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DETECTION OF LEAF DISEASE AND CLASSIFICATION USING IMAGE PROCESSING

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Abstract: Pest detection techniques is recently increasing in order to grow the productivity and quality of yield. To improve crop productivity disease identification is very much important, but some diseases cannot be identified at early stage by farmers and the crop will harm. Hence to avoid the decay of the plants and to improve quality of the product pest detection is important. The pest detection methodology will be developed by using the image processing algorithm like K- means algorithm. It will classify the leaf image in the factors like color-features, texture features, ad their combinations to train three models based on support vector machine classifier. The dataset will be trained dataset which will consist the thousands of images collected from plat village and farms. The system will be having the trained dataset to identify the healthy and diseased leaf. It will contain the different images of the diseased leaf along with the healthy leaf. The system will be easier to use as it only takes the input as image of plant and it is giving result like healthy and diseased plant. Hence farmers can easily use the system to improve the quality of crop.

***Keywords**: Plant disease, Image processing, Android, etc.*

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I INTRODUCTION

Pest detection is major challenge in the field of agriculture. India is a country of agricultural field. Many people feed on it. But due to environmental changes, many diseases occur to the plants or crops. It leads to reduce the yield and hence the income of farmer reduces. Farmers using traditional method for pesticides. But now a day's technology is growing faster. We can implement its applications to the day today life. Image processing is one of those fastest growing technology in today's world. Image processing is a method to perform some operations on an image, in order to get an enhanced image or to extract some useful information from it. Nowadays, image Processing is among rapidly going technologies. It forms core research are within engineering and computer sciences. As our country is Agricultural country, most people are feeding on the farming.

Diseases to the crop can affect badly to the productivity. Hence disease detection is important. So, we extend the application of an image processing in farming sector to early detection of the diseases.[9] Image Processing uses machine learning algorithm for making the work simple and sorted. Many supervised and unsupervised algorithms are used for image Processing. The machine learning algorithm which we going to use is supervised learning algorithm. Supervised learning is the machine learning task of learning a function that maps an input to an output based on example input-output pairs. A supervised learning algorithm analyzes the training data and produces an inferred function, which can be used for mapping new examples.

II. LITERATURE SURVEY:

Detection of PestsI Using Color Based Image Segmentation
Name of Authors- Apurva Sriwastwa, Shikha Prakash, Mrinalini, Swati Swarit, Khushboo Kumari, Si- tanshu Sekhar Sahu
Paper Review
In this paper, we use colour based image segmentation method to efficiently detect the pest. The extensive simulation results on various pest images show that the proposed method outperforms the existing Otsu's method and edge detection segmentation [1].

Novel Algorithm for Segmentation and Automatic Identification of Pests n Plants using Image Processing
In this paper we present a clustering technique, the popular algorithm for clustering is kernel- based fuzzy c-means clustering algorithm (KFCM) is used to identify density of pest in plant. A supervised learning neural network was applied to the classification of feature extraction of leaf. The methods studied are for increasing throughput reducing subjective arising from human experts in detecting the pests in plant [3]

eAGROBOT- A Robot for Early Crop Disease Detection using Image Processing
Name of Authors
Sushma R. Huddar, Swarna Gowri, Keerthana K., Vasanthi S., Sudhir Rao Ru- panagudi Paper Review
In this paper, we propose a novel and unique algorithm to segregate and detect pests using image processing. The proposed methodology involves reduced computational complexity and aims at pest detection not only in a greenhouse environment but also in a farm environment as well [2].

E_cient Kernel-Based Fuzzy C-Means Clustering For Pest Detection and Classification
Name of Authors- N. Vinushree, B. Hemalatha, Vishnu Kumar Kaliappan Paper Review

Name of Authors
Sai Kirthi Pilli, Bharathiraja Nallathambi, Smith Jessy George, Vivek Diwanji Paper Review
eAGROBOT (a prototype) is a ground based agricultural robot that overcomes challenges existing in large and complex satellite-based solutions and helpdesk form of solutions available as m-Services. It provides a small, portable and reliable platform to automatically survey farmland, detect diseases as well as spray the pesticide. [4]

III PROPOSED SYSTEM:

