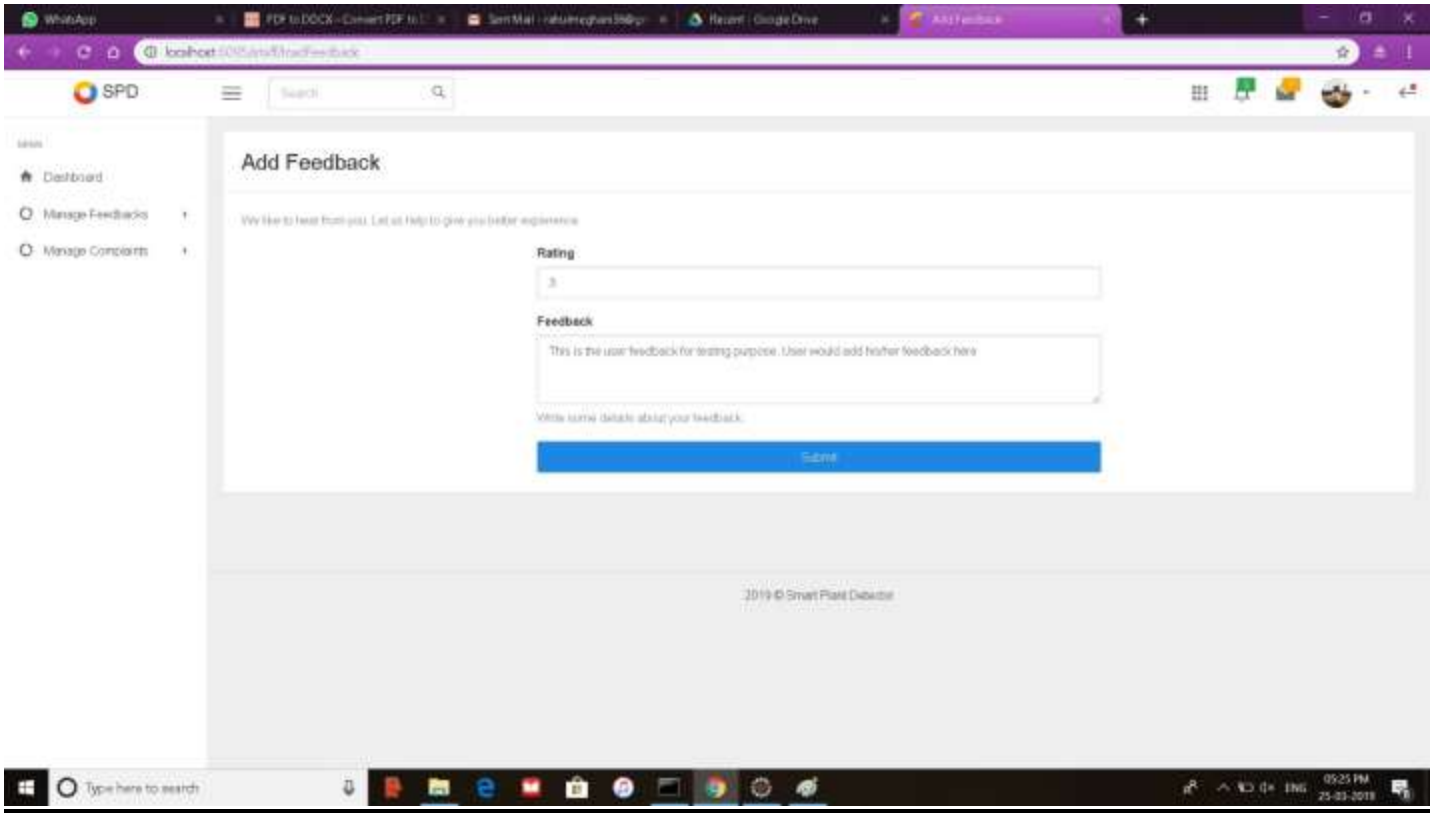
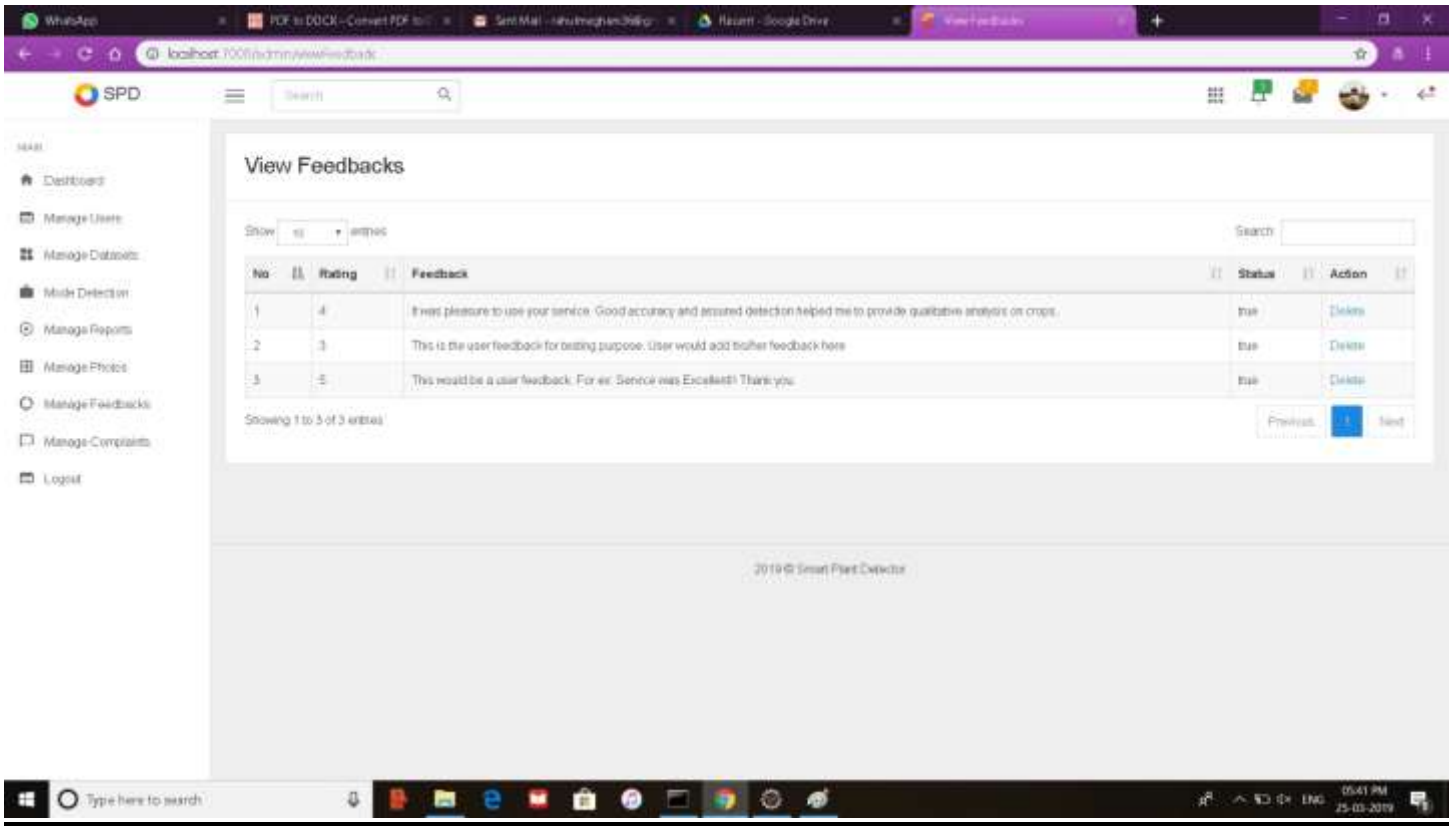


