CLASSIFICATION OF ORCHID PLANT DISEASE USING IMAGE PROCESSING TECHNIQUES

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ABSTRACT

This paper will be a great helpful for the orchid's lovers and commercial growers. And also will be able to give knowledge about the orchid species and diseases. Different types of orchids and orchid diseases are really important for the growth of orchids. Growing a tree with no knowledge of orchids may not result in the growth of orchids. It may have a major impact on commercial orchids. In order to identify image processing techniques, it is necessary to improve the input orchid image. The input to this method is an image of an orchid leaf. The input image is divided into sections and extracted features from enhanced image. After that the system can classify orchid kinds and diseases. And this system can identify the orchid specie name and viruses by extracting the features of orchid plant leaf in the input image using image processing techniques.

Keywords—Classification, orchid disease, image processing, black rot, brown spot, petal blight and analysis.

INTRODUCTION

There are numerous types of rot viruses that you should appearance for when caring for an orchid plant. Common viruses affect not only the plants but also the flowers and roots. If your plant is left untreated, your plant could face death or worsen if it spreads to your home or office (other than the death of many plants).

The best care is always protection. Therefore, you are regularly practicing your orchard and giving it the best care it needs to grow and be healthy. Learn more about this type of rot, How to find out There are two types of leaf rot. They are symptoms and control.

Symptoms- The common orphan disease is leaf rot. This will spread especially fast, especially if there is no immediate response to the disease. Leaf rot is frequently affected by a fungus that is classified as Cercospora or Colletotrichum (note the watering and watering instructions). Bacteria usually turn a little leafy. Sometimes known as a yellow dot on the leaves. If left untreated, infected spots can range, grow larger, and form irregular borders. The spots change from yellow to brown or black. Infected areas become soft and moldy.

Controls: Cut off infected leaves until a healthy, sterile device or knife is used to clear healthy tissue. Treat the good part of the leaves with a disinfectant. Keep the orphanage in a place where it will get fresh air. This is to keep the bacterial surface dry well. You need to make sure the answer is quickly dried and sealed in the injured area.

LITERATURE REVIEW

Five types of plant diseases, such as early-season burns; Ashen Mushrooms Late tempering; Cottony fungi and small white matter were tested by image correction method. At Startup, this image is obtained and the K-Means Clustering method is used for segmentation. The red extracts were then used as CCM (Color Co-Occidence Method) for texture analysis. Finally, the paper proposes a reproductive algorithm for classification of plant diseases. The results of this morphological change show an accurate detection of plant diseases and a high accuracy of 93%.[1]

The early leaf morphology (Cercospora) and the late leaf spot (Cercosporidium personatum) were transformed into HSV colors in RGB. Color-coded green pixels in the image reduce the speed of change. Color and texture extraction analysis uses the Co-occurrence matrix technique. There are two methods to examine

texture images in texture extraction. The first is a systematic approach and the second is a statistical approach. The author used the statistical approach in this paper. Adoption methods are used for the identification and recognition of peanut diseases. There are two types of late propaganda. 1) Propagation and 2) Weight update. The authors categorized four different diseases into 97% of efficacy. [2]

The most common bacterial infections in plants are bacteria. Early detection of it contributes to plant growth. Image processing begins with image acquisition. This includes the basic steps of capturing images and converting them to a computer-readable format. Then the clustering is done to separate the foreground and background with the help of the K-means clustering method. Clustering is based on strong mapping. Leaf highlighters are made by subtracting leaf shapes from the images. Compared to Fuzzy Logic, the K-means clustering algorithm is simple and efficient in identifying the infected region with the requirement of manual grape picking. [3]

Digital images of infected tomato leaves contain two kinds of tomato disease. Noise Resize image Remove image isolation and background removal. Gabor wavelet features are available for phase transfer of transfection viruses in the feature extraction. At the classification level, SVM is trained to identify the type of tomato disease. SVM's input contains classes related to vectors. The result is a diagnostic test of tomato leaf disease.[4]

Black leaf spots and sunburn are the most common orchids. The basic step of image transformation is to save the image for capture and save it to the computer for further processing. In the image correction process the histogram equations for image enhancement or correction. These include coordination, coordination, and filtering. There are three types of sperm in the boundary system for the removal of small objects and the preservation of large objects. The segment is used for the start and stop points of the thresholding Edge tracking line. The author has added ROI in the GUI. After the border segmentation process is completed by calculating the white pixel in the image. [5]

Table 1: Analysis of the Plant Disease

Framework for distinguishing leaves and stem diseases	K-Means clustering, Back propagation algorithm, CCM
Using the Back Propagation Algorithm to identify and diagnose peanut disease	CCM, Back propagation algorithm
New Algorithm for Finding Bacterial Leaf Scorch (BLS) by Shade Tree	K-means clustering algorithm, Intensity mapping
Tomatoes are based on machines that support infection	SVM, Gabor wavelet transform
Diagnosis of orchids using Border Segmentation Techniques	Border segmentation, Pattern classification

PROPOSED DESIGN

Agriculture is not the only way to feed a growing population. Plants are an important source of energy and are a fundamental part of the ecosystem to solve the problem of global warming. Business There are many diseases affecting plants that can have serious social and ecological damage. In this situation, accurate and timely identification of diseases is of utmost importance. There are many ways to find plant pathology. In some cases there are no symptoms. In these cases, sophisticated microscopes require sophisticated analysis. Because the information collected through the use of imaging modalities is not only diagnostic, but it is often focused on the problem of detection, there are many ways of focusing.

