Retraction

Retraction: Disease Detection In Cotton Leaf Spot Using Image Processing (J. Phys.: Conf. Ser. 1916 012224)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

IOP Publishing respectfully requests that readers consider all work within this volume potentially unreliable, as the volume has not been through a credible peer review process.

IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1

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Disease Detection In Cotton Leaf Spot Using Image Processing

J. Karthika, K. Mathan kumar, M. Santhose, T. Sharan, Sri haribaran. S

1Professor, Department of EEE, Sri Krishna College of Engineering and Technology, Coimbatore, India
2Student, Department of EEE, Sri Krishna College of Engineering and Technology, Coimbatore, India
karthika@skcet.ac.in

Abstract. Agriculture isn’t solely a method of food for ever-growing populations, however over that. The infected plants cause ill-health in humans and additionally decrease gradually the economy of the country. Therefore, distinguishing plant diseases at an early stage becomes necessary method to avoid losses in an agricultural production system. Largely the symptoms of the malady are visible on leaves. Manually observance of each plant during an immense in acre is hard. Hence, image process techniques area unit accustomed to observe and determine the diseases in the plant that may be a higher  various to observe diseases quickly and correctly.

Keywords: Image process, Plant-leaf detection, Multi-SVM Classification, MATLAB.

1. INTRODUCTION
Plants square measure the key supply of elements and so scale back the difficulty of world warming. Generally, the plant is plagued by diseases, pests, unfavorable conditions, and nutrition deficiency. The classification of plant diseases squares measures infectious agent plant, and microorganism diseases [1]. The common observation to discover disease is thru clean eye observation by consultants. But, to safeguard the plant from obtaining infected, a quick and early detector is needed. to observe the massive fields of crops, mechanically police work the symptoms of plant diseases becomes vital.thus we’d like automatic, fast, correct, and fewer costly methodology to discover plant diseases by analyzing leaf pictures. The system is interfaced with a digital/web camera which can alter the farmersto require pictures of plant leaves. victimization image process algorithms, the captured picturesquare measure analyzed to discover the symptoms of illness and to live the disease sort. The knowledge relating to the kind of the illness is going to be notified to the farmer through the GSM interface. supported the infected illness, the relay activates the pump put in within the device to unleash drugs to the infected plant [2].

2. LITERATURE REVIEW
As the yields are confronting several difficulties because of the effect of illness on them, it is vital to identify the sickness in the beginning phases to stay away from further misfortune. This illness recognition is essentially done in three different ways: Visual Analysis, Image Processing, and Optical sensors. By utilizing these three techniques, the framework can be created to distinguish the illness prior. In any case, as we go through these techniques, we go to certain benefits and difficulties [3]. Infection identification by Visual investigation doesn't give the exact yield while in the event of an optical sensor, the framework turns out to be more mind-boggling and exorbitant.
Thus, picture of handling is the best way to construct a straightforward, powerful and precise infection identification framework. While working with picture handling, the information base assortment is the most difficult errand. For data set assortment, it is critical to gather the fundamental information about the harvest and its sicknesses [4]. A profound report ought to be done on the kinds of infection, their side effects on crops, and the examples of illness. By noticing the examples of sickness, the framework will get planned. The essentially happening sicknesses on the cotton crop are Bacterial illness, Fungal infection, Viral sickness, and illnesses because of bugs. The paper gives the itemizing of these illnesses. After the determination of the picture preparing innovation and sorts of infection, the proposed framework is planned stepwise. By and large, the picture handling method depends on 5 significant advances for example Picture Acquisition, Image pre-processing, Image segmentation, feature extraction, and classification. During picture pre-handling, it is vital to change the first picture over to other tone changes, for example, grayscale, double. The appropriate choice of shading change is vital for the post preparation. All the tone change methods are clarified in this paper [5]. Post-preparing for the most part comprises two areas, include extraction and characterization. Shading, shape, and surface are fundamental highlights in the picture preparing for additional characterization. Characterization is the last advance to recognize the illness. Support vector machine (SVM) and classification are the characterization strategies that can be utilized for picture grouping. The near investigation of location strategies is significant. Figure 1 shows the Proposed system [6-9]

3. PROPOSED SYSTEM

3.1. Image Acquisition: The image acquisition is the opening move of the image process. An assortment of the image that is to be processed is termed image acquisition. The image of the ginger plant leaf is captured through the digital/web camera put in at the projected system. The information of the captured image is held on for more MATLAB operations.

3.2. Image Pre-processing: The main objective of image pre-processing is to create the desired options and suppress some unwanted distortions within the non-inheritable image for more processes. Here size and form of the image are modified, noise gift within the image is removed and a few different morphological variations are processed to reinforce the standard of the image. within the projected system, MATLAB code is employed to size the image, enhance the distinction, and convert the RGB image into greyscale to proceed into segmentation.

