

Tech Farmer

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ABSTRACT

India is the agricultural country. In India 70% of population depends on agriculture to their meal. There are several disease which affect fruits and vegetables cause economic, social, ecological losses. In agricultural science, Images are the efficient and good source of data and information. This desktop + web application uses digital image processing to detect quantify and classify the fruits and vegetables diseases with the help of image. Diseases occurs in any part of the fruits and vegetable it take this part and detect the diseases. They are then divided into three classes according to there goals, classification, quantification and detection. Each tothere classes they are further divided into subclasses according to the algorithm. This application is very useful for farmers and can control the loss of the country

Keywords: *k-means clustering, svm, fuzzy algorithim, image processing(API).*

1. INTRODUCTION

India is the second largest producer of fruits with the production 44.04 millionstones. The large variety of fruits grown in India which are apple, banana, mango, guava are the major ones. Fruits industry contributed 20% to the nation growth. But because of the improper cultivation of fruits, lack of maintenances and manual inception the big loss in the production of fruits. Farmer finding its more difficulty to manage the quantity of the fruits and decides how to prevent it from loss of both a farmer and the nation. There are various types of diseases

found in fruits and vegetables which not only decrease the yields but also decrease the variety and withdrawal the cultivation. Early to detect the diseases proper management is taken such as vector control through fungicides application, chemical application, pesticides application and improved the productivity. The classical approach for detecting the diseases in fruits and vegetables in based on the naked eyes or by the expert persons. This process is time consuming and need more knowledge.

In this application we designing automatic detection of diseases in fruits and vegetables using images of fruits and vegetables. With the help of the images we will divide it into different classes, check the excepted and unexpected color and then use the API to detect the diseases. There are various application uses image processing and pattern recognition technology. In this application we uses extend image processing and analyzing technology.

Diseases appear a spot or a big patch on fruits and vegetables if it not prevent several losses will occurs. More uses of pesticides increases the toxin level in fruits and vegetables which is dangers to the growing population. Pesticides also decreases the productivity of the fruits and vegetables. Therefore, we have take the approach to prevent the diseases as soon as we see the symptoms on it and proper management is taken by the application. The early detection of diseases would be valuable to the farmers and proper approach can be taken without any loss of farmer and the nation. Our application (TECH FARMER) uses

image processing and cloud .we using API(Application programming Interface)in java named as JIU(java image utility)which is use to process the image. After image is processed we detect the diseases and the appropriate solution to the diseases. Cloud is use to store the image captured by the farmer, and can get the solution to the problem.Images is captured and upload by the farmer is store at the server side.

We have 3 modules in the application that is client side, admin side, server side. This is the diagrammatical view of our application

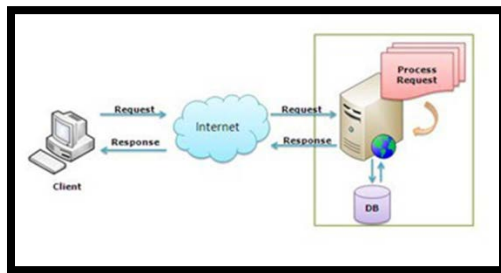


figure 1 :Diagrammatical view of the application

The aim of this application is to use the image processing and machine vision technique in agriculture and food industry. The main goal of the TECH FARMER is the recognize the species and the diversity of the fruits and vegetables and the types of diseases present in the fruits and vegetables from the images given by farmer.

2. LITERATUREREVIEW

Many work is done in the fields of image processing and detecting the diseases from an image given by the user. Major work is done on the detect segmentation of fruits are done using threshold approach. shruiti and Nidhiseth 2 July 2014.Classification methods are used to partitioning the pixel and placed them into different classes.Classification is used by most of researchers shiv ram dubey and anandsingh in nov 2013.where pixel are compared by pre-calculated model. Unsupervised classification does not benefit

