Machine based Onion plant automated disease detection on based on IOT

Ms.Dipali Pawa,r Ms.Gauri Pawar, Ms.Mansi Thakur, Sonal Patil

1Student, Department of Information Technology G H Raisoni Institute of Business Management. M. S, India
2Student, Department of Information Technology, G.H.Raisoni Institute of Business mangement, M. s, india.
3Student, Department of Information Technology, G.H.Raisoni Institute of Business management, M. S, India.
4Department of Information Technology, G.H.Raisoni Institute of Business management, M. S, India.

ABSTRACT

The uploaded pictures captured by the mobile phones are processed in the remote server and presented to an expert group for their opinion. Computer vision techniques are used for detection of affected spots from the image and their classification. A simple color difference-based approach is followed for segmentation of the disease affected lesions. The system allows the expert to evaluate the analysis results and provide feedbacks to the famers through a notification to their mobile phones. The goal of this research is to develop an image recognition system that can recognize crop diseases.

Image processing starts with the digitized color image of disease leaf. A method of mathematics morphology is used to segment these images. Then texture, shape and color features of color image of disease spot on leaf were extracted, and a classification method of membership function was used to discriminate between the three types of diseases.

Keyword: *Image Processing, k-means Clustering, Pattern Recognition*

1. INTRODUCTION

Onion rightly called as “queen of kitchen” is one of the oldest known and an important vegetable crop grown in India. It belongs to the family Alliaceae. Several factors have been identified for the low productivity of onion in India. The most important factors responsible are the diseases like purple blotch, downy mildew, Stemphylium blight and now twister disease.

1.1. Background

Onion twister, a disease of rainy season onion, was first reported near Zaria, north Nigeria, in 1969 (Ebenebe, 1980). Kuruppu, (1999) reported the disease on shallot onions, Allium cepa var. ascalonicum, that caused yield losses of up to 20 to 30% in Kalpitiya Peninsula in the North Western Province of

Sri Lanka. In the 2005-06, this disease has seriously attacked red onion in a number of onion production centers of Indonesia (Wiyono, 2007). Survey carried out during kharif and rabi/summer 2011-12 and 2012-13 revealed typical symptoms of the disease twisting of leaf, neck with blight as well as dieback (anthracnose), scanty root system with galls and showing fungal growth was noticed.

2. LITERATURESURVEY

In the recent years, twister disease has become epidemic on onion crop in coastal tract and other onion growing districts in Karnataka. This disease vernacularly in Srilanka called as Disco, in Indonesia Seven whorl and in Karnataka as Haavu suruli roga/Tirupu roga. This disease-causing heavy yield loss, leads to shortage in supply to the market resulting in higher prices to a common man. Very less information is available on survey of twister disease of onion in Karnataka. Karwar, Ankola, Kumta, Honnavara and Bhatkal area farmers grow onion in paddy fallow area as

In recent years, twister disease of onion has become epidemic in coastal tract and other onion growing districts of Karnataka which caused heavy loss.Artificial inoculations of onion seedlings with Colletotrichum gloeosporioides, Fusarium oxysporum, Meloidogyne spp. alone and in combinations expressed twister disease symptoms. Metabolomic changes like increased total sugars and growth hormones (IAA and GA) were seen. Test for pathogenicity demonstrated that twister disease complex whereby the based on all these studies we have proposed a model disease cycle for this twister disease complex.

Rabi/summer crop with local Kumta variety which is used as table purpose because of its sweet nature. This onion cultivating tract is facing severe twister disease since 2-3 years showing severity up to 40-60 per cent. In Chitradurga, Chikamagaluru and other onion cultivated area also in last two years this disease caused heavy loss to farmers.

3. SYSTEMARCHITECURE

The proposed system consists of processes like preprocessing, segmentation and analysis, feature extraction and classification of images.

