

# Detection And Classification Of Unhealthy Region Of Grapes Plant Using Texture

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**Abstract**— This paper is based on survey of identification and classification of various plant diseases. Plant diseases have turned into a important factor in which reduction in both quality and quantity of agricultural product. In this paper, survey of various different papers of classification and identification of plant leaf diseases are summarized.

**Index Terms**— ANN, k- Nearest Neighbour, k- Mean Clustering, Neural network, Radial Basis Function, SGDM matrix.

## I. INTRODUCTION

India is an agriculture country and farmers have to select suitable Crops and such a Crops can be affected by Fungi, bacteria ,viruses [4] .

The disease caused can be measured problem for farmer for reduction in quality and quantity of Crops. To identify the diseases which caused to leaves the expert is required to identify the diseases. For large field of Crops the identification of diseases from human eye is difficult. Because various leaves can be impossible or time consuming and also costly to affords many expert for identification. For above solution we are implementing a image processing technique. For monitoring large field of Crops to identified the leaves diseases. Image can be captured by webcam and process using image growing , then part of leaf spot has been taken for train & test purpose. The image processing and advance computing technique will used to identify the diseases with the help of MATLAB software[10].

We are using grape Crops field and work on their leaves diseases with image processing technique [9]. This paper focus on grapes plant diseases detection and classification using image processing technique and algorithms [2].

## II. PROCEDURE FOR PAPER SUBMISSION

### A. Review Stage

In [1] Implementation of RGB and gray scale images in plant leaves disease detection, the comparative study of both RGB and gray scale images for disease detection is done. In this paper, the author used median filter for image filtering operation. This filtering is most suitable for infected leaves detection as compared to gray scale image in this paper they have taken the RGB and gray scale images

for analysis. RGB image pre-processing have the better result than the gray scale. The colour of plant leaves is play important role for the analysis of detection of leaves.

In [2] Real Time Grape Leaf Disease Detection, artificial neural network is used. The artificial neural network is normally used for the classification purpose. In this Neural Network Pattern recognition toolbox which is present in MATLAB 7.1 is used for implementation purpose. They achieve the training accuracy 100% because of using the hue features alone and this hue result is compared with saturation and intensity.

The [3] plant disease detection using image processing used weight gradient K- nearest neighbour (KNN), radial basis function (RBF), probabilistic neural network. K-nearest neighbour classifier is used for the calculation of minimum distance between the given point and other points to identify the given point belong to which class. A radial basis function (RBF) is known as real-value function and its value based on the distance from the origin. It is basically used for measuring norm that is the Euclidean distance. They observe in result that the RBF is slower in execution speed.

The [4] detection and classification of plant leaf diseases using image processing technique and it is implement by using various machine learning technique like artificial neural network and genetic algorithm. In recent years, ANNs are most widely used as it is a popular machine learning algorithms. There are other types which are held in neural networks, those are used for texture classification. This paper also used the SGDM matrix for generation of H and S statistical analysis. The function  $P(i, j, d, \Theta)$  involved in the SGDM Matrix; Where 'i' is gray level of location and 'Θ' is orientation angle. In result, accurately detection of plant leaves can be done without affected by background but using CIELAB in colour model.

The [5] paper deals with Grapes plant diseases detection and classification using image processing techniques. They have used the decision support system and the background subtraction in their algorithm. This paper proposed for the algorithm which is tested over the database of 450 images of Grape leaves. The database consists of images of 160 healthy leaves and 290 diseased leaves. The classification result by using multiclass SVM classifier in terms of average accuracy was 89.3%.

The [6] classification techniques for plant disease detection using image processing was used the image processing algorithm for its operations. This paper proposed for decision making easy for the sorting of vegetables, disease detection and then pesticides, fertilizers. This paper also used the k- mean clustering method for segmentation. From this method they accurately classify and verify the various plant diseases. The result efficiency is much high.

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The [8] classification of cotton leaf spot disease using support vector machine has a main objective to detect the disease of all plant that is fruit, stem and leaf. This paper also deals for the size and shape of the fruit. In this paper, they used the PCA classifier for disease classification. They used the PLA/KNN classifier technique and by using this technique they achieved the well recognized with recognition accuracy 95%, this is much more than the human eyes.

In [9] leaf disease detection and classification, author proposed the system that not only detect the disease but also calculate the infected area and degree of sickness. This paper proposed to identify the disease of leaves with some little amount of calculations. The result of this paper mainly based on the SVM classifier. The result in terms of accuracy is varies from one image to another image. Result varied from 69% to 93% of accuracy.

In [10] image processing technique for detection of leaf diseases, HPCCDD algorithm and image analysis is used. Homogeneous Pixel Counting Technique for Cotton Diseases Detection (HPCCDD) algorithm is used for detection of disease and affected part of cotton leaf having spot by using the image analysis technique. This deals with survey of different techniques which are generated for leaf disease detection. This paper has the main characteristics of disease detection are accuracy and speed. This results in increasing of recognition rate of final classification process.

### B. Figures

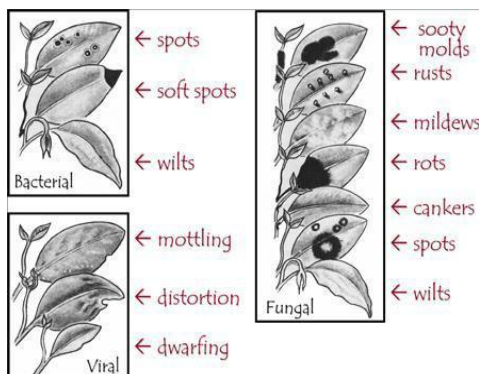


Figure 1: Various types of diseases [10]



Figure 2: Filtered image using Median Filter [1]

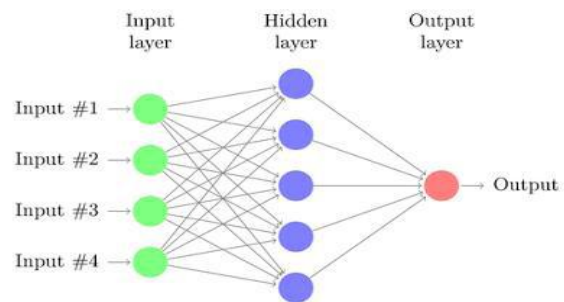


Figure 3: Architecture of neural network [2].



Figure 4: Normal (non-diseased) leaves [8]

### III. CONCLUSION

This paper is a survey of different technique and algorithm for leaf disease detection and classification. In this paper, we discussed the various algorithms such as Radial Basis Function (RBF), K- Nearest Neighbour (KNN) and various machine learning technique. These all are used for various different projects. After discussing these all, we use k- mean clustering for our main implementation of project because of its high accuracy than the other like KNN.

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