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Detection and Classification of Fruit Diseases Using Image Processing and Cloud Computing

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Abstract: Disease detection is vital at early stage since it will affect the agricultural field. In this project, mainly consider the detection and analysis of fruit infections which is available in the plant areas and storage of data about the agricultural filed and details of farmers in database and recovering the data using Cloud computing. There are more fruit diseases which occur due to the surrounding conditions, mineral levels, insects in the farm area and other factors. The detected data from the plant area is determined by image processing and stored in the data base.
Keywords: Image processing, Cloud computing, machine learning, Python, systematic reviews

I. INTRODUCTION

Agriculture has been the base for every people. It is most important that more than 70% of the people depend on agriculture for their livelihood in India. Nowadays the growth of productivity of plants, crops and fruits are normally affected by the diseases. The disease is a major problem arising in an agricultural field. In plants, most of the leaves and fruits are affected by diseases due to bacteria and virus.

This technique is used to determine the infection on leaves, fruits and stem of the plants. In order to generate an automated database to examine the infections using proposed method. The database consists of data related to plant leaves, fruit conditions and the symptoms of disease to be affected.

The fruit details and the identification of disease from the feature extraction are stored in the database. The entire database is viewed and compared with the captured image. The mobile application is developed for processing the data and providing intimation to the farmers.

Thus, the variation in image from the database and also indicates the disease in the fruits. The various features of few fruits were initially extracted and segment the respective images. After comparison with feature values, the various disease names are analyzed and the optimal disease for the image is identified and the disease is indicated by an alert box and can be provided as the message through mobile application.

II. LITERATURE SURVEY

Pratik Agarwal, "AGROCLOUD-Open surveillance of Indian Agriculture via cloud" 2016.International Conference on Information Technology-The Next Generation IT Summit. Athmaja S1, Hanumanth Appa M2, "Applications of Mobile Cloud Computing and Big Data Analytics in Agriculture Sector- A Survey".

International Journal of Advanced Research in Computer and Communication Engineering ICRITCSA M S Ramaiah Institute of Technology, Bangalore Vol. 5, Special Issue 2, October 2016. Wang-Su Jeon1 and Sang-Yong Rhee, "Plant Leaf Recognition Using a Convolution Neural Network "International Journal of Fuzzy Logic and Intelligent Systems Vol. 17, No. 1, March 2017, pp. 26-34. Li Tan1,2†, Hongfei Hou1, Qin Zhang2.

"An Extensible Software Platform for Cloud-based Decision Support and Automation in Precision Agriculture".2016 IEEE 17th International Conference on Information Reuse and Integration. Shiv Ram Dubey1, Pushkar Dixit2, Nishant Singh3, Jay Prakash Gupta4, "Infected Fruit Part Detection Using K-Means Clustering Segmentation Technique". International Journal of Artificial Intelligence and Interactive Multimedia, Vol. 2, N° 2.

III. SYSTEM DESIGN
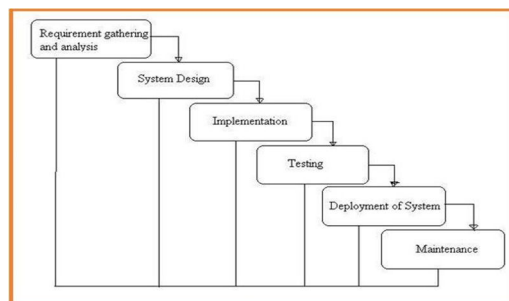
A. System Design

Fig 1: Project SDLC

Project Requisites Accumulating and Analysis
Application System Design
Practical Implementation
Manual Testing of My Application
Application Deployment of System
Maintenance of the Project

B. Requisites Accumulating And Analysis
It's the first and foremost stage of the any project as our is an academic leave for requisites amassing, we   followed of IEEE Journals and Amassed so many IEEE Relegated papers and final culled a Paper designated "Individual web revisitation by setting and substance importance input and for analysis stage we took referees from the paper and did literature survey of some papers and amassed all the Requisites of the project in this stage

C. System Design
In System Design has divided into three types like GUI Designing, UML Designing with avails in development of project in facile way with different actor and its utilizer case by utilizer case diagram, flow of the project utilizing sequence, Class diagram gives information about different class in the project with methods that have to be utilized in the project if comes to our project our UML Will utilizable in this way The third and post import for the project in system design is Data base design where we endeavor to design data base predicated on the number of modules in our project

D. Implementation
The Implementation is Phase where we endeavor to give the practical output of the work done in designing stage and most of Coding in Business logic lay coms into action in this stage its main and crucial part of the project

E. Testing Unit Testing
It is done by the developer itself in every stage of the project and fine-tuning the bug and module predicated additionally done by the developer only here we are going to solve all the runtime errors

F. Manual Testing
As our Project is academic Leave, we can do any automatic testing so we follow manual testing by endeavor and error methods

G. Deployment Of System And Maintenance
Once the project is total yare, we will come to deployment of client system in genuinely world as its academic leave we did deployment i our college lab only with all need Software's with having Windows OS.
The Maintenance of our Project is one-time process only

IV.   IMPLEMENTATION

Fig 1: code

V. RESULT

Fig 2: Greening disease

Fig 3Future : Healthy fruit

VI. CONCLUSION AND FUTURE SCOPE

A. Conclusion

The development of cloud-based scheme for helping Indian farmers and agriculture, helps to analyze the agriculture in a better way to reduce the hordings and bringing up a prosperous, safe and peaceful farmer society in India. The classification and detection of fruit images were performed using K-means algorithms and SVM techniques. The various features of few fruits were initially extracted and segment the respective images. After comparison with feature values, the various disease names are analyzed and the optimal disease for the image is identified and the disease is indicated in the dialog box and can be provided as the message through mobile application. The total number of samples provided, true and false position, the true and false negatives, the accuracy and specificity are also indicated in an alert box.

B. Future Scope

In future enhancements we will add some more machine learning algorithms.

VII. ACKNOWLEDGEMENT

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