IOT BASED IDENTIFICATION OF DISEASE AFFECTED FOR RICE LEAVES USING IMAGE PROCESSIG

R.Triveni[1], J.Ashalatha[2], B.Bavitha[3], V.AParna[4], K.Navaneetha[5]
[1]Associate Professor, Dept of ECE, Aditya college of Engineering, Madanapalle

Abstract
Most of the Indian's GDP comes from the agriculture. In that agriculture paddy is the main crop because rice is important to live the people.In the paddy field mainly the disease occur in the leafs due to the insufficient nutrients.Due to insufficient of nutrients whole crop is damaged.to identify the disease in two way one is using sensors, two is using image processing.
In this paper , we can use the MATLAB for gives the disease occur in the leaf.we can take two nutrients that are nitrogen and magnesium.we are observe the four diseases are sheath blight,rice blast,brown spot,bacterial blight. In that we are using GUI to produce the output in the pc.Then the output is given to nodemcu to send the classification of disease and effected region % to the mobile
Keywords:WaterManagement;Agriculture;Irrigation;ImageProcessing;NutrientDetection;Automation;NodeMCU;Mobile.

I. INTRODUCTION

India is blessed with a large chunk of cultivable land, but the output produced does not do justice to the country's potential. The World Bank data reveals that around 60% of the land is under cultivation. The use of technology in agriculture is on the rice, but a large portion of agriculture, especially irrigation remains a manual exercise. It is known that the output of a plant depends on various factors. The availability of optimum quantity of water is highly imperative in this regard. Interaction with farmers and agricultural enthusiasts revealed that the existing automated irrigation facilities are expensive and in accurate to some extent. Then send the data to the mobile by using NodeMCU.
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II. COMPONENTS

The components used this project is given below

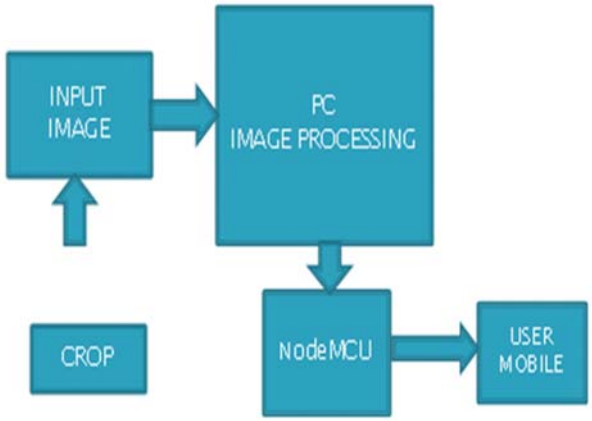

FIGURE 1:BLOCK DIAGRAM

• Node MCU:
It is an open source of IOT platform.It includes the firmware with the microcontroller of ESP8266.It consists 1 analog and 8 digital pins.It introduced the Espressif company.It is used as a wifi module to send the information to the user.

FIGURE 2:NodeMCU

III. PROPOSED MODEL

The input image is captured by using mobile camera and save it in one folder. The image is giventotheMATLAB.

Figure 3:INPUT IMAGE

By using GUI to create the blocks for te input image enhanced image and segmented image . after that the classification of the result,effected region % and accuracy.

The parameters calculated is mean, variance, Smoothness,Entropy,S.D,RMS,Kurtosis,Skewness,IDM,Contrast,Correlation,Energy.

The segmentation is done by using the K-means clustering algorithm in that algorithm we can separate the image into k clusters and select one centroid to cluster the image. In this paper we can take three clusters. Then we select the ROI.in hat we select ROI is 2 for the better result. If we select 1 it is not segmented properly.In second cluster only it segmented properly. In third cluster the total leaf color is changed as shown in figure 4.