to detect the diseases used by Leemes ,megein and destain for detect segmentation. The spectroscopic and imaging are the most commonly used method to detection of diseases. Some of the authors researches on the leaf diseases various methods and illustrated here. The authorp. Revati et.al research on the identification on the plant leaf diseases. At first, edges detection techniques is used and the last edges uses HPCCDD algorithm. The aim of the this research is to detect the disease in the cotton leaf. Sobel and canny use RGB pixel counting and recognize the affected part of the leaf spot and we get the required output. Jaya sil and santanuphadikar introduces a software prototype system in which is used to detect the disease in plant and also used the image segmentation technique.For identify the diseases in the cucumber author gengying take the sample of it and relate the effect on the cucumber.Regularization and extraction technology and describe the Eigen features of this technology and this technology gives more accuracy than other detection feature technology studied by Ajay A. Gunjar .Three methods of leaf disease detection: 1) To identify the affected part of leaf by using K-means Clustering. 2) To solve the affected part of leaf by using color co -occurrence methodology for texture analysis. 3) To find and classify the type of disease by Neural Networks is used by author H Al .Hiary and et al to identity the diseases. First is RGB images of leaves are acquired and apply for color transformation structure. After that image is segmented by K-means clustering techniques and masked the green pixel and remove the green masked pixels and obtained the threshold value of object by Otsu’s method. The RGB images are sets the zero value for converting color co-occurrence techniques. Afterthat infected clusters was converted into Hue Saturation Value (HSV) and for texture analysis use the SGDM matrix for each image formation. Finally the recognize the process was execute the solution by Neural

Networks. All the author's use some basic step and detection steps are as follows:

1) Basic steps of algorithm :-

Firstly, the RGB images of leaves are required. Then RGB images are transformed into Hue Saturation Value (HSV) by color space representation. After that setting the pixel value in an image to zero or some other background value is called as Masking. Hence to associate the green colored pixels. Then infected portion of the leaf is extracted. The infected region is then segmented into a number of patches of equal size.

2) Detection of algorithm:-

Using digital camera, the digital image is acquired. Then to the acquired image the image processing technique are applied to take out useful features that are essential for further analysis. After that to classify the image according to the specific problem, several analytical methods are use

Authors	Detection technique/Algorithm	Parameters
Phadikar & eqal.	Baye's and SVM classifier, mean filtering technique and Otsu's algorithm	Baye's - 68.1 % SVM - 79.5% Accuracy
Ajay A. Gujar & et al.	Eign feature Regularization and Extraction Techniques	Accuracy of 90% detection on fungal disease
Dheeb Al Bashish & et al.	K-means techniques	93% Accuracy
Ging Yao & et al.	SVM method	Accuracy of 97.2 % on rice disease plant
Stephen gangWu et al.	Probablistics Neural Networks (PNN)	Accuracy of 90% on 32 kinds of

Figure2: Different types of techniques to find diseases.

2.1 WHY TECH FARMER??

Using digital camera, digital image is acquired. Then acquired images are go under the image processing techniques and given the essential feature required for the analysis and then required methods are used and give the solution. TECH FARMER is fast, efficient, less time consuming.

3.ADVANTAGES

- **Tech farmer** will prove as an effective tool for analysis of parameter related to the image of infected crop.
- Diseases identified by the application are accurate and less time consuming as compared to traditional methods.
- The early detection of fruit and vegetables diseases could be a valuable and very useful for diseases control measures.
- It automatically detect and classify the diseases present in the given image using image processing technique.
- Less loss of farmer and nation and proper management is applied.

4.DISADVANTGES

- We have to created an new metadata for other products like for plants , crops , leaf, steams etc. In **TECH FARMER** we make the metadata of fruits and vegetables that is only end products of trees.

5.CONCLUSION

In this we study, the automatic detection of disease in fruits and vegetables. The algorithm is used to detect the diseases .

The application is robust and would be operated at any environment and any time occlusion is cleared since the image is record perfectly. The application is interact with the user well and handle many level of difficulty.

6. FUTURE WORK

- The android app is made for better use of the application.
- We can extend the application by adding a metadata of crops ,leafy vegetables.
- We can make the application in different languages as farmer are not that educated.

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