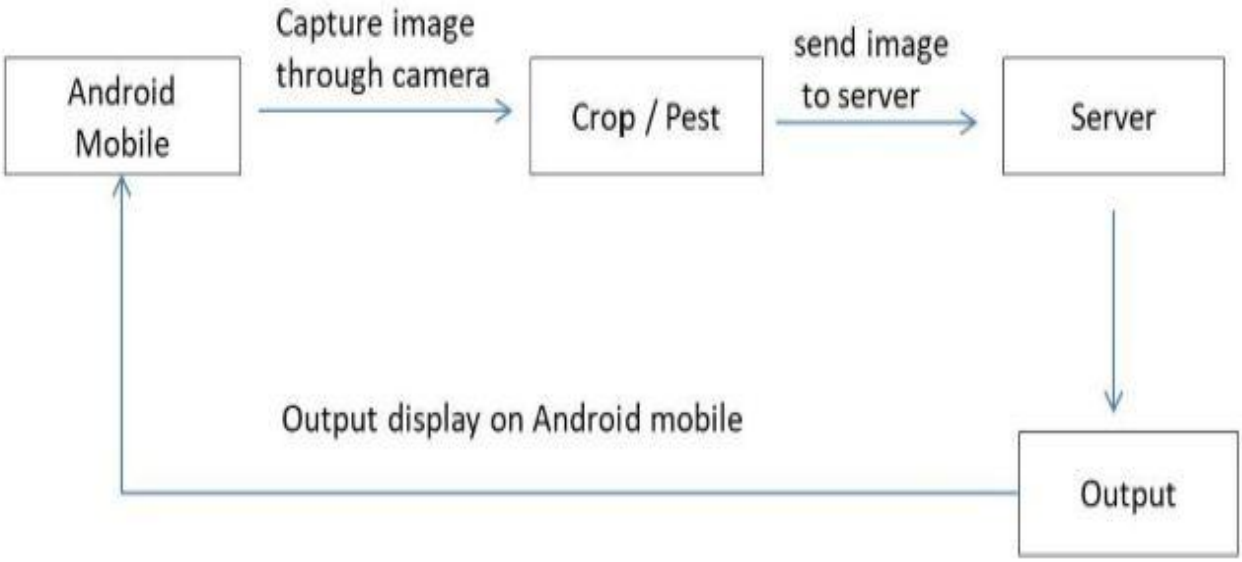

Figure 1: Proposed System

This implementation is aimed at a real time usage of Detection Identification of Pest using Image Processing. Disease detection in farming is major challenge for farmers which leads to decreasing yield and quality. Hence to improve quality of product pest detection is important. Through this application farmer can easily identify the pest on crop and get suggestions about the pesticides.

IV EXPERIMENTAL RESULTS:

