International Journal of Management, IT & Engineering
Vol. 8 Issue 6, June 2018,
ISSN: 2249-0558 Impact Factor: 7.119
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A

THE MODEL OF MULTILINGUAL MULTIMEDIA BASED CROP DISEASE IDENTIFICATION

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Abstract

In agriculture sector it is found that plants suffer from many types of diseases. In this paper model of multimedia based Plant Disease Identification for Wheat crop is discussed. This model helps farmers and students who study plant pathology. The aim of research is to identify plant disease and provide multimedia based information like scientific name, Diagnostic Symptoms, Disease Cycle, and Disease Management, with the support of relevant images, and support of Multimedia audio in different languages.

Keywords:
Crop Disease;
Diagnostic Symptoms;
Multimedia,
Multilingual;
Disease Management;
Image Processing;

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1. Introduction

Agriculture plays a vital role in India's economy. Over 58 per cent of the rural households depend on agriculture as their principal means of livelihood.[13]

The Indian food industry is poised for huge growth, increasing its contribution to world food trade every year due to its immense potential for value addition, particularly within the food processing industry. The Indian food and grocery market is the world's sixth largest, with retail contributing 70 per cent of the sales.[13]

The development and application of better customized technologies specific to agro-climatic conditions, farm size and level of agricultural development is the real challenge ahead for the policy makers. [1]

Mainly the detection and identification of leaf diseases can be done by naked eye observation.[6]. Currently the detection of crop disease is mostly dependent on manual recognition, but it can be erringly diagnosed by farmers because they usually judge by the symptoms by their experiences[2].

The key role of Mobile technology is to facilitate flexible services to ensure availability of information which is easy to access. Automatic detection of plant disease using mobile technology is an essential research topic that will benefit the farmers. The need of the agriculture society is to increase and sustain the crop yield by protecting the agriculture product from diseases using appropriate measures at right time.

In Gujarat state, farmers are planting many crops like wheat, sugarcane, rice cotton, groundnut etc.. Varieties of diseases have been observed in various crops. To increase the crop yield it is necessary to identify these diseases at initial stage.
Thus there is a need of such a system which can assist the farmers to identify the disease at early stage and take appropriate precautions to cure the disease and hence reduce the yield loss.

The following***fig. 1 shows theTikka leaf spot in groundnut plant, and fig. 2 shows Yellow Rust in Wheat plant , and fig. 3 shows Angular leaf spot in Cotton plant, and Fig.4 shows Red Rot in Sugarcane plant***these diseases are observed in major crops of this region.

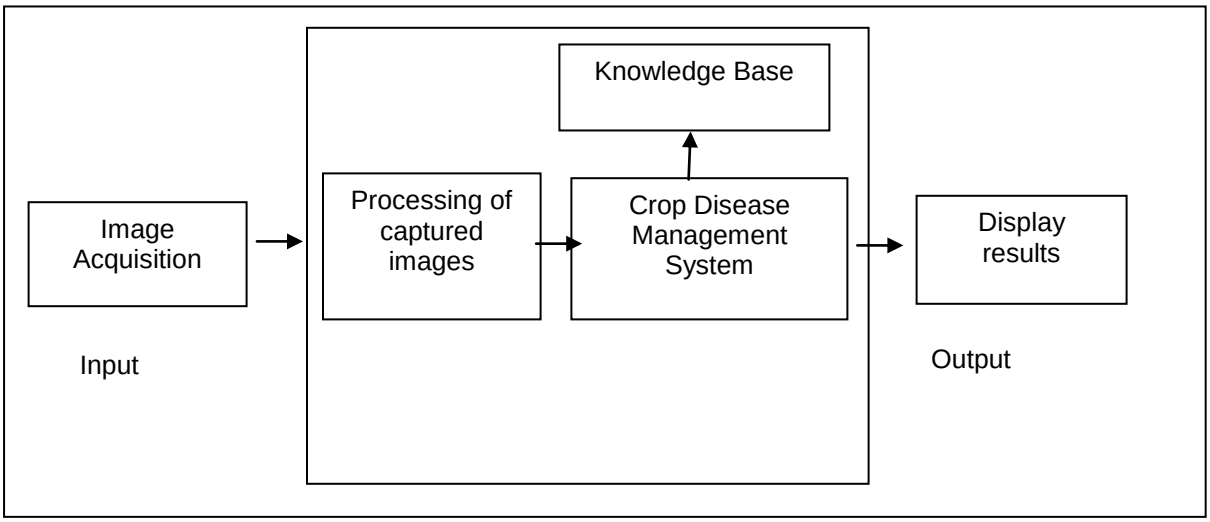
	
Fig 1: Tikka leaf spot in groundnut plant.	***Fig 2 : Yellow Rust in Wheat plant***
	
Fig 3 : Angular leaf spot in Cotton plant	***Fig 4 : Red Rot in Sugarcane plant***

There is a scope in this area to develop a model for crop disease identification using mobile technology with a multilingual and multimedia support.

2. Research Method

As a part of research the model of Multilingual, Multimedia based crop disease identification is designed.

The main objective of the model is to process images of the leaf for crop disease identification and using knowledge base to suggest remedies for the same in user's own language with support



of multimedia. The architecture of the model is shown in following Fig: 5

Fig 5 : The proposed model Multilingual Multimedia based Crop Disease Identification.

The model takes an image of a plant leaf as an input, process it, identifies the disease and display the information regarding that disease management in users own language.

The modules of the model are

1. Image Acquisition: It helps the user to select the crop first and then capture the leaf image using camera of the mobile phone/tablet.
2. Processing of image: The captured image in step 1 is then cropped first to reduce the processing time and then processed further to identify the disease the plant is suffering from.
3. Knowledge base: The knowledgebases stores information about color ranges of each crop diseases for different crops in RGB color model which helps to identify the disease by RGB extraction through image processing, diagnose the disease and displays the name of the disease.
4. Crop Disease Management: This module consists of the expert knowledge embedded into the system and provides this knowledge in textual as well as audio format to the user.
5. Display Result: This module provides all information in detail regarding scientific name of the disease, Diagnostic Symptoms, Disease cycle information and disease management information to the user in selected language with multimedia support.

3. Results and Analysis

The users, farmers and students can receive information like scientific name of the disease, Diagnostic Symptoms, Disease cycle information and disease management information for the selected crop, the user receives information with multimedia support in form of Text, Images and Audio formats in users selected language.

4. Conclusion

Using this proposed model the farmers can identify the disease and get information regarding disease & its management in his own language. Also the model supports multimedia formats like images and audio for disease identified and expert knowledge displayed as part of disease management. Hence the users, farmers & students gets the benefits of such a model which gives information on hand very quick. The model also serves as quick reference guide for the students who study plant pathology. Hence, the proposed model helps farmers to identify disease in crops & its management in his own language.

ACKNOWLEDGMENT

We wish to acknowledge contribution of those who have helped us in collection of photographs and Texual content related to plant diseasesfor generation of Knowledgebase :

I. Dr. Ajay Bhanvadia, Associate Professor (Agronomy) and Dr.RamjibhaiParmar, Associate Professor Plant Pathology Department, B A College of Agriculture, Anand Agriculture University, Anand.

II. Dr. RadhaKrishnan T. Director – ICAR and Dr. Ram Dutta, Pr. Scientist (Plant Pathology), Head, Crop Protection, & PI- Crop Protection (AICRP-G) ,ICAR-Directorate of Groundnut Research, Junagadh, Gujarat.

III.

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