

DESIGN OF SYSTEM FOR PEST IDENTIFICATION IN LEAF AND STEM

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Abstract:

There are countless number of plant species available across the global which might be useful plants or might be weeds. When farmers encounter a plant in their field, it is necessary for them to know the type of plant growing in their field so that they can evaluate the useful and harmful qualities of the plant, if the field is infected with a pest, then farmer might be interested in knowing type of pest and also their control measures. Hence, in this paper we are proposing a system which detects pest in leaf and stem and also lists control measure for the same.

Keywords: Pest, Leaf, Image Processing.

I. INTRODUCTION:

Agriculture is the most important sector of Indian Economy. Agriculture is the process of growing crops, fruits, vegetables, flowers and rearing of live stock. Agricultural science includes research in production techniques, increase the productivity, reduce the pest, reduce the adverse effect on environment etc. Agriculture plays a critical role in our life. The aim of agriculture is to modify the surface of earth by the cultivation of crops and raising of live stock for food and economic gain.

Agriculture is the backbone of the economic system of a country. It also provides employment opportunities. Agriculture is the main source of livelihood, main source of national income for developing countries and provides raw material for industries. Nations export trade depends on agricultural sector and it ensures food security of the nation. Most of the country depends on agricultural products as well as industries associated with agriculture products for their main source of income.

The crop production quantity and quality depends on the plant growth and its essential to save the plant. Therefore, plant leaf and stem disease detection is very essential in earlier stage and take necessary steps prevent it from spreading to others parts of the field. Normally, the farmer identifies the disease by observing the color and shape of the leaves and stems.

This project proposes an idea that shall address all these problems. Therefore this scenario has influenced us in developing an application that can help in determining the type of leaf and stem, freshness, and presence of pest and give the control measures for the same.

This project provide description of leaf and stem disease detection using image processing that can recognize problems in crops from images, based on color, texture and shape to automatically detect diseases and give the fast and accurate solutions to the farmer.

II.LITRATURE SURVEY:

Serial No.	Title	Author Name	Publication Journal/Date	Disadvantage	Advantage
1	Detection and Recognition of Leaf Disease Using Image Processing	Rakesh Chaware, Rohit Karpe, Prithvi Pakhale, Prof. SmitaDesai	Department of Electronics and Telecommunication Dr. D. Y. Patil Institute and Technology, Pimpri, Savitribai Phule Pune University, Pune, India 2017	The plant disease diagnosis is limited by human visual capabilities because most symptoms are microscopic. This process is tedious, time consuming.	The development of an automated system also helps farmers avoid consulting divine. Uses K-mean clustering to identify the affected part of the disease.
2	Image Processing Techniques for Detection of Leaf Disease	Arti N. Rathod, Bhavesh Tanawal, Vatsal Shah	Computer Engineering, Gujarat Technical University, BVM, V.V. Nagar, dist. Anand, Gujarat, India Volume 3, Issue 11, November 2013	-	To find the boundaries of the affected area. To determine the color of the affected area. To determine size & shape of leaf. To identify the Object correctly.

					Digital image processing is a technique used for enhancement of the image.
3	Advances In Image Processing For Detection Of Plant Diseases	Jayamala K. Patil , Raj Kumar	June-2011		Plant disease detection using machine-learning methods used to achieve: speed And accuracy. algorithms help plant Scientist in detecting disease.
4	Leaf Recognition And Matching With Matlab	Byliah Spring	Master of Science in Computer Science San Diego State University, 2014	It requires user help in the pre-processing Stage. Its inability to work with images with complicated background	MATLAB image processing tools help in Achieving accurate results.

III.Existing Systems

1. Plantix

Plantix is an Android Application designed for farmers growing all types of crops mostly edible Crops. Plantix is a mobile diagnostic tool for Field Crops as well as Fruits and vegetable Crops. Suggestions and solutions from highly skilled experts and Scientists helps the farmers and

individual. It is a Social Networking Android Application for the Farmers. Agriculture Students can also get practical knowledge using this Plantix Plant Doctor App.

2.PlantNet

Uses visual recognition software that helps us to identify the type of plant. Plant Net identifies only plants present /stored in the database. Recognizes ornamental plants, regardless of the world region you live in it's free. Easy to use. It helps in dealing with plant life.

