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Identification of Leaf Diseases and their Classification with the Application of Image Processing Techniques

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ABSTRACT

One of the most crucial steps in preventing a loss of agricultural product quantity and production is the diagnosis of plant diseases. A key factor in the economy's dependence is agricultural productivity. It is for this reason, among others, that plant disease detection is crucial to the agricultural industry. The quality, quantity, or productivity of the corresponding product is impacted if sufficient care is not given in this region, which has very negative impacts on the plants.

The project's goal is to correctly identify and categories the illness based on photos of the leaves. Pre-processing, Training, and Identification are the necessary steps in the process. The method for image segmentation utilized in this suggested technique allows for the automatic detection and categorization of diseases affecting plant leaves. A crucial component of plant leaf disease detection is image segmentation.

Keywords:

Plant leaf disease detection, CNN

(Convolution Neural Networks), Machine

Learning, classifying the disease

I. INTRODUCTION

Plant Disease Identification: With this initiative, rainy and dry days will now be classified according to a new system that takes plant disease condition into account. This system is very useful for agriculture. Compared to the original image, enhanced photographs are of higher quality and clarity. Red, green, and blue are the basic colors found in color imagery. Because of their range, which is 0 to 255, RGB is challenging to integrate in applications. They thereby transform the RGB images into greyscale images. The photos of plant diseases are then improved by applying the histogram equalization, which spreads the intensities of the images. Artificial neural networks have been used to identify illness. Various pre-processing approaches are taken into consideration to reduce noise from images or other objects. The smoothing filter is utilized for the purpose of image smoothing. The purpose of image enhancement is to raise contrast. Segmentation is the process of dividing a picture into several sections with comparable or identical properties. Segmentation utilizing the boundary and spot detection algorithm: The RGB image is transformed into an HIS model in order to begin segmentation. Locating the leaf's contaminated area is aided by boundary and spot detection systems.

A set of characteristics is utilized to classify an object into K number of classes using the K-means clustering algorithm. The distances between an object and its matching cluster, an object can be classified.

II. EXISTING SYSTEM

The plant image will be uploaded into the current system, and the disease will be diagnosed using CNN. They are unable to identify certain agricultural diseases. By improving the quality and clarity of the original image, we can obtain better images for segmentation. Because of their range, which is 0 to 255, RGB is challenging to integrate in applications. They thereby transform the RGB images into greyscale images. Then, to improve the photos of plant diseases, the histogram equalization is done, which spreads the intensities of the images. Two distinct databases have been established: one for query image implementation and the other for training with previously recorded disease images. Training databases' weights are adjusted via back propagation.

DRAWBACKS

- Only reduce the noise, cannot find out disease.
- It is very slow.

III. PLANT LEAF DISEASE

Fruit spot (Cephaleuros virescens Kuntze) with an algae leaf

Disease symptoms:

• On leaves, the spots can range from specks to large patches that can be crowded or dispersed; on young fruits, the lesions are almost black. • Alga attacks immature guava leaves during the early spring flush. Lesions are typically smaller than leaf marks on older blemishes since the expansion of the fruit, which causes the lesions to sink and crack more frequently. They range in tint from dark green to brown to black.

IV. MODULES DESCRIPTION

Data set collection

The first module collects the datasets from the laboratory and the following link for initial analysis. https://catalog.data.gov/dataset?tags=plant+disease. The collected dataset contains the plant sequence dataset for different types of structures such as primary and secondary dataset. These details will be extracted and stored in the database.

Sample structure dataset:

- VGG-16
- VGG-19

Pre-processing

The next module is the pre-processing details, which eliminates the unwanted contents and irrelevant contents from the report. This eliminates auxiliary data.

Upload Image Process

In this module user login this application and upload plant image. This Plant image details will be stored in a separate table.

Image Analysis

In this module is select the uploaded images and moved into Image analysis process. It can be viewing the image and analysis and its statistics. It shows the disease values and details.

Disease Detection Process

This process automatically displays and show the disease affected details. After uploading the image this application analyzes the plant image and predict the disease information and display the user.

Report

Finally, admin can view the all reports like plant details, disease details and user details etc.

V. APPLICATION

I. Early illness detection and adequate treatment of lead, with information provided to farmers on preventative strategies to be implemented.

II. Helps to detect disease and give treatment for Agri crops.

VI. CONCLUSION

Using image processing, it is possible to properly detect and classify plant diseases, which is crucial for the successful production of crops. To divide the plant's diseased portion, this system employs a number of methods. In order to extract the characteristics of a diseased leaf and classify plant illnesses, this research also covered various feature extraction and classification methodologies. Image processing techniques allow us to effectively identify and classify a wide range of plant diseases.

VII. SCOPE FOR FUTURE ENHANCEMENTS

There are benefits and drawbacks to each application. Nearly every need has been met by the project. Given that the code is primarily structured or modular in nature, adding further needs and improvements will be simple. Upgrades can be added by altering the current modules or by adding new ones. The potential possibilities for this project are enormous. In the future, the intranet may be used to execute the project. Given its great degree of expansion flexibility, the project can be modified in the near future as and when the need for it arises. In the future, an Android version of this app might be produced.

IX. REFERENCE

[1] Hong-ning Li, Jie Feng, Wei-ping Yang, Xiang-sheng Wu, Ze-dong Li, Wei Liu “Spectrum-based Method for Quantitatively Detecting Diseases on Cucumber Leaf” 2011 IEEE.

[2] Hashim H.; Haron M.A.; Osman F.N; Al Junid, S.A.M “Classification of Rubber Tree Leaf Disease Using Spectrometer “2010 IEEE.

[3] Min Zhang, Q in gg ang Meng “Citrus canker detection based on leaf images analysis”2010 IEEE.

[4] Dheeb Al Batish, Malik Barik, and Sulieman Bani-Ahmad “A Framework for Detection and Classification of Plant Leaf and Stem Diseases” 2010 IEEE.

[5] Kohli’s Majid, Yeni Herdiyeni , AunuRauf "I-PEDIA: Mobile Application for Paddy Disease Identification using Fuzzy Entropy and Probabilistic Neural Network" IEEE ICACSIS 2013.

[6] Mrs. Jayme Garcia ArnalBarbedo‖ Digital image processing techniques for detecting, quantifying and classifying plant diseases‖(SPRINGER PLUS-2013.

[7] SmitaNaikwadi, NiketAmoda, “advances in image processing for detection of plant diseases” International journal of application or innovation in engineering & management, PP: 168-175, November 2013.

[8] Al-Bashish, D., M. Braik, and S. Bani-Ahmad. 2011. “Detection and classification of leaf diseases using Kmeans- based segmentation and neural networks-based classification”. Information Technolog Journal, 10(2): 267-275.