

PREVENTION WITH DETECTION



Black Rot Disease Detection in Grape Plant (Vitis vinifera) Using Colour Based Segmentation & Machine Learning

MENTOR : LAXMI PRASANNA

Team members

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|--------------|--------------|
| • A.Roshini | 105320467007 |
| • K.Ruchitha | 105320467057 |
| • K.Ajay | 105320467064 |
| • A.Srujan | 105320467003 |

Abstract

- **Black Rot is a fungal disease which affects the grape crop 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, etc. can be done on time. The healthy part and the diseased part of the leaves are separated using colour-based & ml techniques .**
- **By using CNN we can classify the whether the leaf is diseased /healthy.**

INTRODUCTION

Intelligent detection of plant diseases by utilizing machine learning algorithms is an essential , as it may prove advantageous in monitoring large fields and automatically detecting diseases based on symptoms appearing on plant leaves. Advanced technologies can be used to reduce the adverse effects of plant diseases by diagnosing them in early development stages.

PROBLEM STATEMENT

The unaided eye method is a traditional method of identifying diseases that requires enormous manpower and is prone to human error, time-consuming, and not applicable for large fields. In addition, it is costly as it requires continuous monitoring by experts. A proper detection of the black rot disease of grape plant is required which can ensure good quality and high production in the crop yield .

Existing System

Grape plant disease detector-

- For given input image of grape leaf it shows same accuracy for both healthy and unhealthy leaves.
- Sometimes shows the wrong result also.

Black rot disease detector

- Gives less percentage of healthiness even if the grape leaf is healthy without any disease.

Software requirements

- Windows 7 and above
- Python 3.6 and above.
 >> Jupyter notebook.

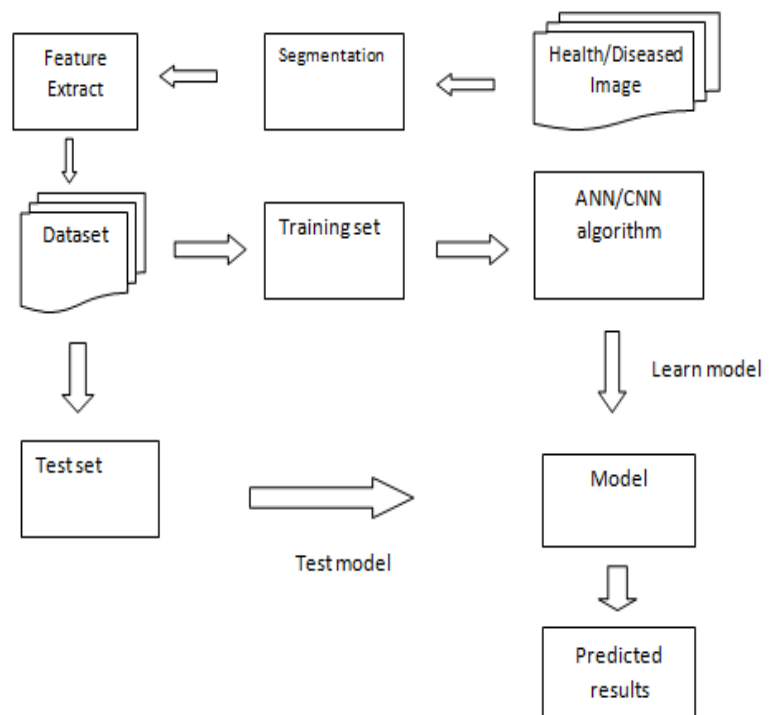
Hardware requirements

- CPU-- Intel 6 th gen and above.
- RAM : 8GB
- Memory: 512 GB
- PROCESSOR: I5

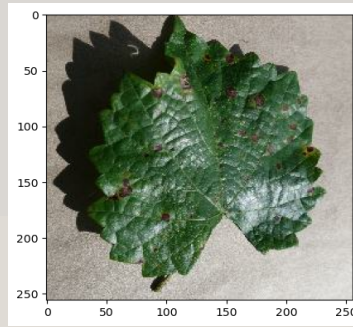
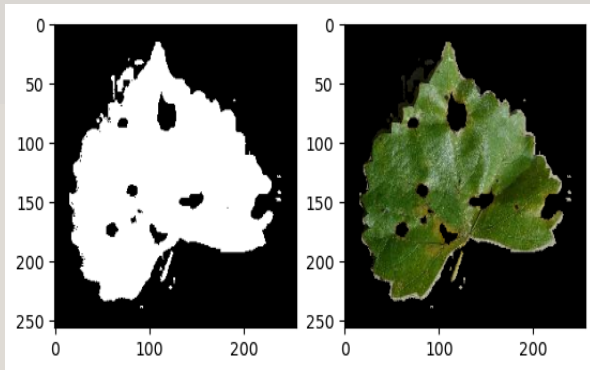
Proposed System

Read the RGB images of grape leaves dataset and convert to HSV colour model then after apply image segmentation. Split the dataset into a training set and a test set. The training set will be used to train the model, and the test set will be used to evaluate the performance of the model. Train a machine learning model using the training set. Then apply CNN algorithm Evaluate the performance of the model on the test set. This will give you an idea of how well the model is able to detect grape disease in new images. And by taking the images from the dataset we predict whether the leaf has black rot or not

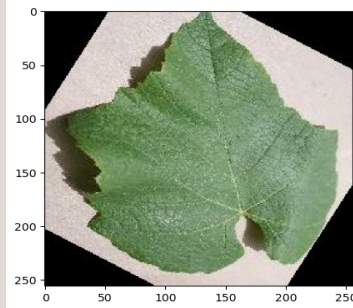
ARCHITECTURE



FINAL RESULTS



first image to predict actual label:
Grape__Black_rot2/2
[=====]
- 2s 703ms/step predicted label:
Grape__Black_rot



second image to predict
actual label: Grape__healthy2/2
[=====]
- 2s 760ms/step
predicted label: Grape__healthy

Project Conclusion

The proposed system was developed taking in mind the benefits of the farmers and agricultural sector. The developed system can detect disease in plant. By proper knowledge of the disease and the remedy can be taken for improving the health of the plant. The proposed system is based on python and gives an accuracy of around 94%. The accuracy and the speed can be increased by use of CNN algorithm. It focused how image from given dataset (trained dataset) in field and past data set used predict the pattern of plant diseases using CNN model