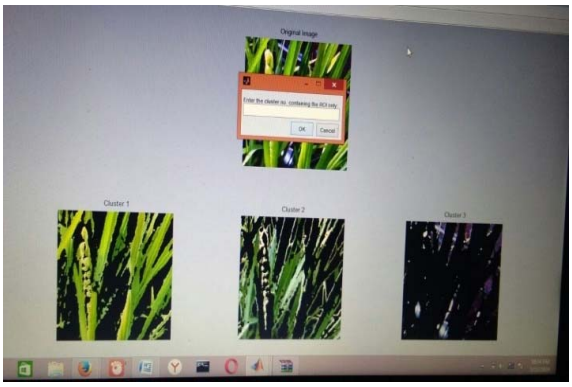

FIGURE 4: Clustering images and Select ROI

After select the ROI then it is used to calculated the classification of the result.in that ttime it prouce both classification of the resut and the calculated parameters as shown in figure5

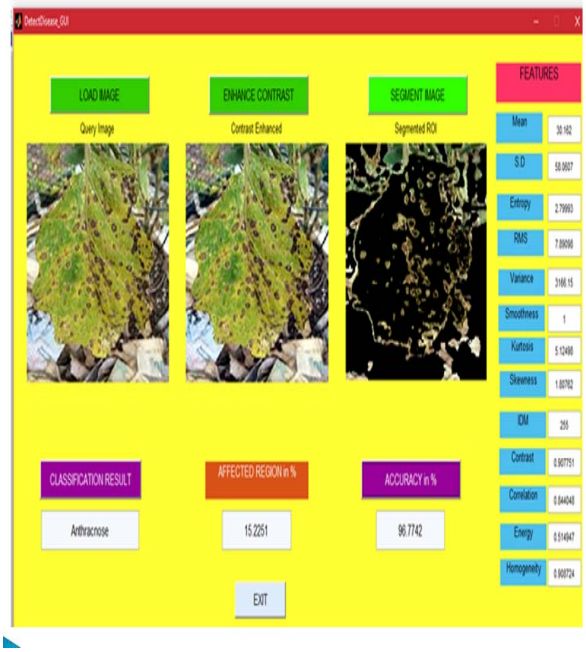

FIGURE 5:Disease Display

By using GUI the user can identify the result very easy. After that result is send mobile as sms of data classification result and effected region % by using the nodeMCU to use blynk and arduino app in the mobile.

IV. RESULTS

The captured image from the mobile data is compare with the healthy leaf then we get the affected area by changing the color of the image. Based on change of the color on the leaf and bateria presented on leaf is observed.in this paper we take the four disease'Bacterial Blight','Brown Spot','Rice Blast','Sheath Blight'.

The disease is classiffied based on the paremeters. the parameters are chaged based on the disease.after classification it calculate the affected region in %.then calculate the accuracy compare with the 500 iterations.

Then we send two parameters that are the classiffication of result and effected region of % to the mobile by using arduino software and blynk app.the final sms in the mobile is shown in figure

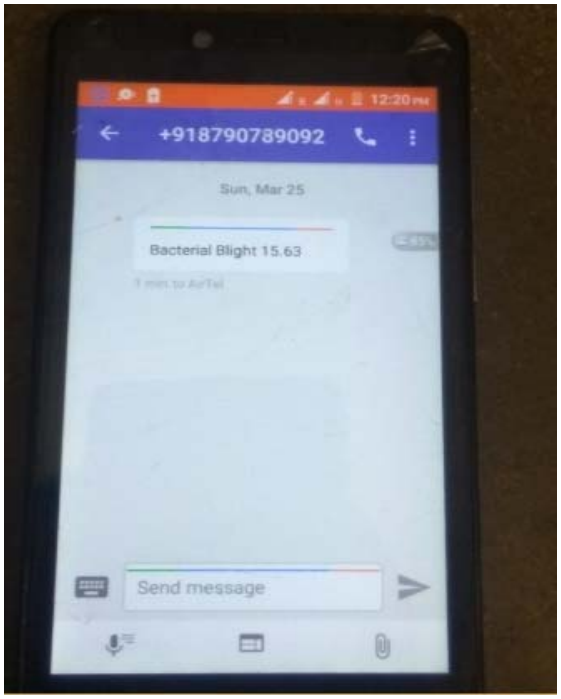

FIGURE 8:OUTPUT SMS

V. CONCLUSION

The development phase of the prototype IOT based intelligentIrrigation system with Nutrient and disease analysisis explained in this paper.With the current setup, irrigationbecomes smarter and flexible to do the agriculture who are far away from the field and reduce the usage of manual labours.

In future we can use this procedure because now a days thecamera is set as a movable camera and the input to the image processing is given automatically then it is more use full to the agriculture field. By changing the nutrient values and parameter it is also used for all the leafs.

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