3.3. Image Segmentation: The image segmentation, the digital images are captured into a variety of segments for straightforward analysis. The objects and their edges are placed in image segmentation. The formula that won't separate the pre-processed image into segments is the k-means cluster formula. The cluster happens in a very method that a minimum of one among the clusters ought to contain giant space of unhealthy half within the leaf image. a set variety of k-clusters and k-centroids ar was
chosen for classification. The classification is finished by maintaining a minimum distance between information points and therefore the corresponding cluster. The RGB image is reborn into greyscale or colour house. Colour house consists of brightness level layer, hue layer. The layers, possess all of the color data, and therefore the colors are classified in house victimization k-means cluster. every element within the image is tagged by k-means and it additionally generates segmental pictures containing unhealthy half. during this system, the image segmentation offers 3 clusters of non-inheritable image victimization k-means cluster formula to induce a higher classification of sickness.

3.4. Feature Extraction: The leaf options like morphology, texture, and color that are needed to classify diseases are extracted. Feature extraction describes an oversized set of information accurately. gray level matrix formula is employed for research texture options. These options are calculated from an organization of information points associated with others at the given position, Here the quantity of grey levels is very important. The statics are classified into 1st second and eventually higher variety of intensity points.

3.5. Training & Classification: The minimum distance maintained by the k-means formula between the information points and the cluster is maximized victimization SVM by separating the hyperplane to the closest example. In basic SVM binary classification is supported whereas, in extension multiclass classification is feasible. further parameters and options are extra to handle the separation of various categories. to induce M variety of classifiers, a group of binary classifiers is made as f1, f2, . . . etc. FM and every categorized is trained to separate one class from the opposite. The g(x) perform returns the signed real price that's understood as the distance of separation from hyperplane to purpose x. the purpose x is assigned to the category that has the largest confidence price for this time. Both k-means cluster and SVM classification formulas are employed to classify and acknowledge the sickness from the non-inheritable image. The sickness name known within the image continuing technique is to hold on within the information that is later sent to the farmer/user.

4. COTTON DISEASES
4.1. Bacteria Blight and its symptom

The bacteria can affect the cotton plant and its leaf spots can appeared to be red to brown in colors with an angular shape as shown in Figure 2.

4.2. Black arm spot and its symptom

Black arm leaf spot is a leaf disease caused by fungi and the leaves are brown with purple margins as shown in Figure 3.

4.3. leaf spot and its symptoms

The symptoms of leaf spot disease can be identified on leaf spots on foliage. Spots are brownish but
may be tan or black as shown in Figure 4.

![Figure 4. Leaf spot](image)

5. METHODOLOGY
Cotton leaf diseases detection and classification using image processing consist of the following steps:

- Query Image
- Image Processing
- Segmentation
- Feature Extraction
- Training and Classification

6. BLOCK DIAGRAM

![Figure 5. Block diagram](image)

6.1. ARDUINO

In this project we are using arduino uno as an controller for the rover. Because the arduino will provide the movement of the rover. The movement of rover has forward, reverse, right and left control has been coded in C language and then it will be uploaded using the arduino IDE in the IDE we can code what we need give as an input. The ultimate aim of the arduino is to control the rover as shown in Figure 6.
6.2. Rover

- Rover consists of a motor driver, ultrasonic sensors, Geared motors, servo motor, and pi camera. The motor driver wont to control the geared motors with our coding. The ultrasonic sensor is used to sense the distance of the object and it is used for obstacles avoiding function.
- The servo motor is employed to rotate the pi camera to capture the both right and left sides of the plants. After capturing the images, the background python coding can compare the captured image with the database image. If both aren’t equivalent for his or her manner it sends the image and revered problem to the farmer mobile.

7. OUTPUT

7.1. Cluster Image

![Figure 7. Cluster image output](image1)

![Figure 8. Cluster image output](image2)
7.2. Gray scale Image

![Image](image_url)

Figure 9. Gray scale image

Figures 7-9 shows the output.

8. RESULT

The two main sections required for classification are training and Testing. The dataset consists of cotton leaf images with infected leaves and normal leaves are given to the classifier for testing random image from the data set is given. Classification of diseases are Bacteria blight, black arm spot, leaf spot is identified by Multi-class SVM. This is for cotton disease can be identified by multi SVM, classifies disease Black spot arm. If both are not the same for their manner it sends the image and respected problem to the farmer.

9. APPLICATIONS

- Image-based analysis
- Text-based application
- Computational biology system
- Security-based application

10. CONCLUSION

In this paper, the disease analysis is feasible and the cotton leaf diseases detection, the analysis of the varied diseases present on the cotton leave are often early detected in the early stage before it will damage the whole plant. Here k-means clustering will be applied to feature extraction and a support vector machine is used to find the diseases in cotton leaves.

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