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Image Processing Based on Leaf Diseases

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Abstract - **Detecting the visually salient regions in image is a fundamental problem. Salient object regions are soft decomposition of foreground and background image elements. To detect salient regions in an image in terms of saliency map. To create saliency map by using linear combination of colors in high dimensional color space. To improve the performance of saliency estimation, utilize the relative location and color contrast between super pixels. To resolve the salience estimation from trimap by using learning-based algorithm. To create three bench mark datasets, it is efficient in comparison with previous state of art saliency estimation methods. The identification of diseases on plant is an important key to prevent heavy loss of yield and the quantity of agricultural products. The symptoms can be seen on the parts of the plants such as leaf, stems, lesions and fruits. The leaf show the symptoms by changing color, showing the spots on it. This identification of the disease is done by manual observation and pathogen detection which can consume more time and may prove costly. The aim of the project is to identify and classify the disease accurately from the leaf images. The steps required in the process are Preprocessing, Training and Identification. For identification of disease features of leaf such as major axis, minor axis etc. Are extracted from leaf and given to classifier for classification.**

Index terms – **Leaf Diseases, Preprocessing, Pixels, Training, Identification, Classification.**

I. INTRODUCTION

The occurrence of the disease on the plant may result in significant loss in both quality as well as the quantity of agricultural product. This can produce the negative impact on the countries whose economies are primarily dependent on the agriculture. Hence the detection of the disease in the earlier stages is very important to avoid the loss in terms of quality, quantity and finance. Usually, the methods that are adopted for monitoring and management of plant leaf disease are manual.

One such major approach is naked eye observation. But the requirement of this method is continuous monitoring of the field by a person having superior knowledge about the plants and its corresponding diseases. Moreover, appointing such a person would may prove costly. Another approach is seeking advice from the expert which may add the cost. Also, the expert must be available in time otherwise it may results in loss.

Diagnosis of disease on plant can also be done in laboratory testing. But this method requires satisfactory laboratory conditions along with professional knowledge. The pathogen detection methods can provide more accurate results. As the tests are carried out of field the cost may be high and could be time consuming.

This paper suggests a system which can provide more accurate results related to the identification and classification of disease. It tries to replace the need of the experts to certain extent. Here, the captured image is first preprocessed to resize it and then converted to HSI color space format by using segmentation. The features such as major axis, minor axis, eccentricity are extracted from the image. In the last step, these features are given to the classifier to classify the disease occurred on the leaf.

II. RELATED WORK

In existing system, the image processing based on analyze the leaf rot disease in not efficient. Leaf shape description is the key problem in leaf identification. Up to now, many shape

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features have been extracted to describe the leaf shape. But there is no proper application to classify the leaf after capturing its image and distinguishing its attributes yet. We propose a different approach that extends method and automatically initialize it using our saliency detection methods. Experiments on our 10, 000 images dataset demonstrate the significant advantages of our method compared to other state-of-the-art methods.

DRAWBACKS:

- Less Color code density.
- Artifacts may appear.
- Segmentation accuracy not proper
- Edges not clear.
- Inaccurate results in extraction high density images.

PROPOSED SYSTEM:

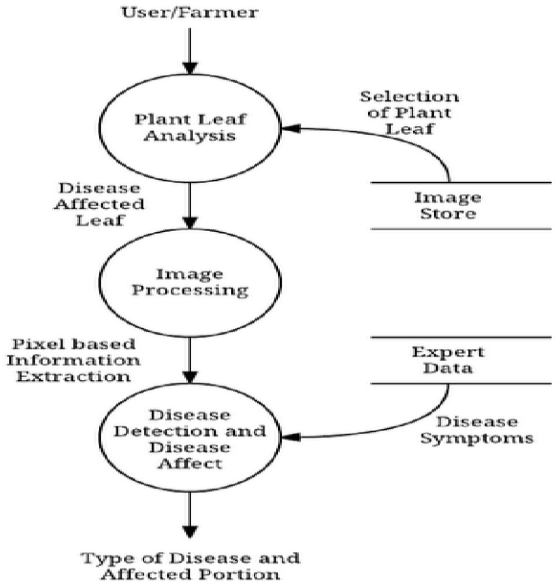
In the proposed system, the application facilitates user to provide the image of the leaf as the input. The system applies algorithm to derive vital parameters related to the properties of the leaf. It then compares these parameters with the ones stored against a leaf entry. The segmentation is based on two principles-discontinuity and similarity. Discontinuity extracts the regions having different properties like intensity, colour, texture etc. Similarity groups the image pixels into groups with some predefined criteria. Based on pixel similarity with the neighbouring pixel, the algorithm used is region based. In leaf disease identification, segmentation is used to identify the diseased area.

FEATURES:

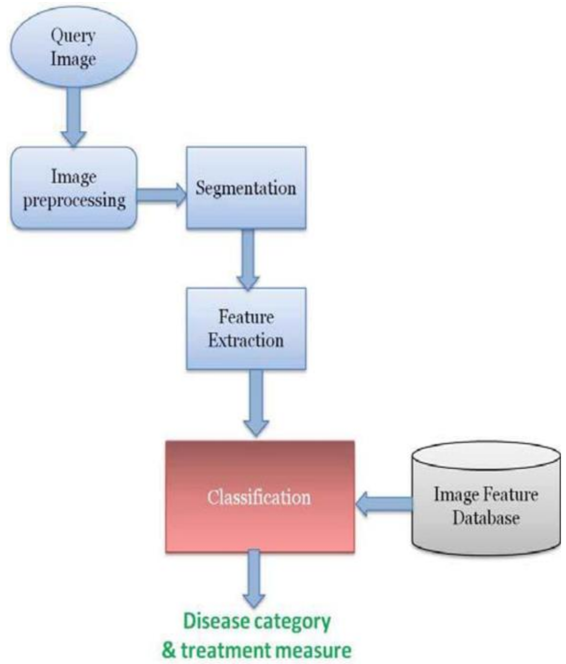
- Necessary input is fed to the system in the form of images of the leaf.
- The system applies necessary steps to extract values for vital parameters from the image.
- This image along with these parameters with their values and other essential information is stored in the database.

III. PROPOSED DIAGRAM

Data flow diagram:



Process diagram:



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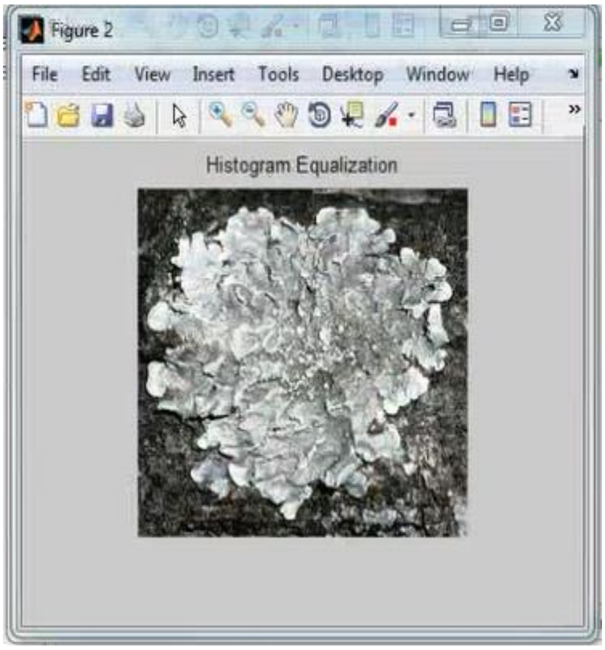
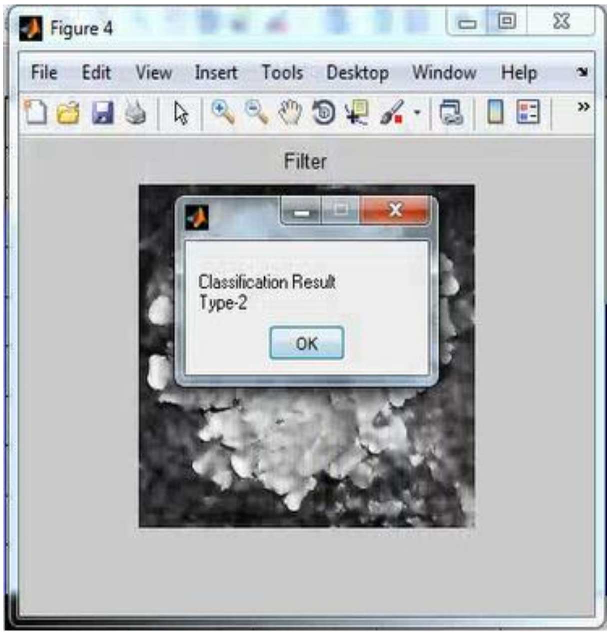
IV. OUTPUT SCREENS