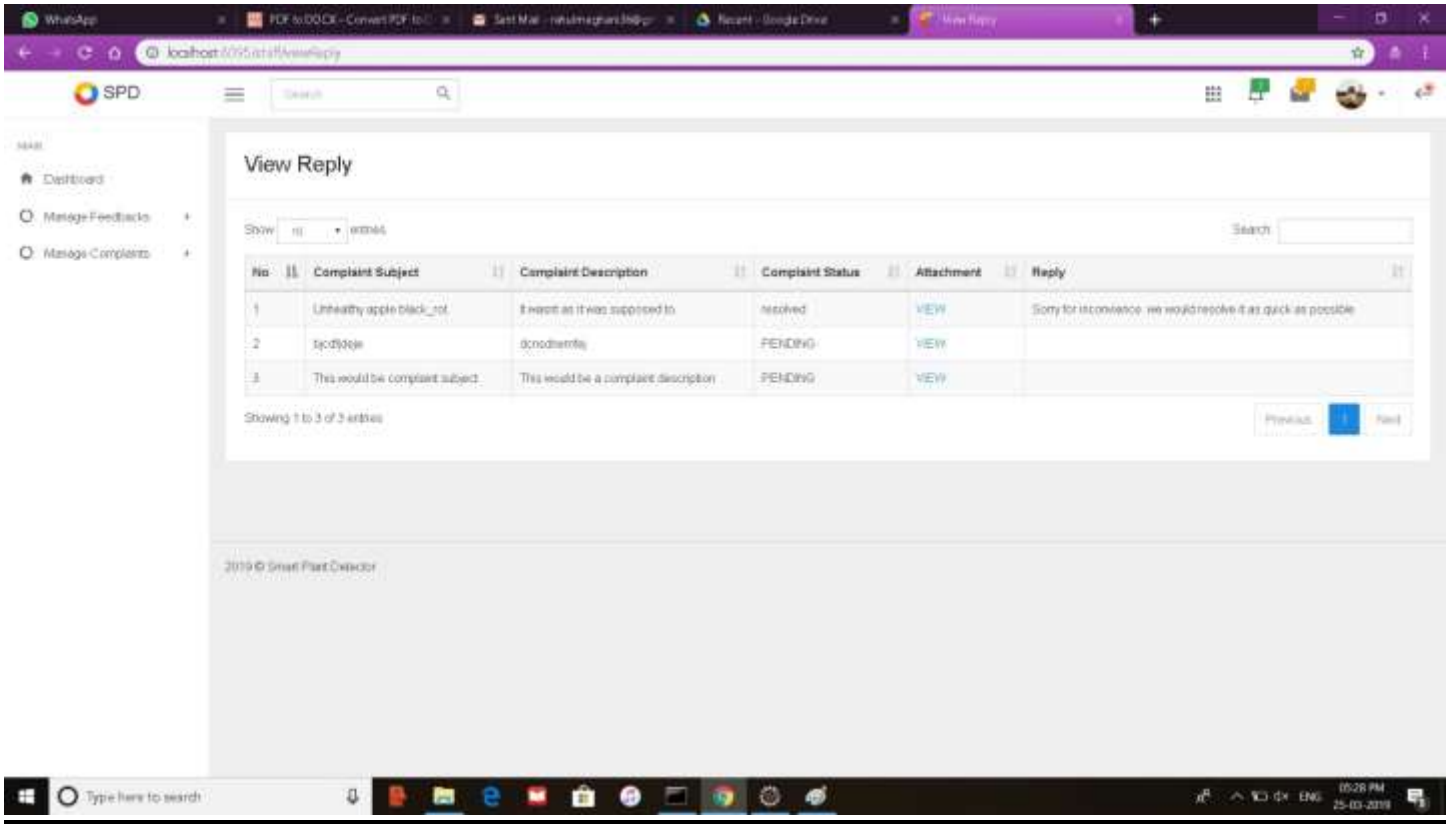
III. Add Feedback:-



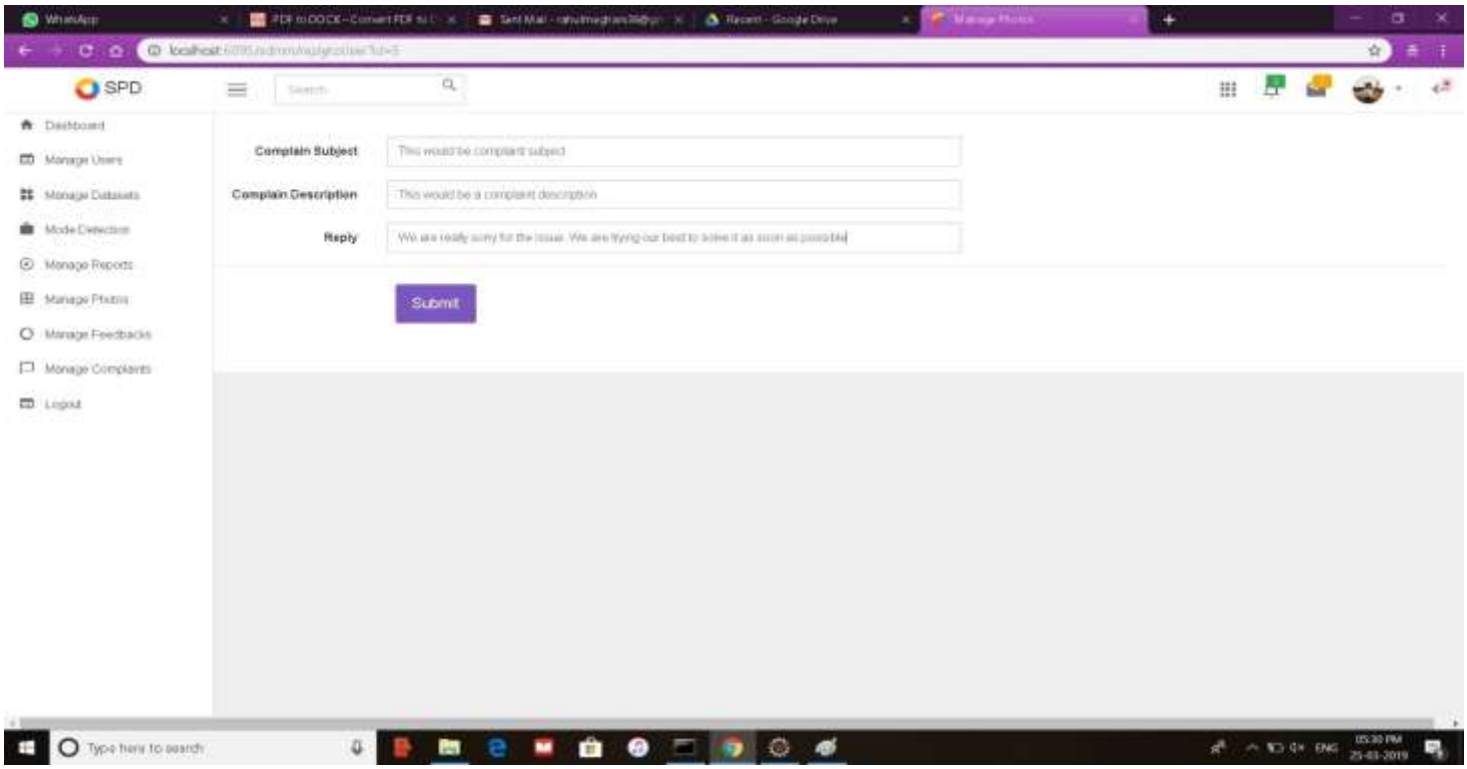
IV. View Complaint:-



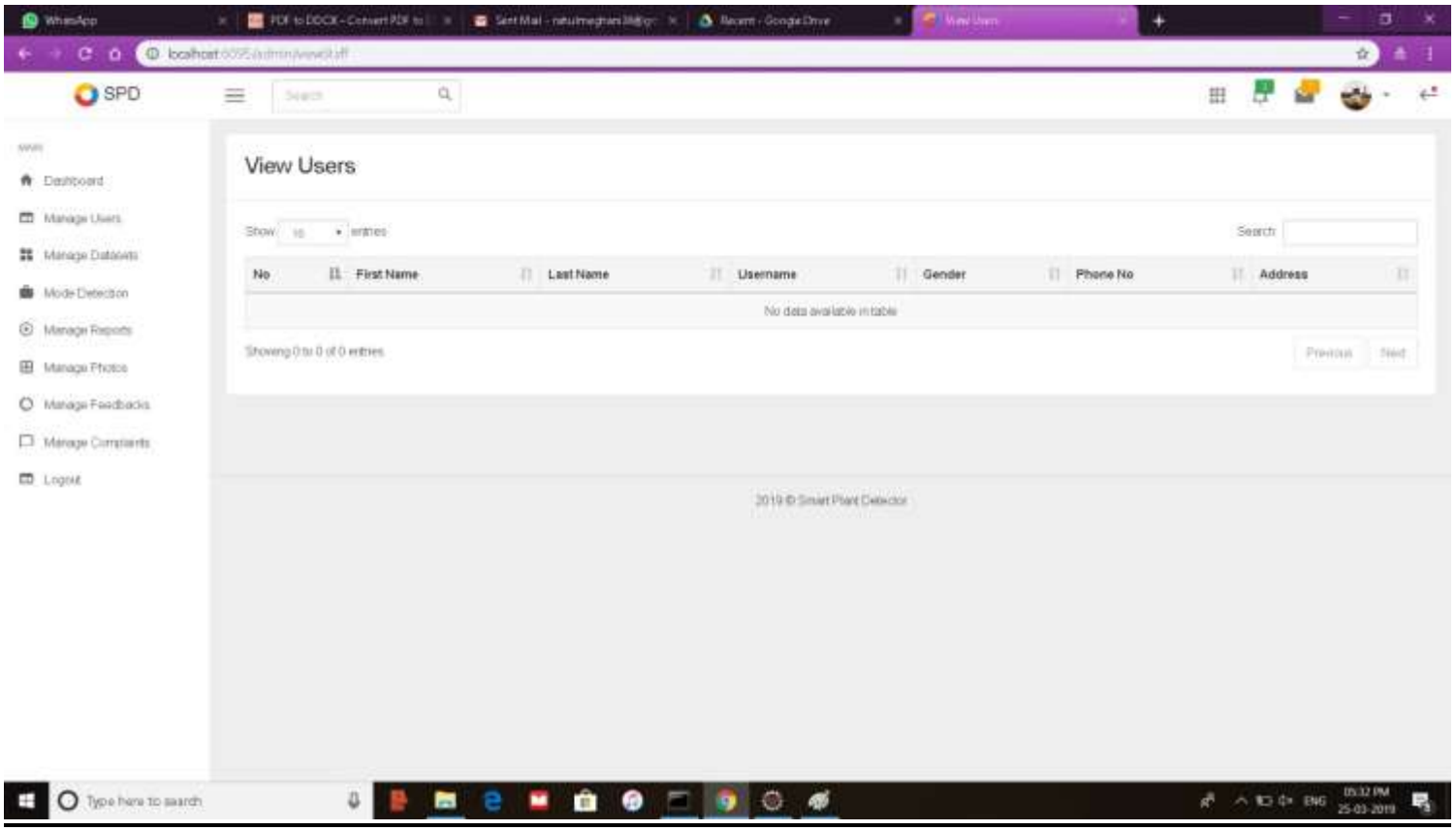
V. View Reply:-



VI. Add Reply:-

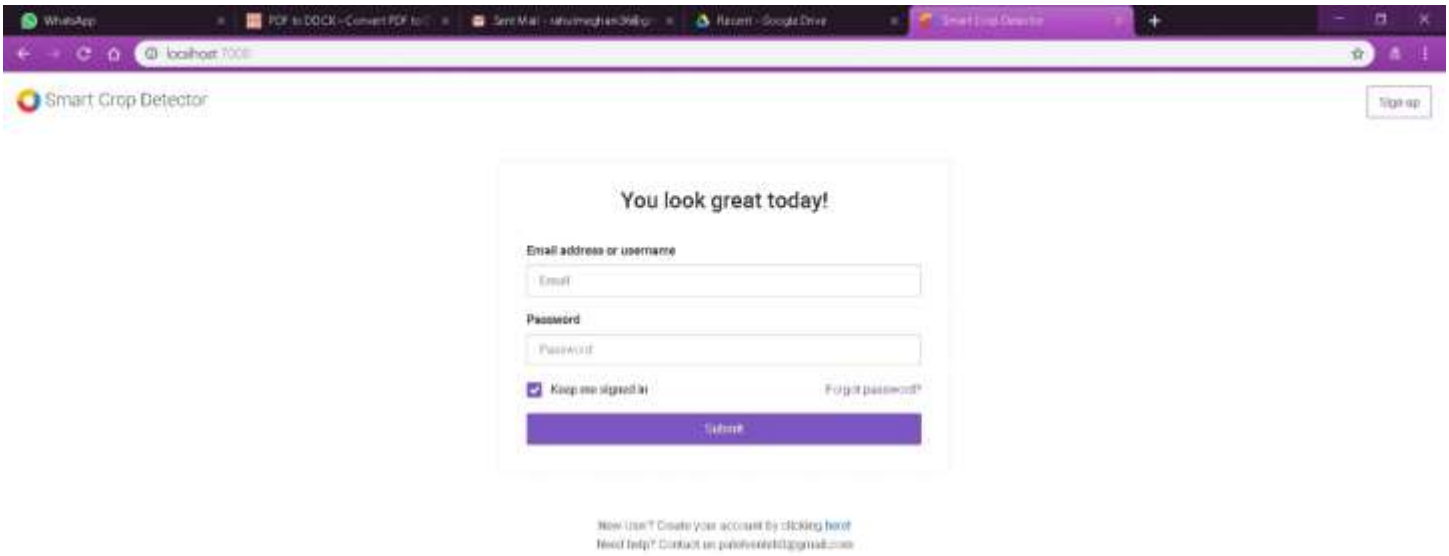


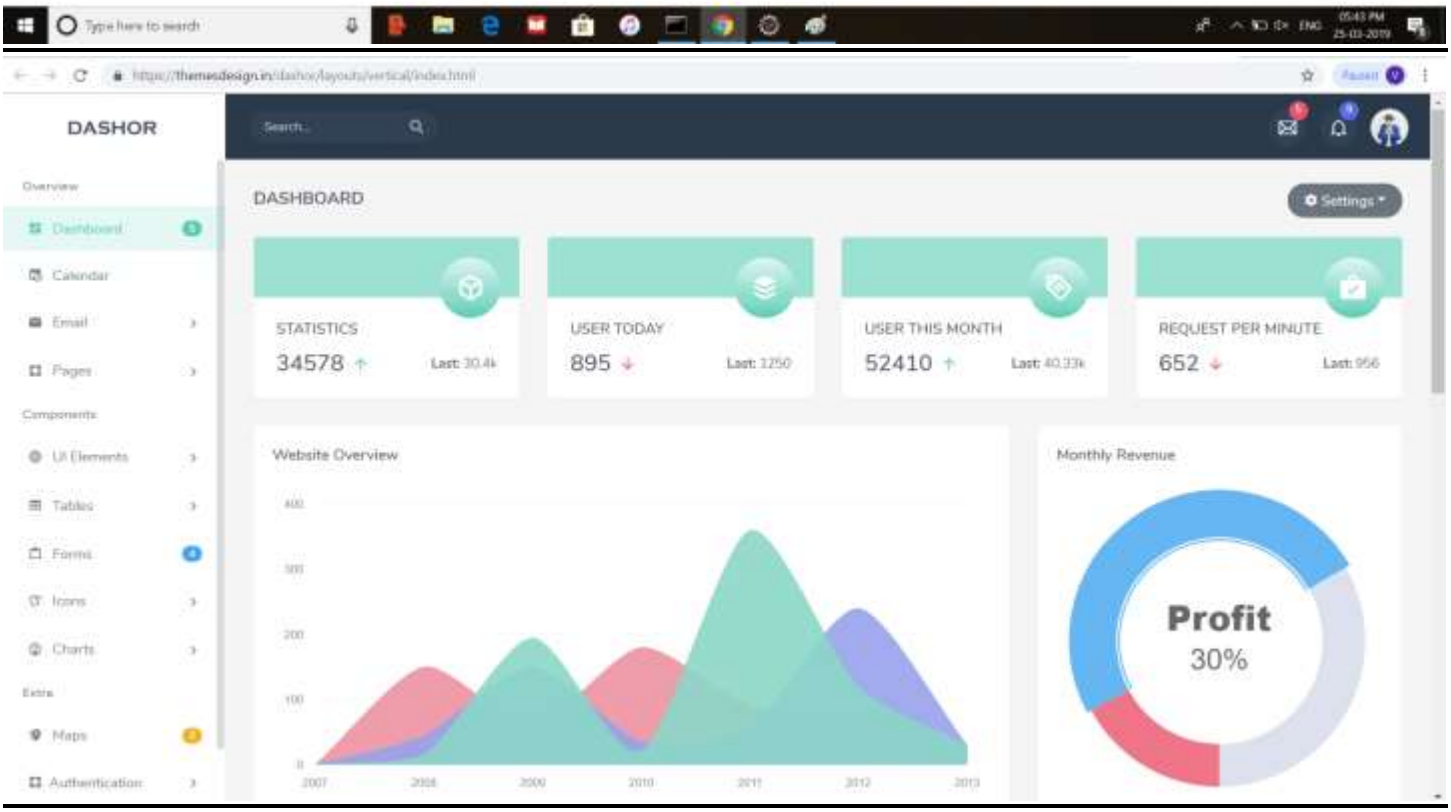
VII. View Users:-



6. Testing (With Test Cases):-

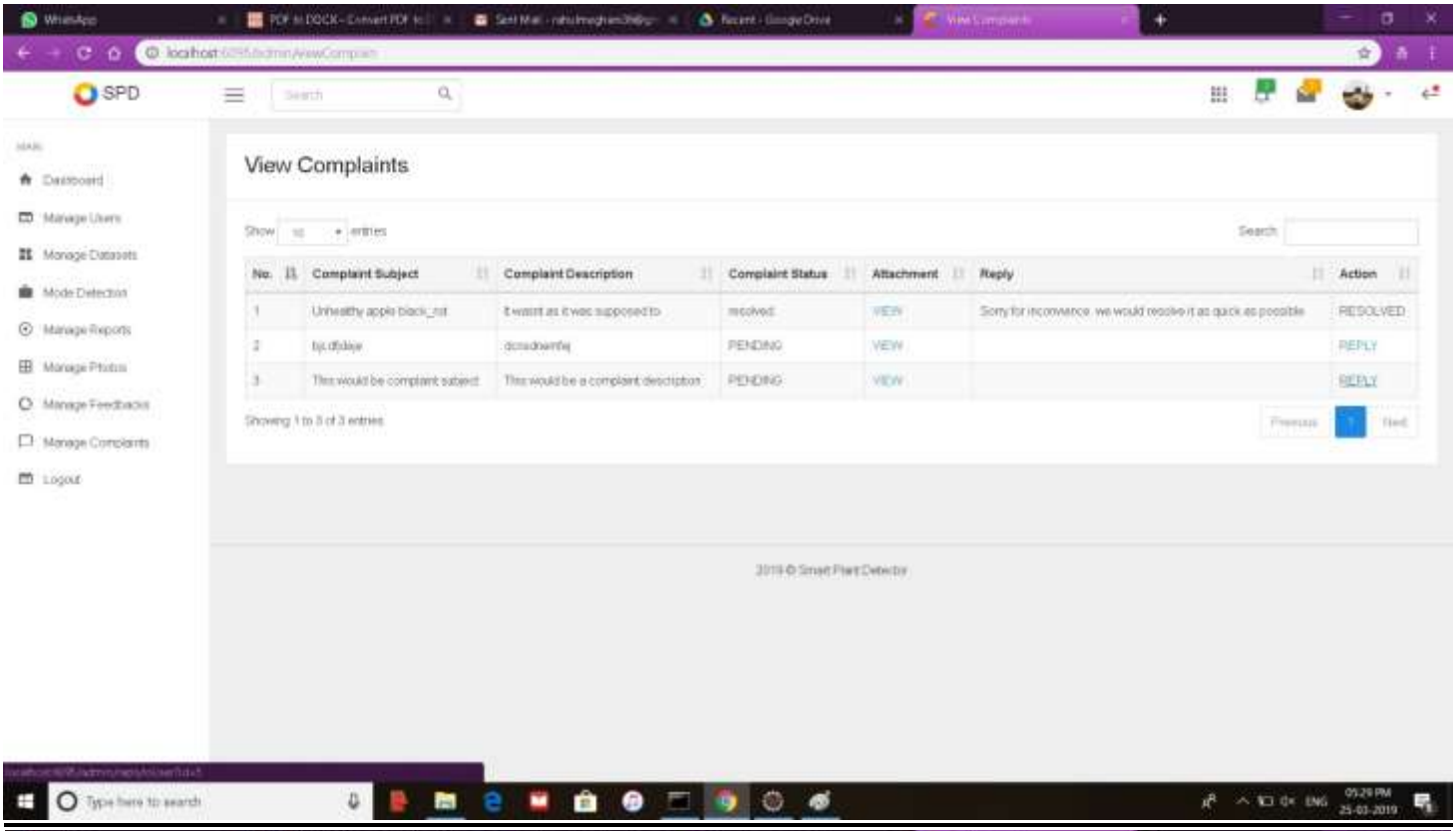
Login Test Case

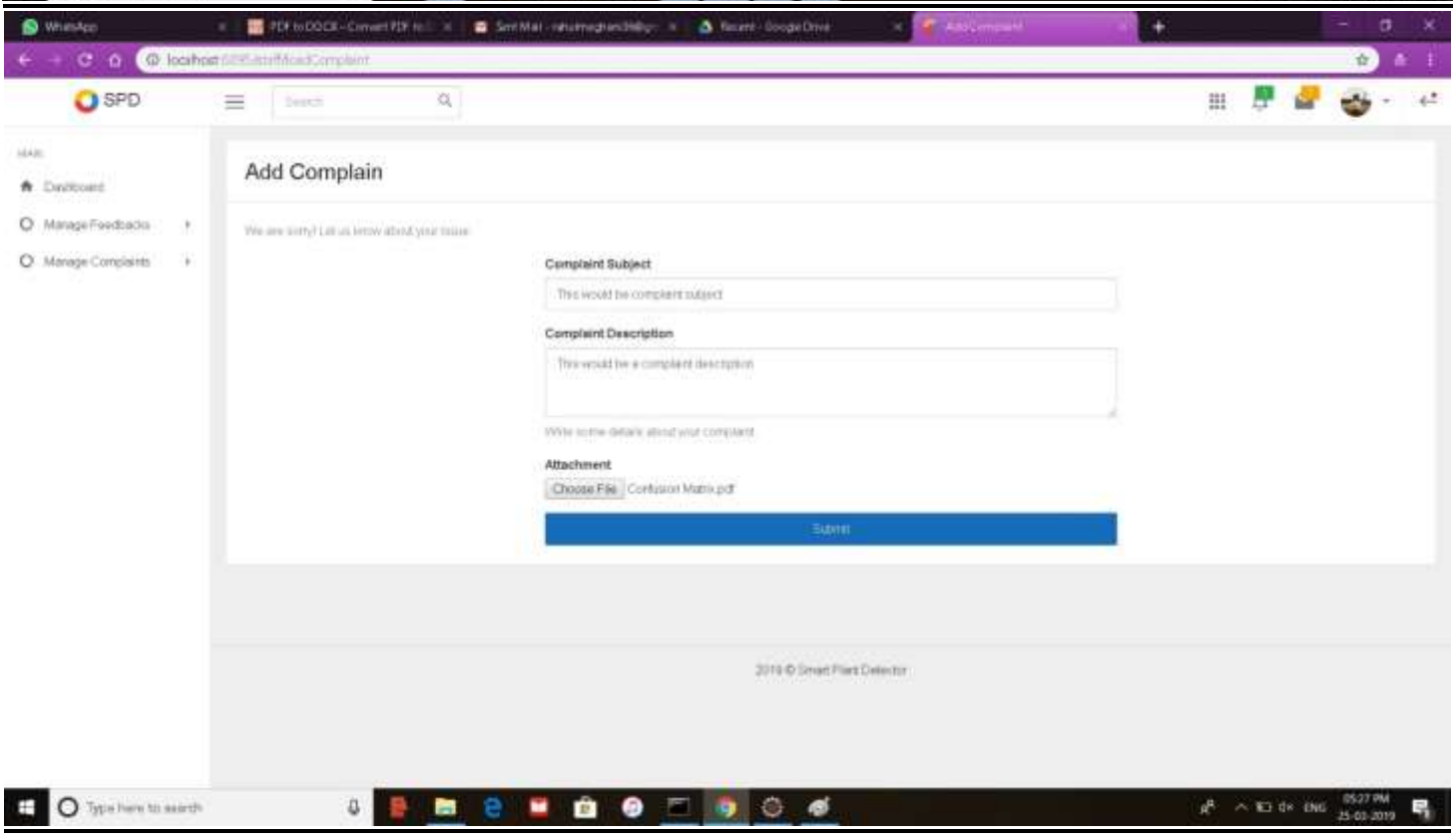




Login Test Case

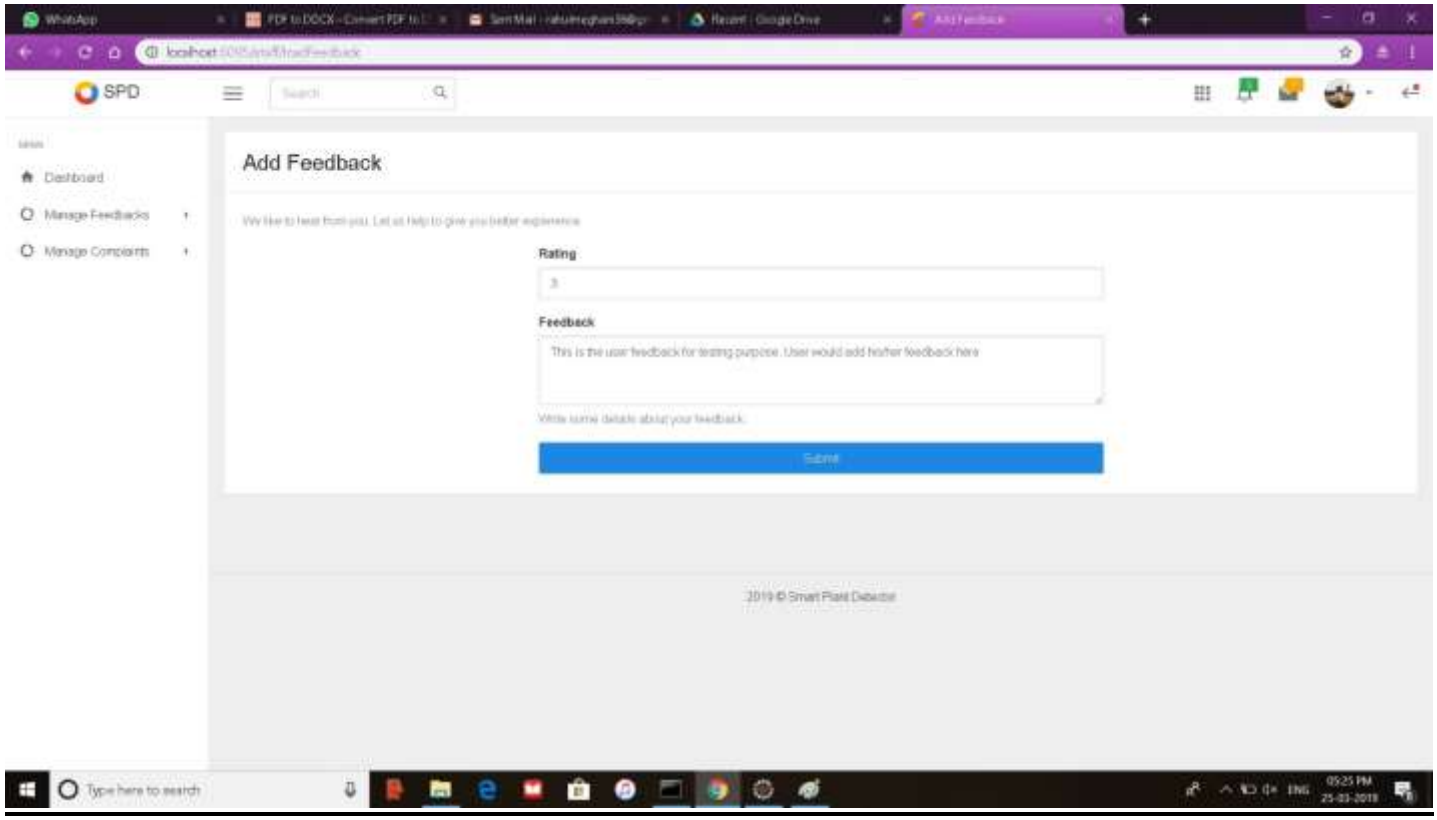
Add and View Complaint Test Case

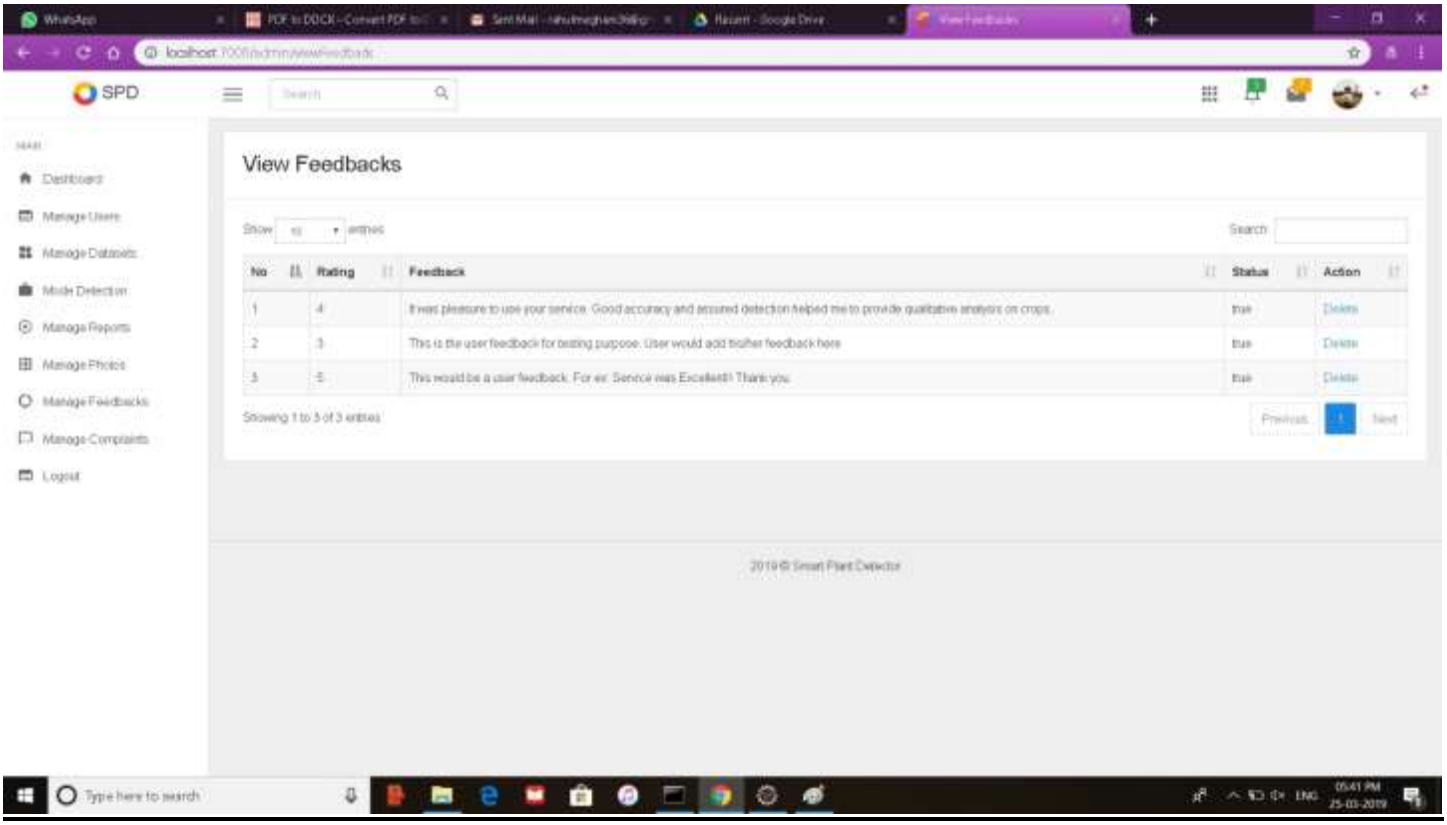




Add and View Complaint Test Case

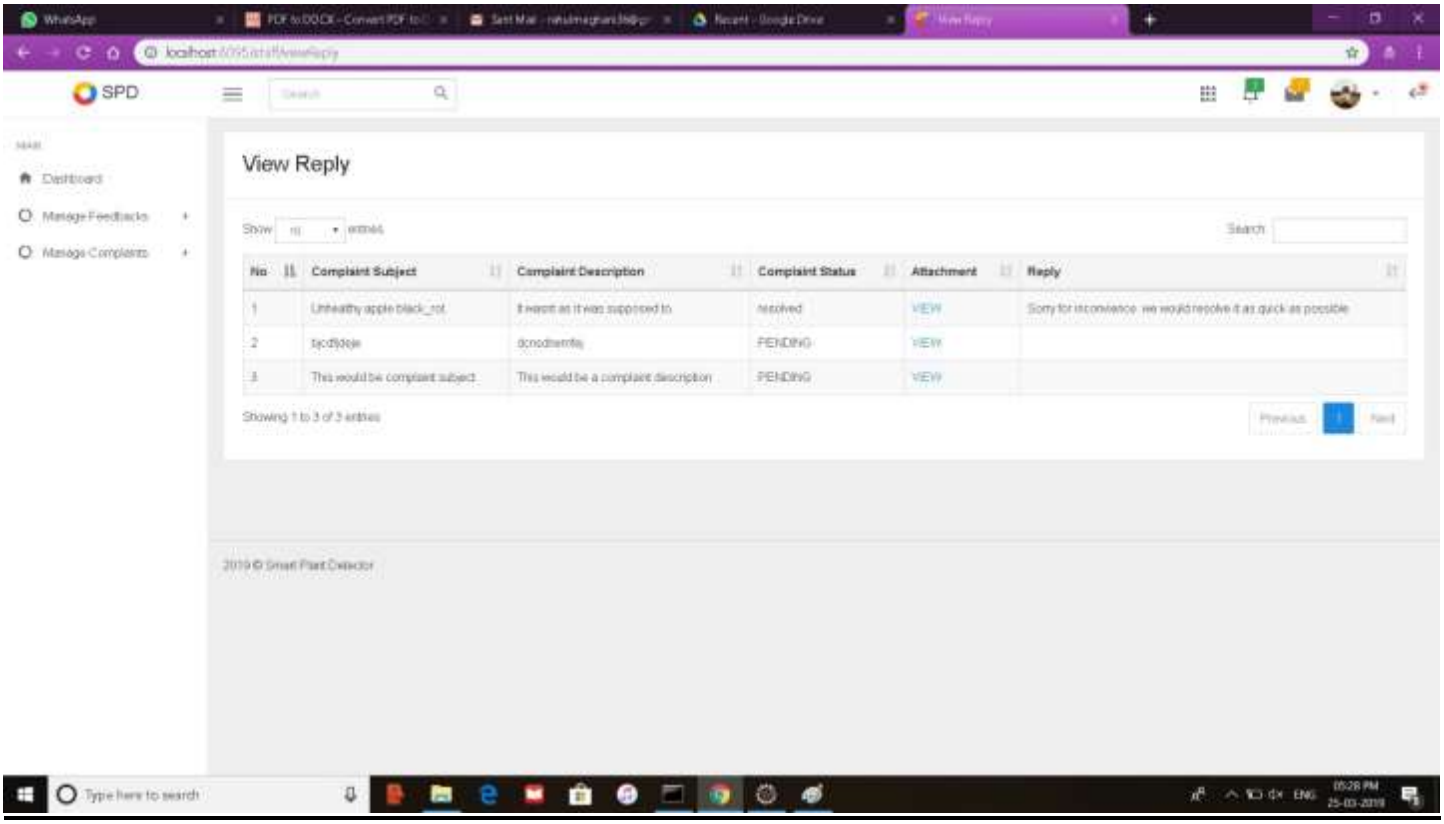
Add and View Feedback Test Case

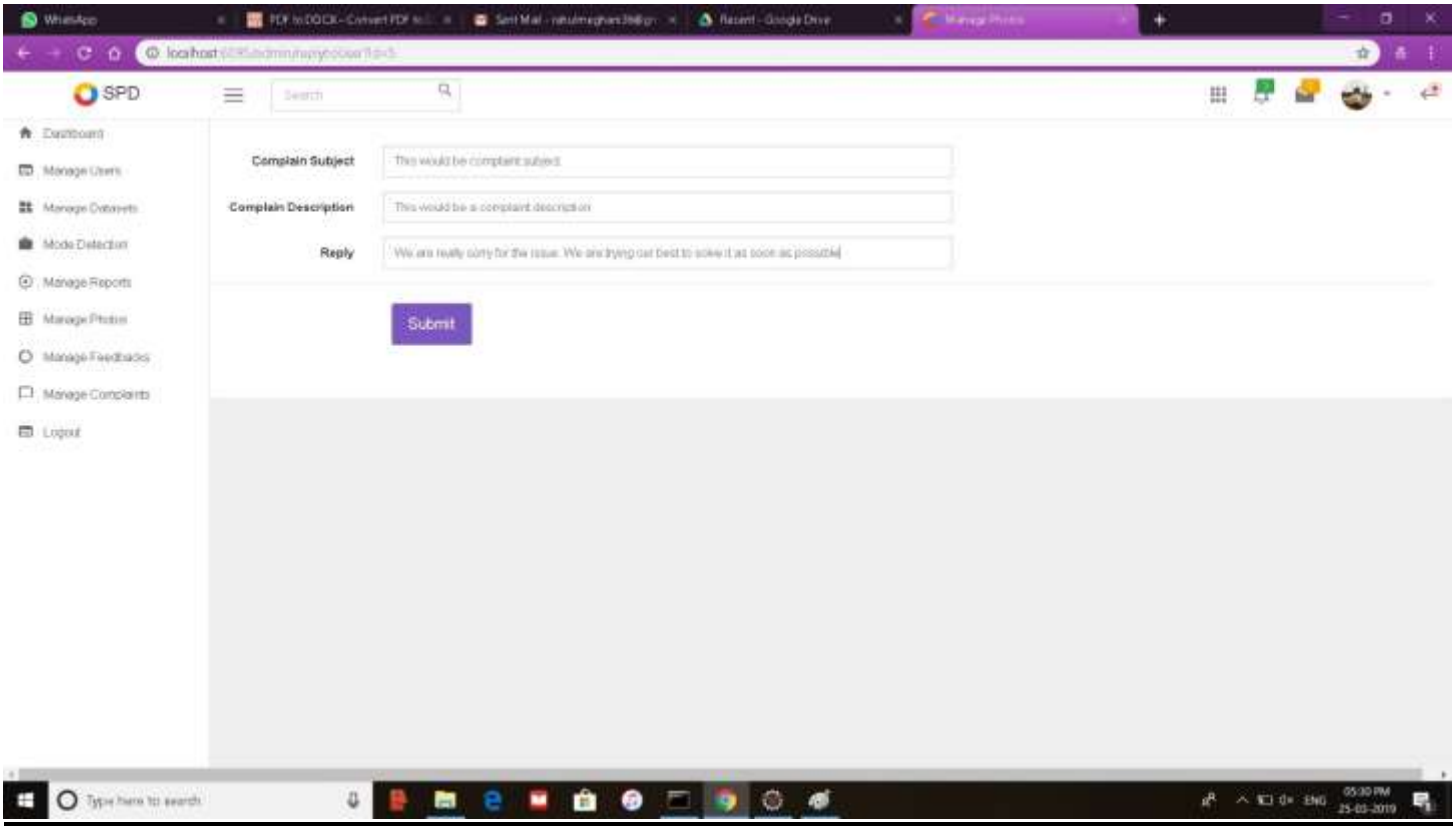




Add and View Feedback Test Case

Add and View Reply Test Case:-





Add a d View Reply Test Case

7. Future Enhancement:-

- In theory UAVs an (unmanned aerial vehicle an aircraft piloted by remote control or onboard computers) in agriculture more information in three areas available.
- First, the view from the air plants, can reveal irrigation, soil variation, and even a lot of problems such as pests and bacteria invade the naked eye cannot be found. Secondly, the UAV can carry aerial camera provides images of multi-band, multi-spectral