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DETECTING LEAF DISEASES OF PLANTS USING SVM

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ABSTRACT_ The identification and detection of diseases of plants is one of the main points which determine the loss of the yield of crop production and agriculture. The studies of plant disease are the study of any visible points in any part of the plant which helps us differentiate between two plants, technically any spots or color shades. The sustainability of the plant is one of the key points that is for agricultural development. The identification of plant diseases is very difficult to get right. The identification of the disease requires lots of work and expertise, lots of knowledge in the field of plants and the studies of the detection of those diseases. Hence, image processing is used for the detection of plant diseases. The Detection of diseases follows the methods of image acquisition, image extraction, image segmentation, and image pre-processing. The main aim of machine learning is to understand the training data and fit that training data into models that should be useful to the people. So we can use machine learning to detect diseases in plants. It has been assisting good decisions making and predicting the large amount of data produced. The color of leaves, amount of damage to leaves, area of the unhealthy plant leaf are used in classification. In this we overviewed different machine learning algorithms to identifying different plant leaves diseases and identifying the best accuracy..

KEYWORD: Image Registration, Image blending, Document image, video

1.INTRODUCTION

The problem of efficient plant disease protection is closely related to the problems of sustainable agriculture and climate change In India, Farmers have a great diversity of crops. Various pathogens are present in the environment which severely affects the crops and the soil in which the plant is planted, thereby affecting the production of crops .Various disease are observed on the plants and crops .The main identification of the affected plant or crop are its leaves. The various colored spots and patterns on the leaf are very useful in detecting the disease. The past scenario for plant disease detection involved direct eye observation, remembering the particular set of disease as per the climate, season etc. These methods were indeed inaccurate and very time consuming. The current methods of plant disease detection involved various laboratory tests, skilled people, well equipped laboratories etc. These things are not available everywhere especially in remote areas. Detection of disease through some automatic technique is helpful because it reduces an oversized work of watching in huge farms of crops, and at terribly early stage itself it detects the symptoms of diseases means that after they seem on plant leaves

2.Proposed System

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3.Algorithm

Support Vector Machine

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"Support Vector Machine" (SVM) is a supervised machine learning algorithm which 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 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 (look at the below snapshot).Support Vectors are simply the co-ordinates of individual observation. The SVM classifier is a frontier which best segregates the two classes (hyper-plane/ line).

4.PROPOSED SYSTEM ARCHITECTURE

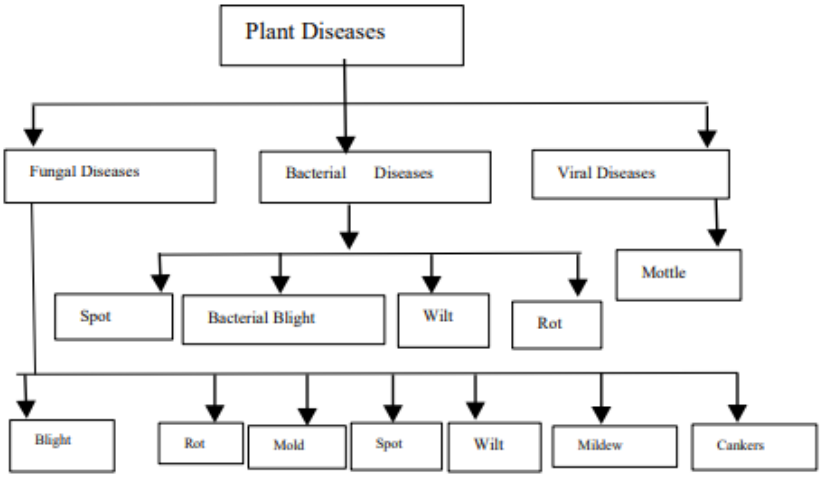

Fig. 1. Classification of Plant Diseases

Plants diseases can be like fungal disease, bacterial disease and viral disease as shown in fig. 1. Fungal diseases are of various types such as blight, rot, mold, spot, wilt, mildew, cankers. Bacterial diseases are of different kind like spot, bacterial blight, wilt, rot. Viral diseases are such as mottle, etc.