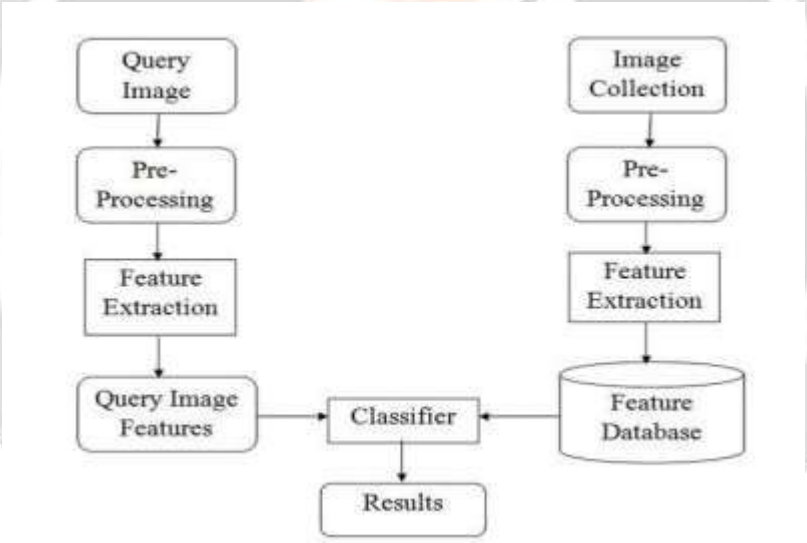

Fig- 1: System Architecture

1.1 ImageAcquisition

The images of the plant onion are gathering from CICR Nagpur. This image is in RGB form. Color transformation structure for the RGB leaf image is created, and then, a device-in dependent color space transformation for the color transformation structure is applied.

1.2 ImagePre-processing

To remove noise in image or other object removal, different pre-processing techniques is consider. Image clipping i.e. cropping of leaf image to get the interested image region. Image smoothing is done using the smoothing filter. Image enhancement is carried out for increasing the contrast.

1.3 ImageSegmentation

Segmentation means partitioning of image into various parts of same features or having some similarity. The segmentation can be done using various methods like Otsu' method, k-means clustering, converting RGB image into HIS model.

1.4 FeatureExtraction

Feature extraction plays an important role for identification of an object. In many application of imageprocessing feature extraction is used. Color, texture, morphology, edges etc. is the feature which can be used in plant disease detection.

4. CONCLUSION

IoT has enables the agriculture crop monitoring easy and efficient to enhance the productivity of the crop and hence profits for the farmer. Wireless sensor network and sensors of different types are used to collect the information of crop conditions and environmental changes and these information is transmitted through network to the farmer/devices that initiates corrective actions. Farmers are connected and aware of the conditions of the agricultural field at anytime and anywhere in the world.

5. REFERENCES

[1] Dheeb Al Bashish, Malik Braik, Sulieman Bani- Ahmad, "Detection and classification of leaf diseases using k-means based segmentation and neural network based classification", Information Technology Journal, ISSN 18125638, pp.267275,2011.

[2] Rampf T., A. K. Mahlein, U. Steiner, E. C. Oerke,H.W.Dehne,L. Plumer, "Early detection and classification of plant diseases with Support Vector Machine based on Hyperspectral reflectance", Computers and Electronics in Agriculture, Volume 74, Issue 1, ISSN 01681699, pp. 91-99,October2010.

[3] Hillnhuetter C., A. K. Mahlein, "Early detection and localization of sugar beet diseases: new approaches", Gesunde Pfianzen 60 (4), pp. 143-149,2008.

[4] PatilTushar,PalambeShubham,"COTTONLEAFDISEASEIDENTIFICATIONUSINGPATTERN RECOGNITION TECHNIQUES", Multidisciplinary journal of research in engineering andtechnology.

[5] Camargo A., Smith J. S., "An image processing based algorithm to automatically identify plant disease visual symptoms", Bio systems Engineering, Vol. 102, Issue 1, pp. 921,2008.