Plant Disease Detection Using Image Processing Technique

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1 . Objective

In this project, our purpose is to automatically detect and identify the different diseases in Agriculture corps. Our project is based on the fact that different diseases have different effect on plant's leaves ,stems and fruits. Various techniques such as Artificial neural network ,Probabilistic Neural Network and fuzzy logic has been used for the automatic detection of diesease.In our project our approach is based on Image Processing Technique like K-mean cluster ,segmentation and feature extraction using wavelet etc.

2. Motivation

We already know many type of dieases in different agriculture plants that greatly affect the product quality and quantity . To visually identify dieases is less efficient ,time consuming and need expertise . So in our project based on Images of effected plant, we create an automatic , efficient and fast algorithm to detect and identify plant dieases to prevent and minimize further loss .

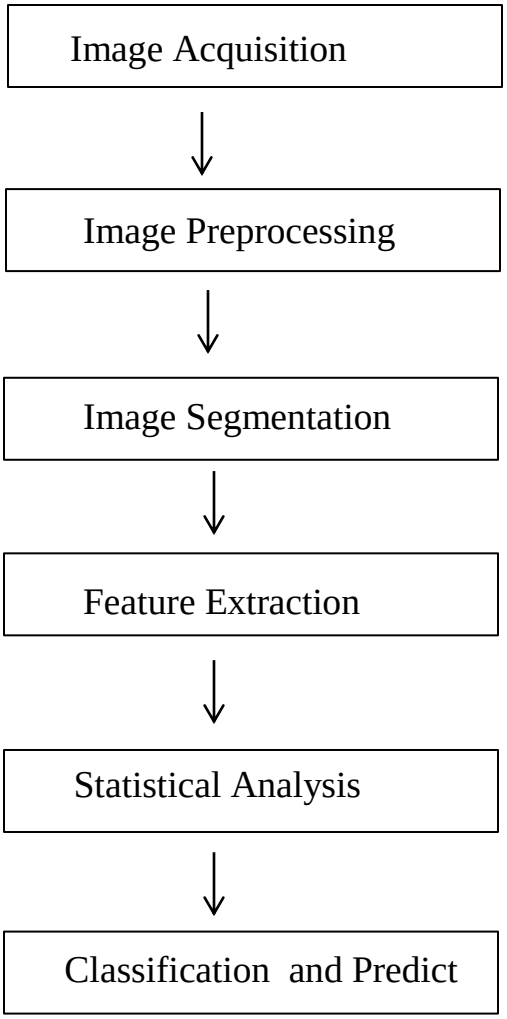
3. Previous Work

- Wenjian Huang et al [1] has studied dieases in Wheat in winter and developed spectral indices to detect and identify the dieases in wheat (Powdery mildew, yellow rust and aphids). In his presentation he used RELIEF-F algorithm to extract most and least wave length of different dieases .

- Prof. Sanjay et al [2] presented an automatic dieases detection technique . Prof . Sanjay used the morphological feature with their productive structure to identify fungi and becteria in leaves. He compute the statics from SGDM matrices to identify plat leaf diease.

- Anand. H. Kulkarni and Ashwin Patil R. K [3] described a methodology to accurately detecting plant diseases .They used image processing techniques along with artificial neural network (ANN) to identify the dieases.

4 . Our Approach



1) Image Acquisition

In this process we capture raw RGB images of plant's leaf Stem and fruit that are effected with different type of dieas es.

2) Image Preprocessing

In this process we process the capture RGB image of plant We convert the image into color space parameter (HSV) . Then we crop the interested area of image and using histog ram we remove any type of noise and inhance the image quality.

3) Image Segmentation

After preprocessing image we remove back ground of ima ge. Based on fact that dieases infected area of leaves shows different color energy we segment different area of image based on different method like threshold , K-mean , ostu's method ,region based segmentation . Then we locate differ ent object and boundries.

4) Feature Extraction

After segmentation of image we extact different feature From image to detect dieases . Based on predefine data set of infected dieases images we extract edge , color ,texture feature like energy ,contrast ,local homogenity and correlation and morphological feature . For feature extraction we use different method like color co-occurence method ,Grey level co-occurence matrices (GLCM) , spatial gray level dependence matrices (SGDM) , Gabor filter (STFT) and wavelet transform for analysis image .

5) Statistical Analysis

After extraction of some feature we statistical analysis the data with predefined infected dieases images data .

6) Classification and Prediction

After statistical analysis of data we classified the plant dieases based on certain feature. For classification we use different network like K-nearest neighbour , Radial basis function Convolution neural network , Support vector machine , Back propagation network Probabalistic neural network on matlab plate form. After the classification of diease we predict the plant diease .

5 . Dataset

For our project we will use internet resources [8] for the infected image of different type of dieases in different plant. For sample images we will use natural images alog with internet sources.

6 . References

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