MES COLLEGE OF ENGINEERING, KUTTIPPURAM
DEPARTMENT OF COMPUTER APPLICATIONS
20MCA245 – MINI PROJECT

PRO FORMA FOR THE APPROVAL OF THE THIRD SEMESTER MINI PROJECT

(Note: All entries of the pro forma for approval should be filled up with appropriate and complete information. Incomplete Pro forma of approval in any respect will be rejected.)

Mini Project Proposal No : _____ *(Filled by the Department)*	Academic Year : 2021-2022 Year of Admission : 2020

1. Title of the Project : BlackRot Disease Detection in Grapeplant Using Colour Based Segmentation & Mechine Learning
2. Name of the Guide : _____
3. Number of the Student: MES20MCA-2006
4. Student Details (in BLOCK LETTERS)

	Name	Signature	Roll Number
1.	Amritha U		06

Date:01/12/2021

Approval Status : Approved / Not Approved

Signature of Committee Members

Comments of The Mini Project Guide Dated Signature

Initial Submission :

First Review :

Second Review :

Comments of The Project Coordinator Dated Signature

Initial Submission:

First Review

Second Review

Final Comments : Dated Signature of HOD

BLACK ROT DISEASE DETECTION IN GRAPE PLANT USING COLOUR BASED SEGMENTATION & MECHINE LEARNING

Amritha U

Introduction and objectives

There are many pathogens which can cause disease in the plants, one of them is fungus. The most common fungal disease among grape plants is Black Rot disease caused by a fungus named as Guignardiabidwellii. Black Rot Disease was observed in the Grape Plants which were growing in the places with high humid conditions. The pathogens release some toxic compounds on the leaves of the plant which results in necrotic (causing the effected tissue's death) spots which appeared to be brownish-tan coloured. These spots can be seen on all green regions of the leaf. This disease can also become an epidemic sometimes resulting in yield loss from 5% to 80% . Relatively small, brown circular lesions develop on infected leaves and within a few days tiny black spherical fruiting bodies protrude from them. Elongated black lesions on the petiole may eventually girdle these organs, causing the affected leaves to wilt. Shoot infection results in large black elliptical lesions. These lesions may contribute to breakage of shoots by wind, or in severe cases, may girdle and kill young shoots altogether. This fungus bides its time. Most plants show very little signs of infection until its too late. They will look very healthy until fruit sets. Even flowering will be normal. Infection of the fruit is the most serious phase of the disease and may result in substantial economic loss. Infected berries first appear light or chocolate brown; it will have a spot that looks very round, like the eye of a bird. That spot will get larger and infect more of the fruit bunch and more of the plant. This creates masses of black pycnidia developing on the surface. Finally, infected berries shrivel and turn into hard black raisin-like bodies that are called mummies. Here we use support vector machine algorithm to predict Black Rot disease in grape plants by analysing leaf images.

Problem Definition and initial requirement:

EXISTING SYSTEM

The first cultural control method is to choose the right grape cultivar for the region that the grape will be grown in. Grape cultivars differ in their susceptibility to diseases, including differences in the disease black rot. Some varieties are less susceptible, while others are more prone to the disease when the right environmental conditions occur. Through research, many lists of grapes varieties will show the amount of resistance a variety has to disease and how the variety should be grown. A list of grape varieties is a good place to start for selecting the right grape variety. So it is very difficult find right cultivar for a region and it is a time consuming proccess. It is important to understand the disease life cycle and environmental conditions to best manage the disease.

PROPOSED SYSTEM

This paper discusses about a model which can be used for early detection of Black Rot disease in Grape Vines. It uses a colour-based segmentation and detection of the disease. The two-colour models i.e. HSV and L*a*b* are used to segment the affected areas from the pictures of diseased leaves. The system is developed using machine learning algorithms which collects the features of the disease and get trained by that data. The trained feature vectors are then compared with the feature vectors to be tested. The accuracy is computed on the basis of those comparisons. Support Vector Machine (SVM) is used to classify the diseased and non-diseased (healthy) leaves.

Black Rot is a fungal disease which affects the yield as well as the wine quality and can also cause complete crop loss. It can be identified as brown/tan coloured circular spots/lesions distributed unevenly on the leaf of the plant. A proper detection of the disease is required which can be further helpful in taking active measures like Spraying of Fungicides, Pruning, etc. can be done on time. The PlantVillage Dataset is used, which contains images of grape plant leaves affected from Block Rot Disease as well as the pictures of healthy leaves. HSV

and L*a*b* colour models are used for the segmentation purposes. The healthy part and the diseased part of the leaves are separated using colourbased techniques and the features are stored for each leaf. The color of diseased part is very much different from the healthy part of the leaves which makes it easier to detect the disease on the basis of color. The machine learning is done using the Support Vector Machine Classifier and the results are analysed on different Kernels of SVM. The highest accuracy achieved is 94.1%.

BASIC FUNCTIONALITIES:

FUNCTIONAL MODULE

- Black Rot disease detection using SVM(Support vector machine)

  Support Vector Machine" (SVM) is a supervised machine learning algorithm that can be used for both classification or regression challenges. However, it is mostly used in classification problems. In the SVM algorithm, we plot each data item as a point in n-dimensional space (where n is a number of features you have) with the value of each feature being the value of a particular coordinate. Then, we perform classification by finding the hyper-plane that differentiates the two classes very well . Here we use SVM to classify different leaf images and comparing them to find Black Rot disease.

USER MODULE DESCRIPTION

1.Agriculture Department:

- View and approve experts
- Block or unblock experts
- Add and manage shops
- View registered farmers
- Add and manage notifications
- View complaint and send reply

View feedback

2.Experts:

- Registration
- Add and manage dataset
- Chat with farmers
- View notification
- View feedback

3.Farmers:

- Registration
- Upload leaf image

- View prediction result
- Chat with experts
- View notifications
- Send complaints
- Send feedbacks
- View and book crops
- View and book tools
- View booking status
- Add shop rating

4.Shop:

- View profile and update
- Add and manage crops
- Add and manage tools
- View and conform booking
- View rating

TOOLS / PLATFORM, HARDWARE AND SOFTWARE REQUIREMENTS:

HARDWARE REQUIREMENTS

The selection of hardware is very important in the existence and proper working of any software. Then selection hardware, the size and capacity requirements are also important.

- Processor : 64 bit
- RAM : Min 3 GB
- Hard Disk : 10 GB

SOFTWARE REQUIREMENTS

One of the most difficult task is selecting software for the system, once the system requirements is found out then we have to determine whether a particular software package fits for those system requirements. The application requirement:

- OPERATING SYSTEM: WINDOWS 10
- FRONT END: HTML, CSS, JAVASCRIPT
- BACK END: Mysql

- IDE: Jetbrains Pycharm, Android studio
- TECHNOLOGY USED: PYTHON,JAVA
- FRAME WORK USED: Flask