IV.Proposed System

Disease management is a challenging task. Mostly diseases are seen on the leaves or stems of the plant. Precise quantification of these visually observed diseases, pests, traits has not studied yet because of the complexity of visual patterns. Hence there has been increasing demand for more specific and sophisticated image pattern understanding. Most leaf diseases are caused by fungi, bacteria and viruses. Fungi are identified primarily from their morphology, with emphasis placed on their reproductive structures. Bacteria are considered more primitive than fungi and generally have simpler life cycles. In biological science, sometimes thousands of images are generated in a single experiment. These images can be required for further studies like classifying lesion, scoring quantitative traits, calculating area eaten by insects, etc. Almost all of these tasks are processed manually or with distinct software packages. The proposed project has a rich graphical User Interface (UI) and provides the user with Multitude of options via Floating Action Buttons (FAB).The first step is importing the infected leaf from the gallery or capturing them from the application's Camera. The application will redirect the user to perform Image Preprocessing by clicking on the button Image Preprocess, on click of the Button the Application will convert the RGB Image to Grayscale Image using LUMINOSITY Algorithm.

Our proposed system helps in determining the type of the leaf or stem, pest attack if any and gives the control measures using image pre-processing. It enables the user to select the task they want to perform, can identify the type of the leaf by click on the Leaf icon or identify the type of stem by click on the stem icon or they can identify the pest infected by click the icon of pest.

It tells user to crop the image, decolourization of leaf or stem image and finally comparison of image take place.

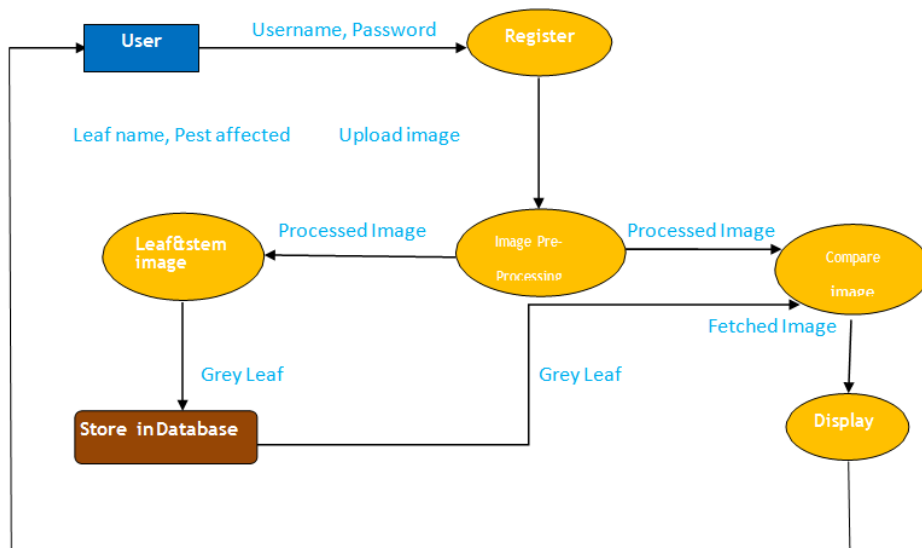


Figure 1 : DFD level-1 for leaf and stem recognized and pest control

A Use Case Diagram at its simplest is a representation of user’s interaction with the system that shows the relationship between the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of user as well.

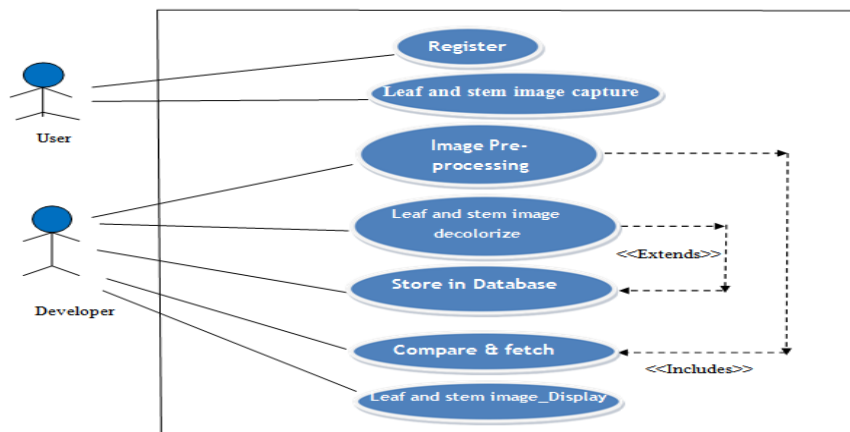


Figure 2:Use-case Diagram for leaf recognized and pest control.

V.CONCLUSION

Plants which are essential for the survival of each and every life form on the mother earth, whose importance is more than the imagination of any individual. So the responsibility of protection of these valuable assets gifted by the all mighty comes on each and every being. Therefore in order to fulfill the responsibility be stored on our shoulder by Mother Earth “The Automated System for Leaf and Stem Recognition and Pest Control” was born.

This system will help the Farmers, Layman, Biochemist around the globe to identify the Name of the Leaf and Stem, Pest Infected if any and give the control measures for the same by using Image Processing Algorithm. It’s a step Forward than any other existing system in terms of

providing more functionality as it not just identifies the Name of the Leaf and Stem but also identifies the name of the Pest along with providing control measures for the same.

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