data capture, these information together, can provide a detailed plant details of the plan, and indicated a healthy plant of plants grow well differences between, and use the naked eye cannot find these differences.
- Finally, unmanned aerial vehicles weekly, daily or even hourly able to plant inspections are carried out, the captured image can be displayed changes in the growth of plants, pointing out areas of problems to facilitate better field management.

8. Conclusion:-

Object of the present invention is to provide a method of identification and diagnosis of the computer image processing plant pests infected leaf plant plant disease diagnosis systems. Techniques of the present invention are: Plant Disease Study automatic identification technology using digital image processing and pattern recognition methods. Combined with biometric texture, shape and color of the leaves when plants infected lesion presented on plant diseases and disease quickly make accurate judgment, agricultural producers can make the most economical cost to recover losses caused by diseases, to meet the needs of agricultural producers, agricultural products and reduce pesticide pollution of the environment. Plant diseases image processing system is mainly around the cucumbers, grapes, corn common diseases as an object, cucumber, grapes, corn leaves infected lesion image processing and recognition.

9. References :-

a) Research Paper:-

[1],” http://www.it.uu.se/edu/course/homepage/sml/literature ”

[2],”http://www.academia.edu/10257214/A_SYSTEMATIC_LITERATURE_REVIEW_OF_MACHINE_LEARNING_TECHNIQUE_USAGE”

[3], S.P Mohanty,” http://downloads.hindawi.com/journals/cin/2017/2917536.pdf”

b) Websites:-

http://scikit-learn.org/stable/

https://matplotlib.org/

c) Datasets References :-

[1], “https://archive.ics.uci.edu/ml/index.php”

[2], “https://www.kaggle.com/uciml/datasets”

[3], “https://skymind.ai/wiki/open-datasets”

10 Appendix:-

10.1 Periodic Progress Reports (PPR)

College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Shethiya Sahil Vasantbhai
EnrollmentNo : 160323107024 Department : Computer Engineering
MobileNo : 7874767705 Discipline : BE
Email : sahil18vs@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : First PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?
Working on different dataset and training machine to identify leaf and stems onto them

2. What challenge you have faced ?
Problem while working with linux and installing Anaconda and Setting depenendencies in Caffe 3. What support you need ?