Simple detection involves two main situations where partial diagnosis is used (when a disease is identified as a disease, it may be convenient to separate it.) Candidate areas can be classified as a result of the disease rather than being classified into probable diseases. And real-time monitoring (in this case the system monitors the crop and alarms immediately when a particular crop is detected).

Image Pre-processing changes the input of the leaf image by increasing the gray scale contrast Leaf image quality improves. Captured at this stage the images will be cut and the size will change used for effective testing.

The architecture for the proposed design is shown in Figure 1. The architecture is divided into three sections. In the first step, images from the database or camera go offline / offline. Each feature in the image database will be exported to create visual metadata that illustrates the image. This function indexes the image and stores it with the image in the metadata database.

The second part describes the image recovery process. Image search is reviewed for retrieving visual features. These features are the same as the images from the image database. Instead of directly comparing the two images. The visual properties of images are measured in shapes stored in the Meta database. Usually the homogeneity of the two images is determined by calculating the distance between the two vector vectors. The system takes the image by returning the first image k, which is less than the distance to a single request image or to a specified threshold. Many visual features can refer to images depending on the subject.

In the third part, the orchid classifications are based on the characteristics (color, structure and shape).

Feature Extraction

The first step of the feature extraction process is to extract image features from different stages. These features are defined as one or more measurement methods. Each identifies the properties of an object and calculates the properties of the object. Feature extraction is a special form of size reduction. Feature of an image is one of the objects in the image change the key attributes that have to happen analyzes are being done.

Matching

The second step is to match these properties to achieve similar results.

Classification

Generally, orphan diseases can be classified into three types. They are black rot, brown spots and flower farms.

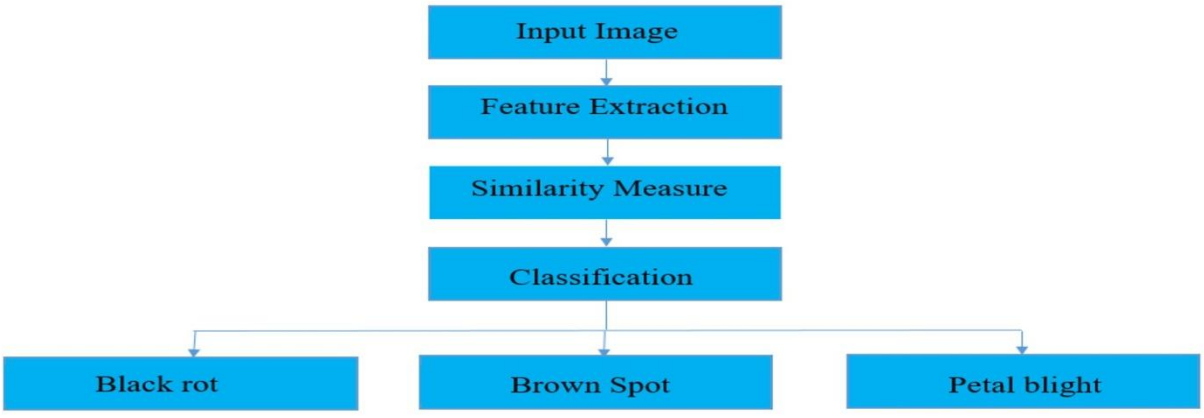

Figure 1. Block Diagram of Proposed System

COMMON ORCHID PLANT DISEASES

There are a variety of diseases that one should be aware of when caring for orchids. Common diseases affect not only the leaves but also the plants and roots. There are three common orchids. They are black rot, brown spot and petal blight. Conservation is an important part of orphan health. And restoring your orchid is part of the inevitable maintenance. Potting mix breaks down. The orphans grew their pots. There are many reasons to refresh your orphanages.

Black rot

Leaf rot is one of the greatest common diseases in fungal orchids. You may have noticed that the affected areas appear on the leaves or roots. However, the whole plant can be caused by black rot. The disease spreads quickly and spreads to other orchids nearby.