Figure 2: Home Activity

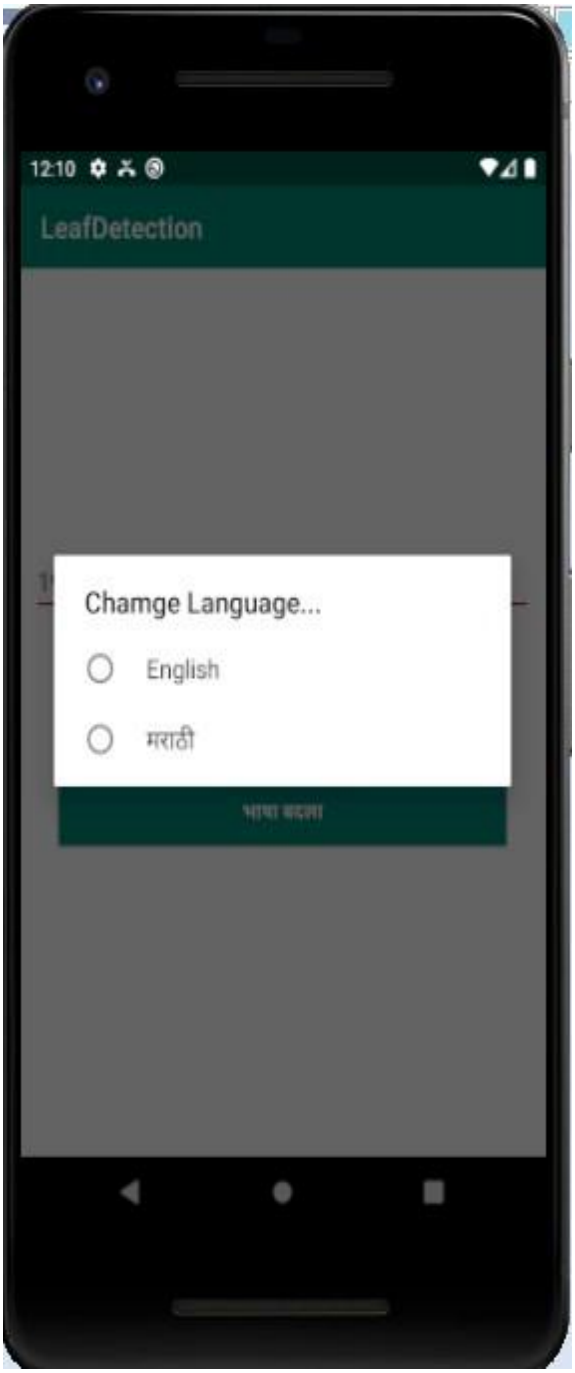

Figure 3: Language Selection

Figure 4: Image Input

Figure 5: Disease Detected

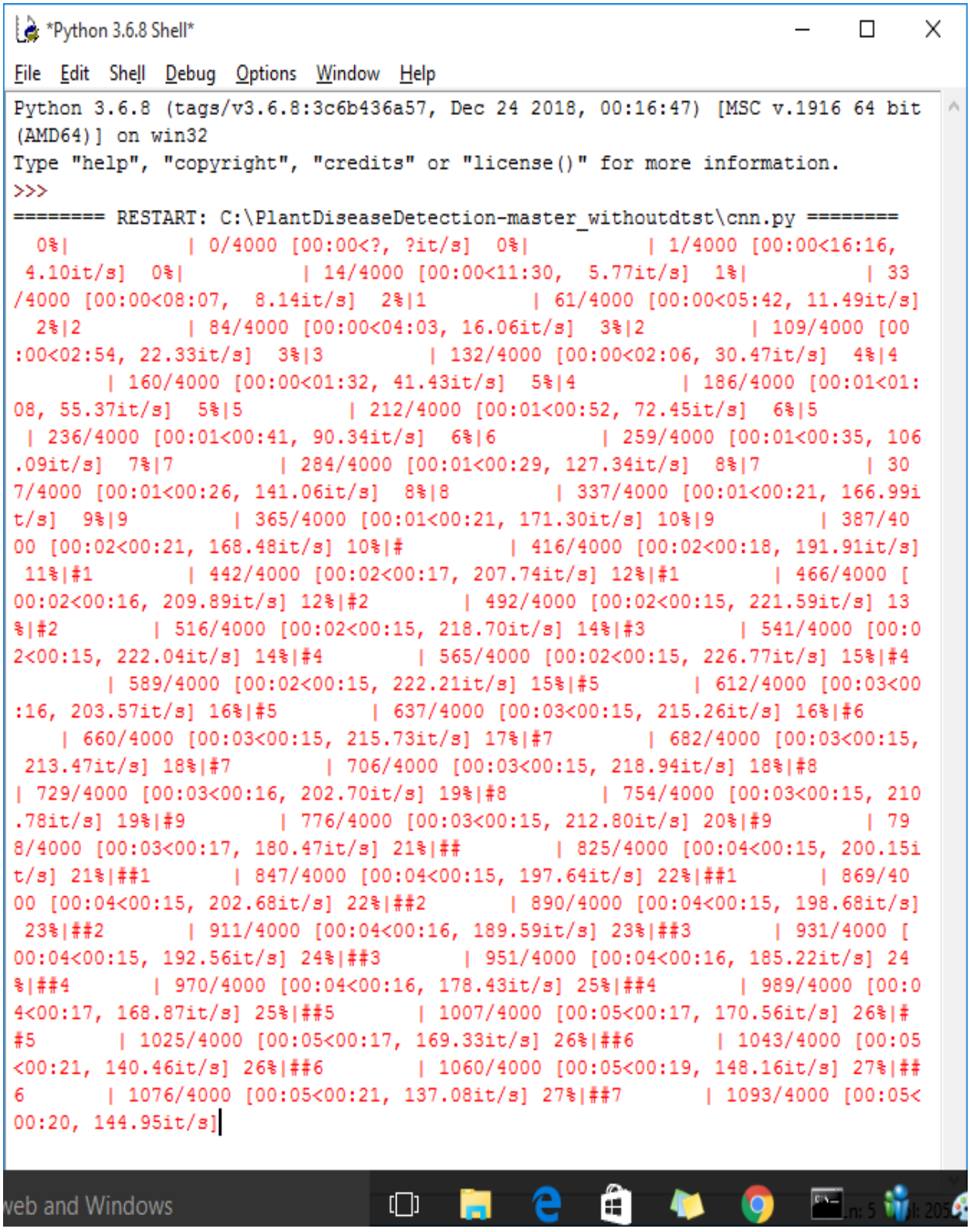

Figure 6: Database Training

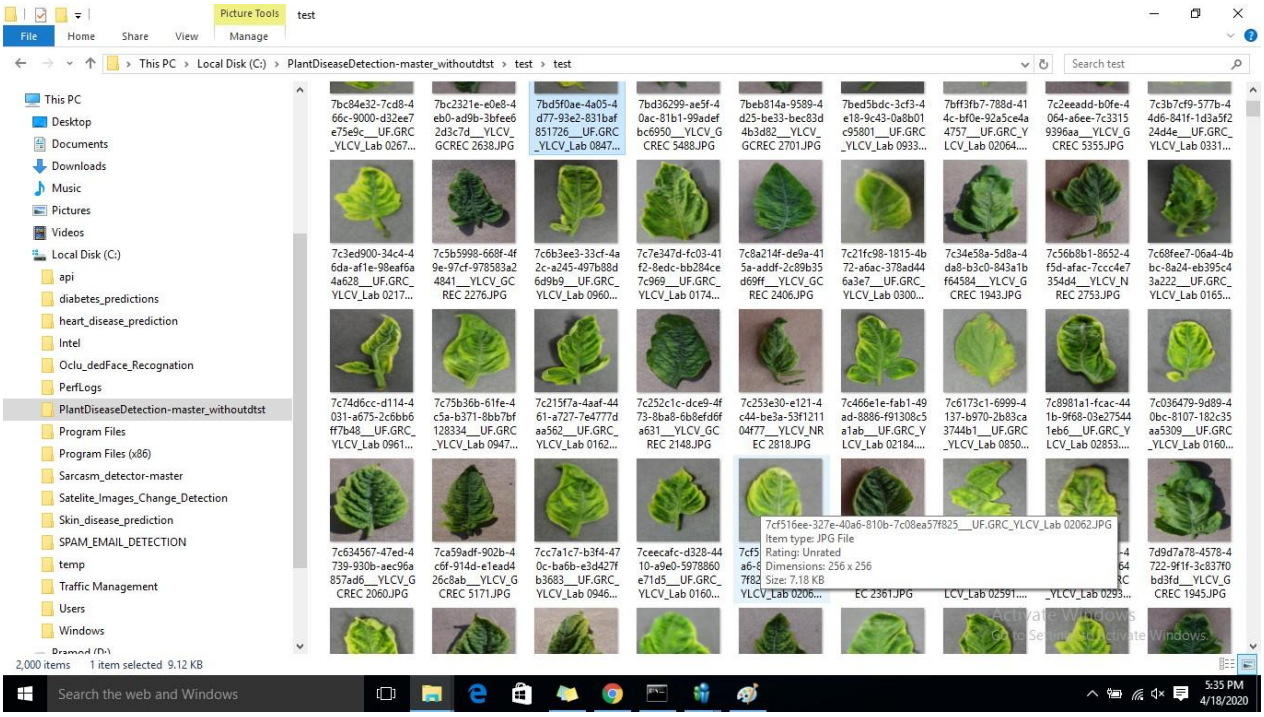

Figure 7: dataset

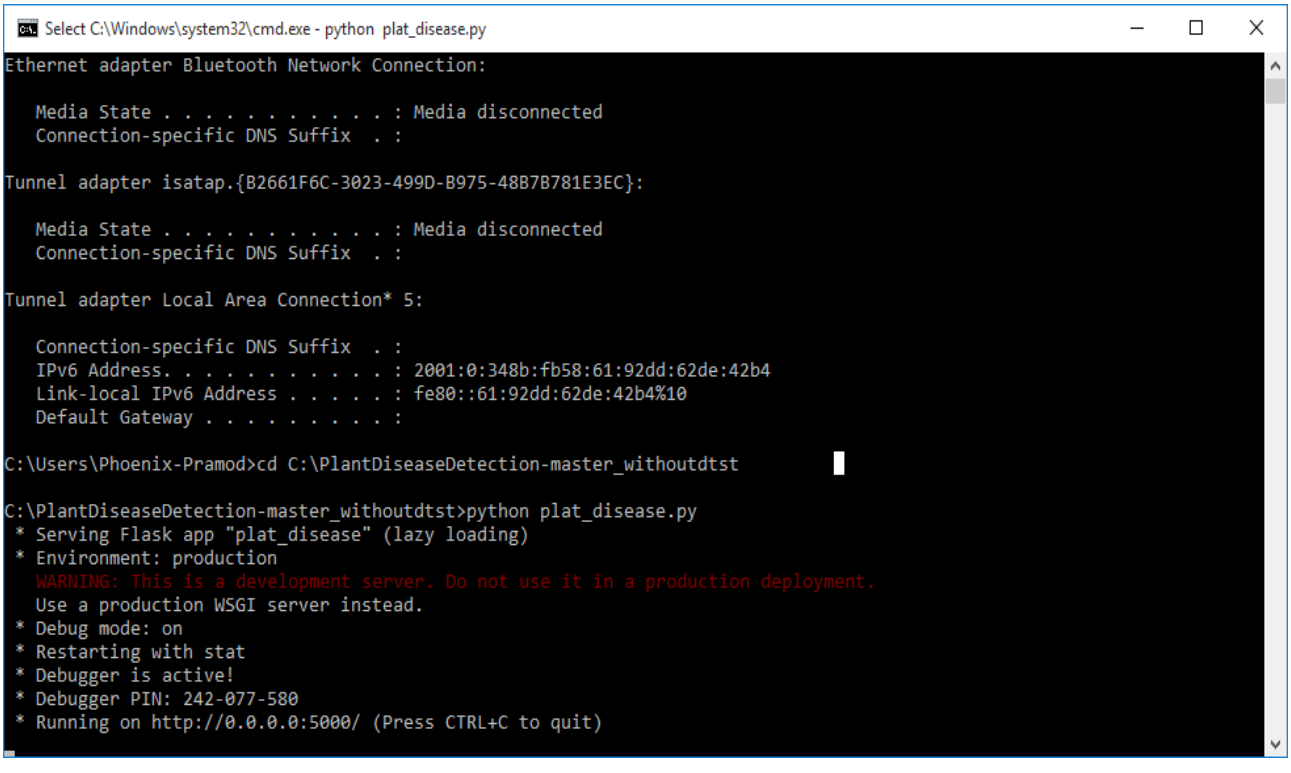

Figure 8: Serer Log

V. CONCLUSION:

Image processing technique plays an important role in the detection of the pests. Our first objective is to detect whiteites, aphids and trips on greenhouse crops. We propose a novel approach for early detection and identification of pests using Image Processing. To detect objects, we use pan tilt camera with zoom. So, without disturbing the pests we are able to take the image. It illustrates the collaboration of complementary