Need System with higher speciffication to run libraries efficiently and Better Knowledge support for working in Deep learning

4. Which literature you have referred ? UCI.com plantvillage.org

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

Print Back

College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Shethiya Sahil Vasantbhai
EnrollmentNo : 160323107024 Department : Computer Engineering
MobileNo : 7874767705 Discipline : BE
Email : sahil18vs@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : Second PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?
Trained and created the model using caffe framework - cpu installation

2. What challenge you have faced ?
Setting dependencies in caffe framework was tough job

3. What support you need ?
Support for solving the error in caffe framework using the community guidelines

4. Which literature you have referred ?
http://caffe.berkeleyvision.org/installation.html https://www.nvidia.in/object/caffe-installation-in.html

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

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College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Shethiya Sahil Vasantbhai
EnrollmentNo : 160323107024 Department : Computer Engineering
MobileNo : 7874767705 Discipline : BE
Email : sahil18vs@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : Third PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?
Tested the trained model for accuracy. The accuracy of around 25% is achieved using the trained model based on the images of size 256×256

2. What challenge you have faced ?
Difficult job to detect the perfect disease of the selected disease based on code. Also problems where faced while plotting on image using matplotlib on the disease spot

3. What support you need ?
Support for more deep knowledge on how disease affect the plant production and what are its effect and furthermore more time for learning layers in CNN more accurately

4. Which literature you have referred ?
https://www.google.com/amp/s/cv-tricks.com/tensorflow-tutorial/understanding-alexnet-resnet-squeezenetand-running-on-tensorflow/amp/ https://www.britannica.com/science/plant-disease

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

Print Back

College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Shethiya Sahil Vasantbhai
EnrollmentNo : 160323107024 Department : Computer Engineering
MobileNo : 7874767705 Discipline : BE
Email : sahil18vs@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : Forth PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?

