Plant Leaf Disease Detection Using Image Processing

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Abstract - *It is difficult task for producing agricultural products, various micro-organisms, pests and bacterial diseases attack on plants. These diseases can occur through the leaves, steams or fruit inspection. This paper covers technique of image processing for early detection of plant disease through feature extraction of leaf and preprocessing of image from RGB (YCbCr) to different color space conversion, image enhancement; segment the region of interest and minimum distance classifier is used. The detection of plant leaf disease is very difficult role. Many of the plant diseases are caused by bacteria, fungi, and viruses. An automatic detection of plant disease is a necessary topic. Computer vision techniques are used to discover the affected spots from the image through an image processing capable of recognizing the plant area is detailed in this paper. The achieved accuracy of the overall system is 90.96%, in line with the experimental results. Matlab software is used to detect plant leaf disease.*

*Key Words***: Digital pictures, Matlab, Image-Processing, Segmentation, Plant-Leaf-Diseases, agricultural-production**.

1. INTRODUCTION

Agriculture has become much a lot of than merely a way to nurse ever growing populaces. Plants have become a vital source of energy, and are a basic piece in the puzzle to resolve the matter of world warming [1]. Diseases in plants increases the value of agricultural production and a total economic disaster of producers if not cured appropriately at early stages and [3]. This can impact negative on the country whose economic income is solely depends on agricultural produces. Procedures needs to monitor their plants regularly and observe any primary symptoms so as to prevent the unfold of a plant sickness, with low cost and save the major part of the production. In 2015 Ghana lose 30% of its annual crop yields to pests and bug infestation, the situation, was attributed to restricted access to plant health services as a result of inadequate extension officers [4]. This approach becomes tiresome when farm lands becomes large. But the demand of this methodology is continuous observation of the sector by an individual having superior data regarding the the plants and its corresponding diseases. Moreover, appointing such a person would may prove pricey [5]. An alternative methodology is seeking advice from the professional by farmers when signs of diseases crop up, and the expert advice should come in time otherwise it could ends up in loss. Disease on plant is tested in the laboratory. But this technique needs satisfactory laboratory conditions on with skilled data. The laboratory detection ways will offer lot of correct results. As the tests are dole out of field the value could also be high and will be time intense [5]. An artificial intelligence and Machine vision can offer a best and alternative way for plant monitoring and early detection of disease, which can be control by professional from a distance and offer their professional advice at a low cost [2]. The self-recognition of the sickness is based mostly on the identification of the symptoms of disease. So that data concerning the sickness incidence may be quickly and accurately provided to the farmers, experts and researchers, this in turn reduces the watching of enormous field by soul [5].

1.1 Need of Project

From the start of humans are directly work in farms but from the start of 21st century many industries worked to reduce this human labor by making robots and machines. Now-a- days many industries are trying to reduce this human labor by making robots and machines. Now more and more chemicals applied to plants without knowing the requirement of plants. Hence productivity of agriculture decreases.
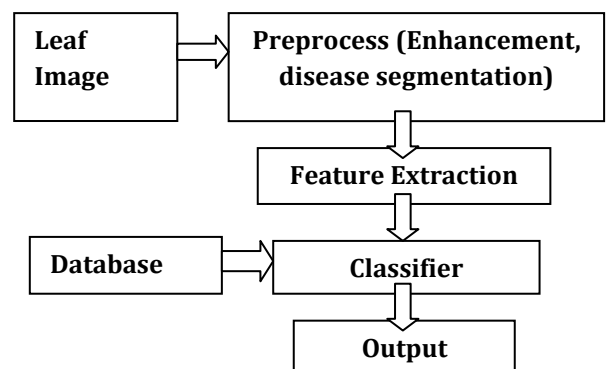
2. Methodology

Block Diagram

Fig2.1: Block Diagram of methodology

Leaf Image:

   Plant leaf disease is one of the crucial causes that reduces quantity and degrades quality of the agricultural products. Now chemicals are applied to the plants periodically without knowing the requirement of plants.