disciplines and techniques, which led to an automated, robust and versatile system. It helps to detect the pests as early as possible and reduce the use of pesticides. It provides a simple, efficient and fast solution in detecting and identifying pests using Image Processing. It is simple to use and exhibits the same performance level as a classical manual approach.

REFERENCES:

1]Apurva Sriwastwa, Shikha Prakash, Mrinalini, Swati Swarit, Khushboo Kumari, Sitanshu Sekhar Sahu, Detection of Pests Using Color Based Image Segmentation, IEEE, 2018.

[2] Sushma R. Huddar, Swarna Gowri, Keerthana K., Vasanthi S., Sudhir Rao Ru- panagudi, Novel Algorithm for Segmentation and Automatic Identi_cation of Pests on Plants using Image Processing, IEEE, 2012

[3] N. Vinushree, B. Hemalatha, Vishnu Kumar Kaliappan, E_cient Kernel-Based FuzzyC-Means Clustering for Pest Detection and Classi_cation, IEEE, 2014

[4] Sai Kirthi Pilli, Bharathiraja Nallathambi, Smith Jessy George, Vivek Diwanji, eAGROBOT-A Robot for Early Crop Disease Detection using Image Processing, IEEE, 2014.

[5] Y.Sanjana, AshwathSivasamy, SriJayanth, Plant Disease Detection Using Image Processing Techniques, IJIRSET,May 2015

[6] Kaushik Kunal Singh,An Arti_cial Intelligence and Cloud Based Collaborative Platform for Plant Disease Identi_cation, Tracking and Forecasting for Farmers,IEEE 2018.

[7] K. Thenmozhi,Image Processing Techniques for Insect Shape Detection in Field Crops ,IEEE 2017

[8] https://sisu.ut.ee/imageprocessing/book/1

[9]https://www.geeksforgeeks.org/uni_ed-modeling-anguage-uml- sequence- diagrams/