Prepared the backend of the website on spring boot with security and authentication function. Moreover, the pages of admin and user side are prepared. Connectivity to database and automatically user login functionality based on type of user

2. What challenge you have faced ?

Problems while setting up database connectivity and spring boot integration with the website pages. Also, errors while setting up feedback and complaint pages on admin side

3. What support you need ?

Deep knowledge of integration of ML and DL code with website by using a service layer to provide functionality.

4. Which literature you have referred ?

http://accordance.github.io/microservice-dojo/kata6/service_talking_to_service.html
https://www.baeldung.com/spring-boot-annotations

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
N

College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Meghani Rahul Jitendrabhai
EnrollmentNo : 150320107048 Department : Computer Engineering
MobileNo : 8347605853 Discipline : BE
Email : rahulmeghani36@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : First PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?

We have created a portal using Spring-Boot for an admin site (including css,js,html and bootstrap). We are also learning and working with CNN for our AI-based project. Also we have collected datasets from numerous number of sites.

2. What challenge you have faced ?

Difficulty to create CAFFE Environment in windows. Also more computing power is required. Although, we are now thinking to shift and build this system in linux environment. Also, the varied image sizes which are used as datasets should in our 256*256 size.

3. What support you need ?

Only support we need is about CNN, and how to implement CNN based project in Caffe (which is a deep-learning framework) environment. Also an guide to use KERAS/tensorflow libraries effectively in windows.

4. Which literature you have referred ?

We have refer- frontiersin.org researchgate.net and several other resources too.

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

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College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Meghani Rahul Jitendrabhai
EnrollmentNo : 150320107048 Department : Computer Engineering
MobileNo : 8347605853 Discipline : BE
Email : rahulmeghani36@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : Second PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?

We have started and implemented most of our portal programming. We have implemented Java-SpringBoot technology for it. We understood the concepts of Spring Security and also some new Java scripts functionalities. We have also started learning deep learning concepts like ANN, CNN and libraries like tensorflow.

2. What challenge you have faced ?

To manage workload and as have mentioned the caffe installation in linux, we even tried the caffe cuda enabled version to train our model with faster speed then before.

3. What support you need ?

We needed the high processor based GPUs so that we can train our model at faster execution speed.

4. Which literature you have referred ?

www.github.com/BVLC/caffe
https://www.researchgate.net/publication/318109025_Leaf_Disease_Detection_using_Image_Processing

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
Non

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College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Meghani Rahul Jitendrabhai
EnrollmentNo : 150320107048 Department : Computer Engineering
MobileNo : 8347605853 Discipline : BE
Email : rahulmeghani36@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : Third PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?
We have completed the portal programming overall and it works fine with ticking all the security options and the behavior of our portal. We also tried to train a normal simple CNN model for our project to identify the disease, but its not working perfectly yet.

2. What challenge you have faced ?
To learn deep learning concepts such as CNN, in which input layers, convolutional layers and hidden layers are working. To understand the importance of Activation function.

3. What support you need ?
To identify and to know more about several plant diseases which we can implement in our model, also their symptoms and the future remedies to avoid that disease.

4. Which literature you have referred ?
https://towardsdatascience.com/plant-ai-plant-disease-detection-using-convolutional-neural-network-9b58a96f2289 https://www.crowdai.org/

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
N

College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Meghani Rahul Jitendrabhai
EnrollmentNo : 150320107048 Department : Computer Engineering
MobileNo : 8347605853 Discipline : BE
Email : rahulmeghani36@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : Forth PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?

We are training our model to get better results and accuracy. We even learned concepts of tkinter in python to create a good graphic enabled GUI. Accuracy is main concern and we are trying our best to escalate it.

2. What challenge you have faced ?

To learn and discover about new plants leaves and also the expected disease to which they can get attached to. To include pooling layer in our CNN model. Also the overall process of portal image uploading and to mode detection.

3. What support you need ?

We have planned to use our model as a web-service to our Java portal, so to learn more about web-services and to implement it.

4. Which literature you have referred ?

https://www.semanticscholar.org/paper/OpenCV-based-disease-identification-of-mango-leaves-Sethupathy-Veni/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4934169/

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

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College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Patel Venish Bipinbhai
EnrollmentNo : 150320107538 Department : Computer Engineering
MobileNo : 8866564676 Discipline : BE
Email : patelvenish8@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : First PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?
We have completed with gathering data set and now we are working on caffe framework on linux for training those data sets

2. What challenge you have faced ?
Problem Installing CUDA on linux and setting dependencies

3. What support you need ?
Better System with high specification to run libraries

4. Which literature you have referred ?
plantvillage.org researchgate.org an several other resources too.

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

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College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Patel Venish Bipinbhai
EnrollmentNo : 150320107538 Department : Computer Engineering
MobileNo : 8866564676 Discipline : BE
Email : patelvenish8@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : Second PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?
Our first presentation at college level is completed. The libraries which we were lacking an not knowing about them were guided to us by our proessors

2. What challenge you have faced ?
the most strenuous task for us was to train the data set in kesas library

3. What support you need ?
Our system doesnt properly support the Linux platform so need better configured system

4. Which literature you have referred ?
Read a book Hands-On Machine Learning with Scikit-Learn and TensorFlow

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

Comment by Principal :
None

Comment by University Admin :
None

Print Back

College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Patel Venish Bipinbhai
EnrollmentNo : 150320107538 Department : Computer Engineering
MobileNo : 8866564676 Discipline : BE
Email : patelvenish8@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : Third PPR

Project : Smart Plant Detector

Status : Reviewed

1. What Progress you have made in the Project ?
The work of our admin site is almost completed. Just few checkings and test need to be done for asurity

2. What challenge you have faced ?
The connection of the one fragment with the other was not happening

3. What support you need ?
we need to understand the concepts in the better manner

4. Which literature you have referred ?
https://docs.tibco.com/pub/spotfire/7.0.1/doc/html/connect/connect_what_is_a_data_connection.htm

Comments

Comment by Internal Guide :
None

Comment by External Guide :
None

Comment by HOD :
None

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None

Comment by University Admin :
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College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
StudentName : Patel Venish Bipinbhai
EnrollmentNo : 150320107538 Department : Computer Engineering
MobileNo : 8866564676 Discipline : BE
Email : patelvenish8@gmail.com Semester : Semester 8