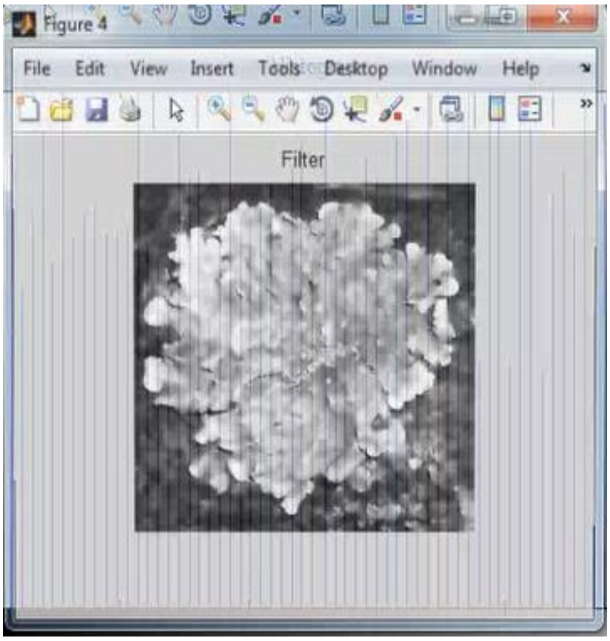
Histogram Equalization



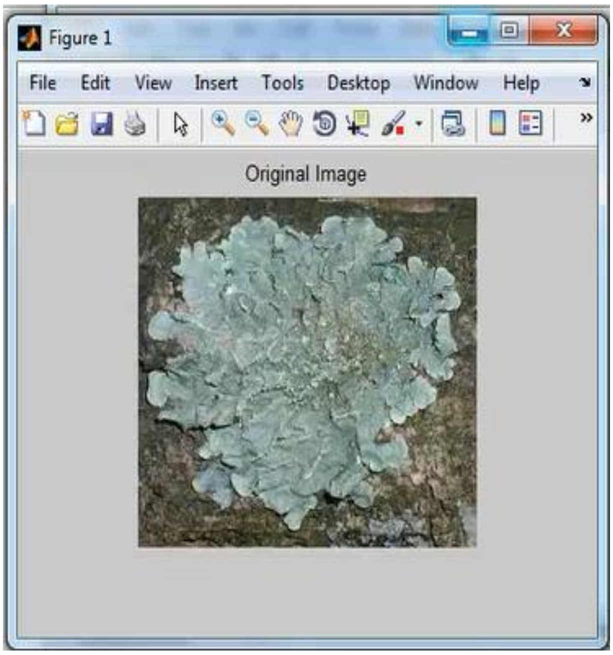
Classification Result



Filter



Original Image



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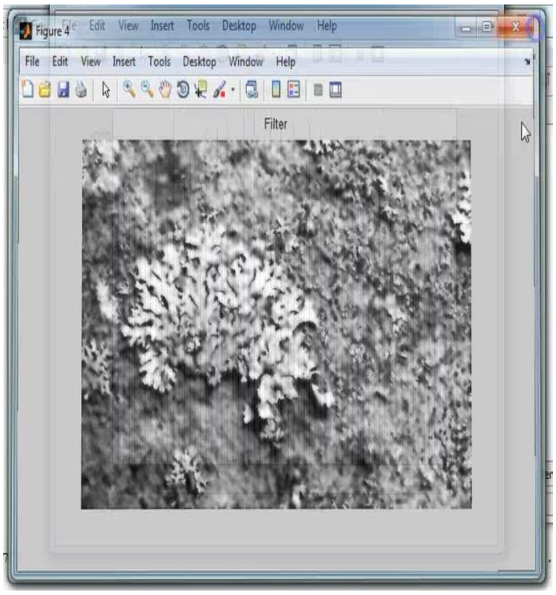
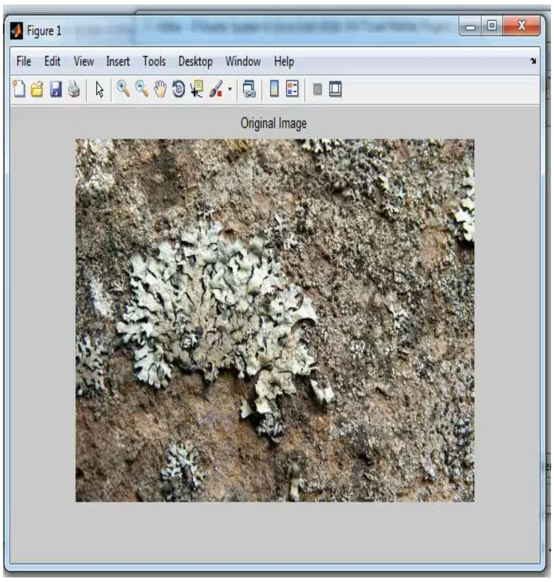
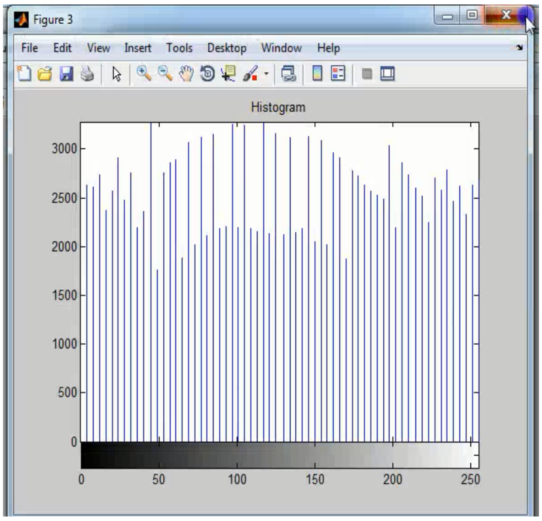


Original Image



Histogram



V. CONCLUSION

This research work is going to be useful for farmers, horticulturists and to trekkers by providing a useful plant leaf identification system and will eventually identify their diseases. The use of automated monitoring and management systems are gaining increasing demand with the technological advancement. In agricultural field loss of yield mainly occurs due to widespread of disease. Mostly the detection and identification of the disease is noticed when the disease advances to severe stage. Therefore, causing the loss in terms of yield, time and money. The proposed system is capable of detecting the disease at the earlier stage as soon as it occurs on the leaf. Hence saving the loss and reducing the dependency on the expert to a certain extent is possible. It can provide the help for a person having less knowledge about the disease. Depending on these goals, we have to extract the features corresponding to the disease.

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