Treatment: Easily eliminate any diseased areas and use a fungicide on the remaining healthy parts. Cinnamon can be used as a fungicide by being applied directly to the areas where you have removed the diseased pieces. If the disease is fairly progressed, your best solution might be to simply discard the whole plant. Separate any diseased plants so as not to contaminate your other orchids.[6]

Figure 2. Black Rot [6]

Brown spot

It can be very deadly as a result of brown spots. The disease spreads on the leaves. It will be like a liquid in the water. As the disease progresses, the infected area gradually becomes brown. If the infection reaches the crown, your orchid will not survive.

Treatment: Remove diseased parts with sterile tools as quickly as possible. Treat the area (and nearby leaves) with a bactericide that contains copper compounds. [6]

Figure 3. Brown Spot [6]

Petal blight

Petal blight is one more common disease which disturbs the flowers of your orchid plant. You will identify that your plant has develop infected by the small brown spots that appear on the petals. If left untreated, grey mold may activate to appear and finally the flowers will die or fall off prematurely.

Treatment: Remove diseased flowers, decrease humidity (if possible), and treat with fungicide.

Figure 4. Petal Blight [6]

The endophytic fungi have huge possibility to synthesize several bioactive metabolites. Hence, it is wanted to intention suitable cultivation arrangement for their marketable utilization. It is actual common to treasure more than one straining up at the similar place, causing parallel disease signs shown in the following figure 5. [7]

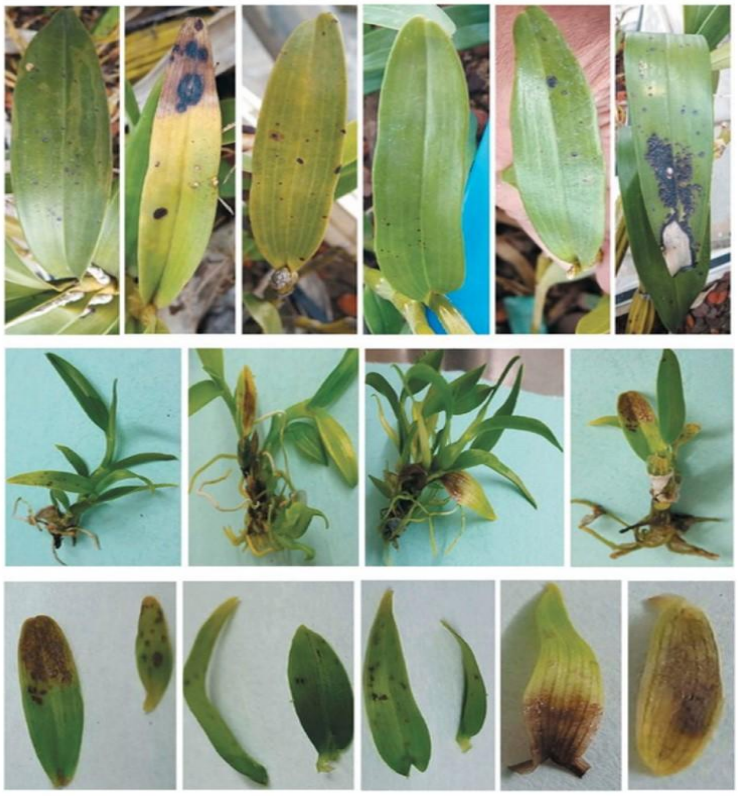

Figure 5. Common Orchid disease symptoms on leaves [7]

EVALUATION OF THE SYSTEM PERFORMANCE

Similar methods are used to determine the resemblance between a photo interview and an image. Therefore, The same scale is required for the image to be retrieved. Researchers have taken similar initiatives to enhance the effectiveness and effectiveness of CBIR.

The SVM type is used to classify the image query type and evaluate the system's performance. The recovery capacity of the system can be measured in terms of its accuracy. The accuracy of the system is to measure the relative image in the entire image. The system calculates the accuracy value of each row in the image database.

To evaluate the system, it uses various orchid's plants and leafs collection of 500 photos including orchid, etc. Databases and then it's 20 images, 40 60 80 and 100 respectively, using the SVM Classifier. The system uses the Holdout method to evaluate this performance. Training and Test Set: The Datasets are divided into two sets. Accuracy is calculated as Equation 1:

$$Accuracy = \frac{TP+TN}{Total\ \ Number\ \ of\ Test\ data} \quad (1)$$

Where,

TP = True Positive, TN = True Negative

CONCLUSION

Image processing is an important part of design in this system. You need to upgrade the input image before applying imaging and imaging techniques orchid leaf material for visual effect change and process. We used Gaussian smoothness. In addition, the process for removing noise from the image. We used the histogram equation method to increase the opposite of the picture. And then we use algorithms split image search for diseases and extract features. This system can take it structures of leaf appearance with higher correctness. In this explanation, the extracted geometric topographies of the leaf image will be used to forecast the orchid specie and the color topographies will be used to forecast the good condition of the orchid plant. There are limitations associated with our system. We are a further development of the system expanding the multi-platform capabilities through mobile support.

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