PPR Details

Periodic Progess Report : Forth PPR

Project : Smart Plant Detector

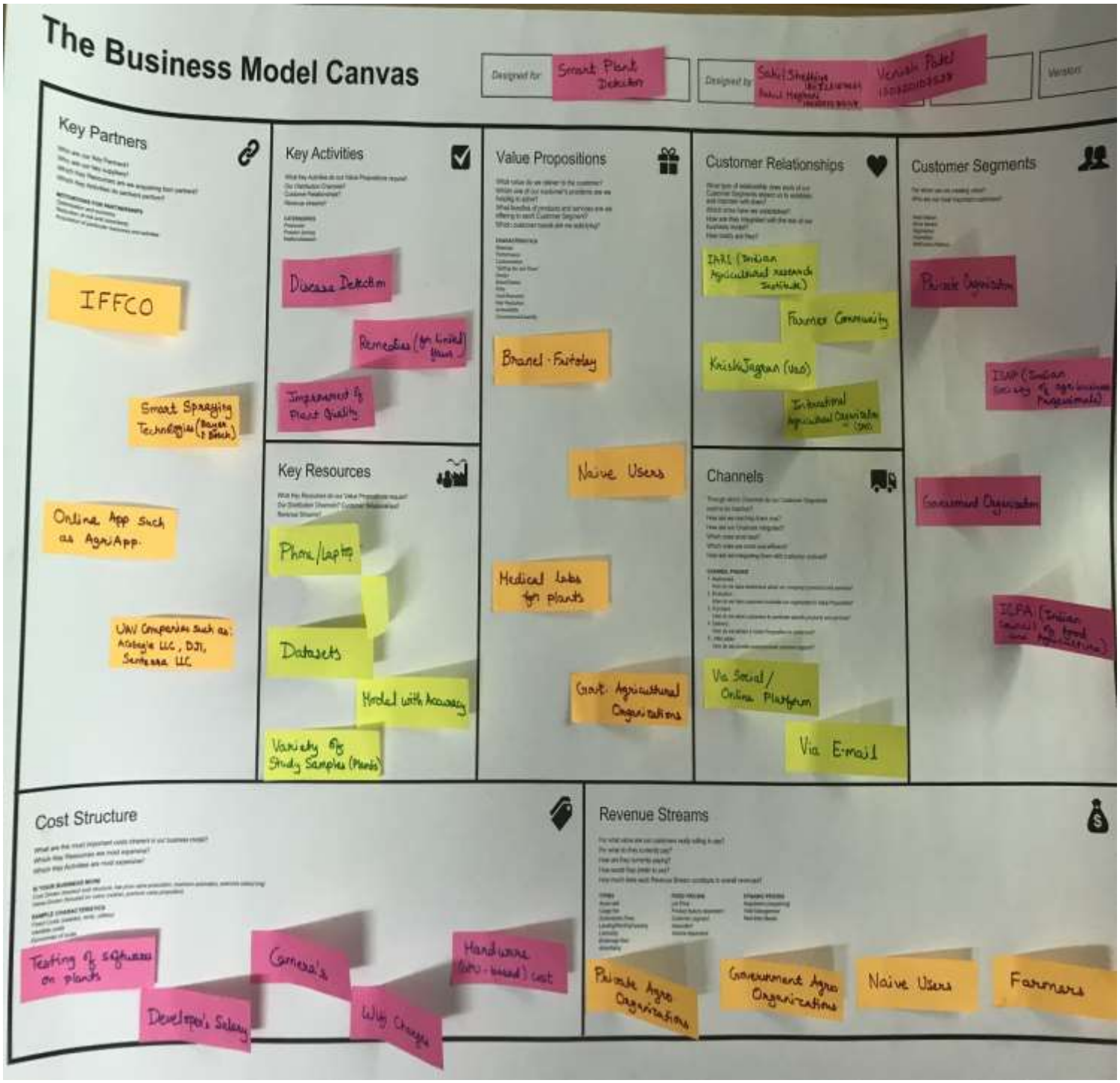
Status : Reviewed

1. What Progress you have made in the Project ?
We are on the last phase of the project where we have to done the image processing of the pre stored data in our system by converting into black white format
2. What challenge you have faced ?
we were not having sufficient knowledge regarding this and to carry forward this process
3. What support you need ?
Better understanding of the concepts are needed
4. Which literature you have referred ?
https://sisu.ut.ee/imageprocessing/book/1

Comments

Comment by Internal Guide :
None
Comment by External Guide :
None
Comment by HOD :
None
Comment by Principal :
None
Comment by University Admin :
None

10.2 Business model canvas (BMC) :



10.3 Patent drafting exercise (PDE) :

College : L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD
Department : Computer Engineering
Discipline : BE
Semester : Semester 8
Project Name : Smart Plant Detector
Team ID : 35892

Form 1 – APPLICATION FOR GRANT OF PATENT

Applicants :

Sr. No	Name	Nationality	Address	Mobile No.	Email Id
1	Shethiya Sahil Vasantbhai	Indian	Computer Engineering , L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD , Gujarat Technologycal University.	7874767705	sahil18vs@gmail.com
2	Meghani Rahul Jitendrabhai	Indian	Computer Engineering , L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD , Gujarat Technologycal University.	8347605853	rahulmeghani36@gmail.com
3	Patel Venish Bipinbhai	Indian	Computer Engineering , L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD , Gujarat Technologycal University.	8866564676	patelvenish8@gmail.com

Sr. No	Name	Nationality	Address	Mobile No.	Email Id
1	Shethiya Sahil Vasantbhai	Indian	Computer Engineering , L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD , Gujarat Technologycal University.	7874767705	sahil18vs@gmail.com
2	Meghani Rahul Jitendrabhai	Indian	Computer L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD , Gujarat Technologycal University.	8347605853	rahulmeghani36@gmail.com
3	Patel Venish Bipinbhai	Indian	Computer Engineering , L. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, AHMEDABAD , Gujarat Technologycal University.	8866564676	patelvenish8@gmail.com

I/We, the applicant(s) hereby declare(s) that:

Following are the attachments with the applications :

Form 2 - PROVISIONAL/COMPLETE SPECIFICATION

1. . Title of the project/invention :
   Smart Plant Detector
2. Preamble to the description
   : Provisional
3. Description

a) Field of Project / Invention / Application :

Our project is made especially for helping the farmers and moreover the industries related to AGRO , Government organization. The invention discloses a method for detecting pathogens and diseases of plant leaves, steams and roots.

b) Prior Art / Background of the Project / Invention :

The previous systems which are developed up till now are mainly made by Chinese. Due to that their centre of attention is to eradicate the pathogens and disease which are mainly cultivated in China. So we are adding the identification of plants which are mainly grown in India.
As there are different types of viruses, bacteria, pathogens according to several seasons. In this system all the feature are not available for recognition of seasonal diseases. We will try to eradicate this problem.

c) Summary of the Project / Invention :

The invention discloses a method for detecting pathogens and diseases of plant leaves, steams and roots. The method comprises the following steps: acquiring a image of a plant to be detected, uploading the leaf image to an on-line detection platform with a disease image automatic identification function using libraries in python and a professional diagnosis system function.

d) Objects of Project / Invention :

As all the industries and businesses are based on the roots of agriculture in any of the Nation. Farmers are facing many complications from the initial phase when they are depositing the seed into soil up to they earn enough resources. The main loss they have to face when their grown plants are affected by pathogens. So to reduce the cost, make it more efficient, reliable and cost effective we are introducing this system with better features and more compatibility with keeping in mind about the Indian agriculture and cultivation criteria.
Along with the detection of pathogens the fertility of soil also matters a lot for plants along so the amount of fertilizers are also examined.

e) Drawings :

f) Description of Project / Invention : (full detail of project) :

Occur during plant growth number of diseases, especially diseases of many greenhouses short latency, fast onset. Some farmers can not acquire the relevant knowledge of the disease, thus preventing poor efficiency, weight loss, a serious disease, which led to a substantial cut. Therefore, the disease is an important factor restricting the growth of the plant.
Traditional plant disease diagnosis generally be determined by experience, prone to human misjudgment. With the rapid development of digital image processing technology, maturing technology widely used in computer vision and pattern recognition techniques variety, using image processing techniques to analyze plant diseases, and diseases accurately given category, non-destructive testing of plant diseases, rapid diagnosis provides new ways and methods.

g) Examples :

h) Claims (Not required for Provisional Application) / Unique Features of Project

Automatic Diseases detection using model based on CNN with accuracy of more than 60%.
Easy access to online portal
Feature of Complaint and feedback
Managing of data-sets on admin site.

4. Claims

5. Date and signature

6. Abstract of the project / invention :

Object of the present invention is to provide a method of identification and diagnosis of the computer image processing plant pests infected leaf plant plant disease diagnosis systems. Techniques of the present invention are: Plant Disease Study automatic identification technology using digital image processing and pattern recognition methods. Combined with biometric texture, shape and color of the leaves when plants infected lesion presented on plant diseases and disease quickly make accurate judgment, agricultural producers can make the most economical cost to recover losses caused by diseases, to meet the needs of agricultural producers, agricultural products and reduce pesticide pollution of the environment.

Form 3 – STATEMENT AND UNDERTAKING UNDER SECTION 8

Name of the applicant(s) :

I/We, Shethiya Sahil Vasantbhai ,Meghani Rahul Jitendrabhai ,Patel Venish Bipinbhai

Hereby declare :

Name,Address and Nationality of the joint applicant :

(i) that I/We have not made any application for the same/substantially the same victim invention outside India.

(ii) that the rights in the application(s) has/have been assigned to

Name of the Country	Date of Application	Application Number	Status of the Application	Date of Publication	Date of Grant
N/A	N/A	N/A	N/A	N/A	N/A

(iii)That I/We undertake that upto the date of grant of the patent by the Controller, I/We would keep him informed in writing the details regarding corresponding applications for patents filed outside India within three months from the date of filing of such application.

Dated this 25 day of March 2019

To be signed by the applicant or his authorised registered patent agent :

Signature.....

Name of the Natural Person who has signed :

Shethiya Sahil Vasantbhai ,Meghani Rahul Jitendrabhai ,Patel Venish Bipinbhai

To,
The Controller of Patents,
The Patent Office,
At Mumbai

10.4 Certificate Obtained from Plagiarism Checking.

PLAGIARISMA

90% Unique

Total 7404 chars (2000 limit exceeded) , 326 words, 10 unique sentence(s).

Essay Writing Service - Paper writing service you can trust. Your assignment is our priority! Papers ready in 3 hours!

Proficient writing: top academic writers at your service 24/7! Receive a premium level paper!

Results	Query
Unique	So we are adding the identification of plants which are mainly grown in India
28,600 results	• As there are different types of viruses, bacteria, pathogens according to several seasons
Unique	In this system all the feature are not available for recognition of seasonal diseases
38,200 results	We will try to eradicate this problem
50,700 results	• In the prior system which were developed, the human interaction was almost negligible
562,000 results	• Along with the detection of pathogens the
Unique	Introduction 1.1 Introduction to System • The invention discloses a method for detecting pathogens
Unique	be detected, uploading the leaf image to an on-line detection platform with a disease image
Unique	System • The previous systems which are developed up till now are mainly made by
Unique	Due to that their centre of attention is to eradicate the pathogens and disease
Unique	the New System • As all the industries and businesses are based on the roots
Unique	Farmers are facing many complications from the initial phase when they are depositing the
Unique	The main loss they have to face when their grown plants are affected by
Unique	are introducing this system with better features and more compatibility with keeping in mind about