5.EXPERIMENTAL RESULTS

In this section performance of plant leave diseases detection is calculated. The overall performance is calculated as how many time the system is detected t
he diseases as correct. In this way performance is calculated.

For evaluating the system, we determined that leaves (mainly tomato leaves) are affected from Bacterial, Fungal, Viral, and Fungus diseases . The proposed methodology evaluated the leaves base on their diseases. The proposed system ask for the particular leave image. Base on the image it will show that the
leave is affected any kind of diseases.

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Fig 5.1 In this screen user will choose image for identifying disease by using uploaded image. here already we have collected some images by applying training and modeling for images

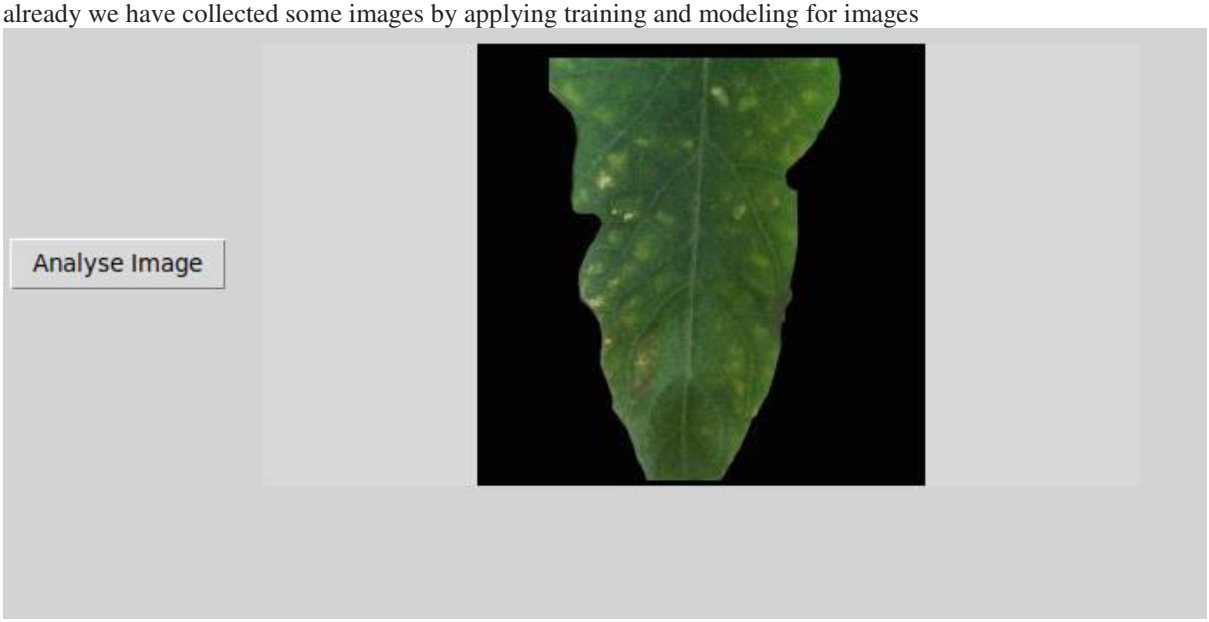

Fig 5.2 In this screen we are going to analyze the uploaded image

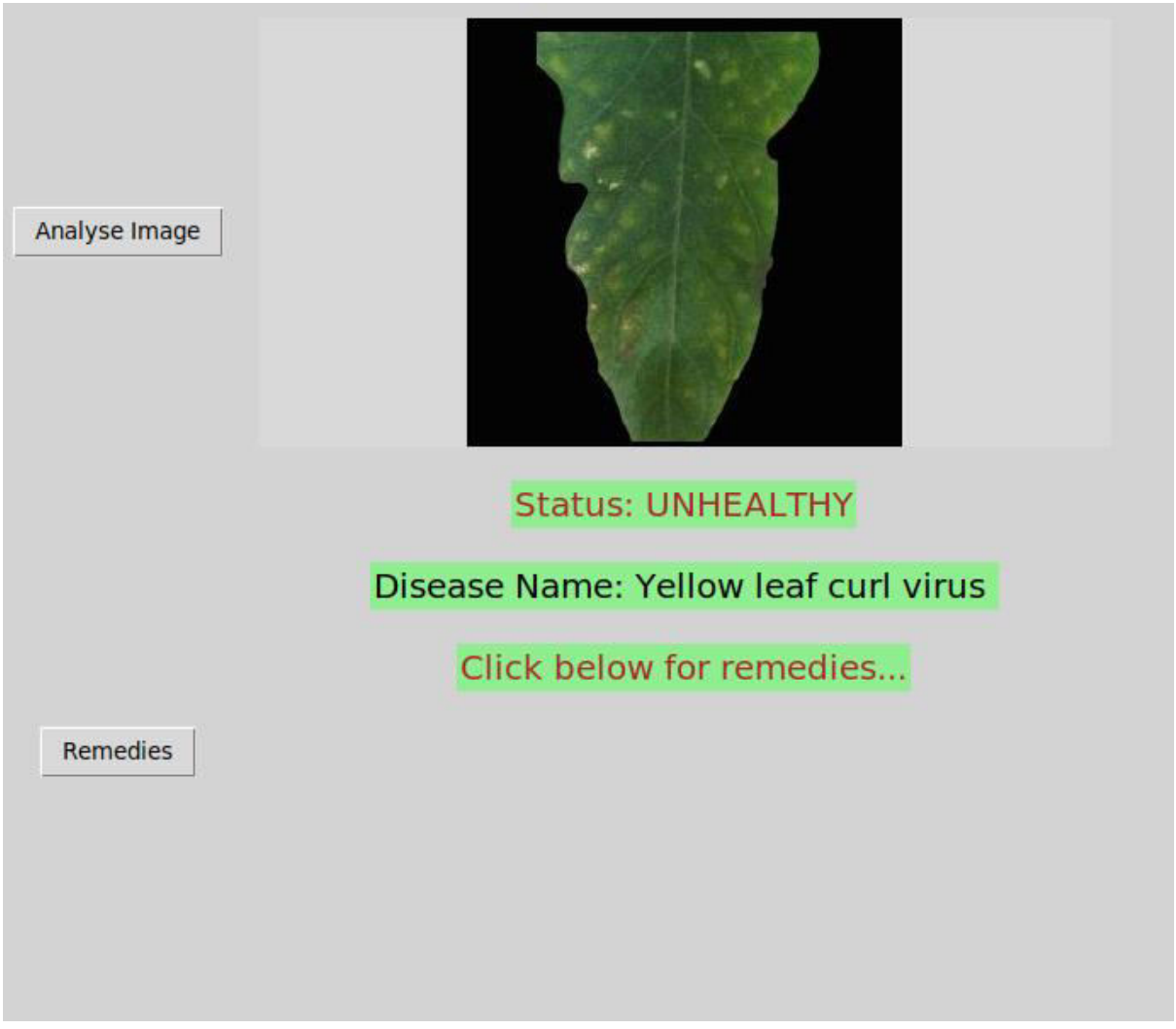

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Fig 5.3 In the above screen we have result of uploaded image weather image is healthy or not In this paper plant leave disease recognition processes an appropriate and perfect dataset is required. First step of the proposed system is train the system. After data is given to the system, evaluate the performance. Machine learning algorithm dataset is required. Basically as a training data healthy and unhealthy leaves are required. For this training data we take commercial farming plants and specially we take tomato and potato leaves. A total of 1000 images are collected from different places for train system.

6.Comparitive Study

Sno	Algorithm	Accuracy
1	**k-means**	**88.6**
2	**SVM**	**91%**

we derived that individual algorithm like k-means process give efficiency 88.6% and SVM give efficiency 91%. But in the proposed methodology it give better result.. The accuracy is better than individual algorithm performance.

7.Conclusion

The proposed method of approaching is a precious approach, which can be give better performance. K mean algorithm didn't work well in global cluster and it does not work well with cluster of different data size and different data density. So that after clustering if we give the clusters in the multiple SVM class then it is give better classification. In the performance analysis this hybrid algorithm is better than individual algorithms performance. In this method it is found that big amount of dataset can be easily trained and tested to predict the different diseases

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