



K. J. Somaiya College of Engineering, Mumbai-77

(A Constituent College of Somaiya Vidyavihar University)

REPORT

Plant Disease Detector

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Introduction

Problem statement:

Crop diseases are a major threat to food security. We need a system to recognize plant leaf diseases focusing on various varieties of plants which will help farmers detect diseases and identify appropriate treatment for the same.

Description:

- Plants have been an important source of energy. There are several diseases that affect plants with the potential to cause devastating losses.
- We want to create a simple and very easily accessible system for farmers and other users to access accurate information that they can use for efficient crop management.
- We scanned the selected images and returned if the imaged uploaded are diseased or not using the concept of Machine learning.

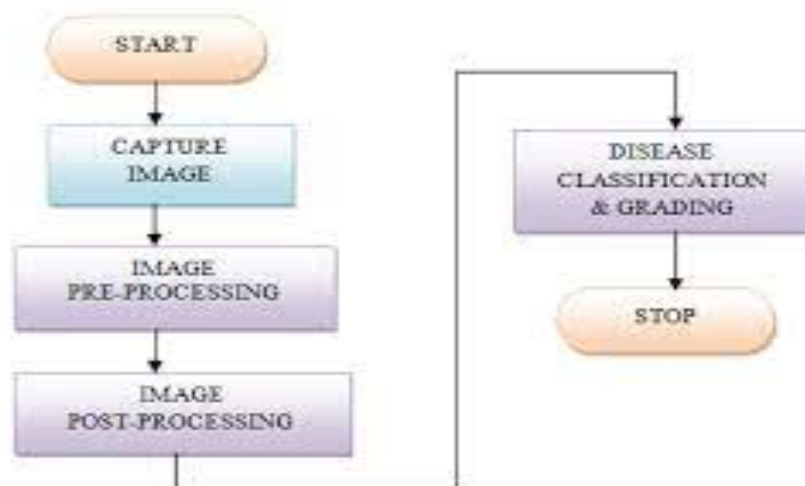


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System architecture:

- We collected a data set of 400-500 diseased plant leaf images to train out machine leaning model.
- We pre-processed the images using labeling.
- Then using the output of “.jpg” and “.txt” we trained the model from where we got a “.weights” file.
- Using the “.weights”, “.cfg” files in a python program, on runtime the images were processed using the pre trained model, we started detecting diseased and healthy leaf plant images through opencv.
- To make it more user friendly and flexible for selecting required images, we added tkinter and combined it with opencv to get a smooth functioning program.
- After segregating the leaves into classes we displayed each leaf images and the class it is in, for example healthy, rust etc.





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Modules & Concepts:

- A. Tkinter
- B. PIL – Python Imaging library
- C. OpenCV
- D. YOLO – Object detection algorithm

Features:

1. The system is user friendly and user interactive which helps in better understanding of our system, interface and its output.
2. The program is very flexible and lets us select any number of images based on our requirement from anywhere in the storage.
3. As an output, we can classify the leaf images into healthy and rust diseased and along with it, we have added information about the disease and steps that can be taken to cure it and prevent it in the future.
4. The system created is 80-85% efficient in detecting diseased plants

A very smooth transition and data transfer between two different modules without causing loss in information.



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Future Work

1. In future, More classes can be introduced, i.e. more diseases can be identified by the same system
2. More different plant leaf data sets can be acquired and used so the system works on more variety of plants
3. The System can be made more efficient by training the model with a larger data set
4. It can be made very accessible for the entire world by integrating the software into a phone application or a web application
5. To make it more portable and quicker, we can integrate and use the device camera to detect diseases and display the cure and prevention fo the same

GitHub Link

<https://github.com/praneelbora/Plant-Disease-Detection>



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Results and Conclusion

1. We detect rust diseased plants with atleast 80-85% accuracy
 2. The information about the disease detected is displayed on the screen
 3. The prevention and cure for the detected disease is displayed as well to help in a better crop management system
- If the diseases are not correctly identified, they affect the crop yield and ultimately result in long-term issues.
 - We created a smooth and easy to use system to accurately and efficiently detect diseases using image processing
 - This will help farmers and people all over the world who have little idea about plant related diseases



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THANK YOU