Pre-process:

   Image pre-processing is the lowest level of abstraction whose aim is to improve the image data that suppress

undesired distortions as well as enhances some image features which is important for further processing and analysis task. It includes color space conversion and image enhancement.

Image Enhancement:

Direct observation of color images is often strikingly different as human visual perception computes the conscious representation. A simple approach in the block (DCT) Discrete Cosine Transform domain for enhancing color images by scaling the transform coefficients i.e. color enhancement. We use median filter.

Image Segmentation:

Image segmentation is process used to simplify the representation of an image into some-thing that is more meaningful object of interest from background and easier to analyze. Segmentation is also done through feature based clustering.

Feature Extraction: In segmentation the area of interest is detected i.e. diseased part extracted. The aim of this process is to find and extract features that can be used to determine the meaning of a given sample. Image features usually include color, shape and texture features in image processing. Texture is one of most popular features and important for image classification and retrieval.

Classifier:

In database minimum five types of disease of data are stored classifier compares these stored data with collected data ,and detect the diseases .We are using Minimum Distance classifier, for classifying unknown image data to classes which minimize the distance between image data and the class in multi-feature space. Following distances are often used in this procedure are Euclidian Distance, normalized Euclidian distance.
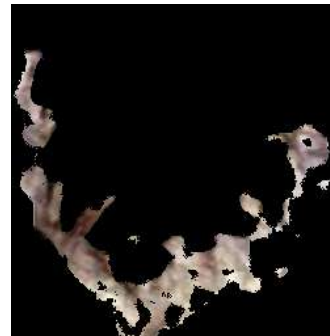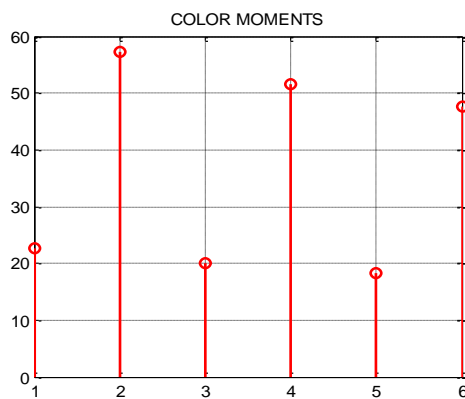
3. Result

ENHANCED IMAGE

YCbCr IMAGE

ROI IMAGE
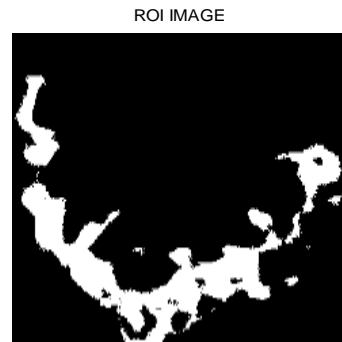
INPUT IMAGE

DISEASE PART

4. CONCLUSION

The exact detection and classification of the plant disease is very important for the successful cultivation of crop and this can be done using image processing. This paper discussed the image processing technique for diseased plant leaf detection. Extraction of feature of an infected leaf and the classification of plant diseases can accurately identify and classify various plant diseases and provide the farmer an idea about extend the damage for suitable treatment using image processing techniques. The overall achieved accuracy of the proposed system is higher than 90.96% in line with the experimental results compared with [2].

5. FUTURE SCOPE

The project can be modifying by using web camera. The project can be modifying by using Audio clip from GUI which help farmer to decide the specific quantity for pesticides applications to reduce the cost and environmental pollution and increases the productivity. The system can work extensively by predicting the type of plant, the kind of disease and recommend the specific pesticides or fungicides to be used, hence recommended for future work.

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DISEASE SEVERITYMEASUREMENT USING IMAGEPROCESSING".

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BIOGRAPHIES

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