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A survey report on: Detecting A diseases of plants using machine learning

Prof. Shah S.N[1], Bhapkar Akash[2], Gaikwad Aditya[3]

Professor, Computer Department, SPCOET Someshwarnagar College, Baramati, India[1]

Student, Computer Department Someshwarnagar College, Baramati, India[2]

Student, Computer Department Someshwarnagar College, Baramati, India[3]

Abstract: Plant disease detection is an Innovative and Enlightening System helping the users to know the disease, trainings or any interesting things taking place around their Area. This Organization aids the native community to keep themselves up to date about the events around their locality or zone or in their town. There are 2 things for this method to work; one for the image processing and another is machine learning.

Modern approaches such as machine learning and deep learning algorithm have been employed to increase the recognition rate and the accuracy of the results. Random forests are as a whole, learning method for classification, regression and other tasks that operate by constructing a forest of the decision trees during the training time. Unlike decision trees, Random forests overcome the disadvantage of over fitting of their training data set and it handles both numericand categorical data.

The histogram of oriented gradients (HOG) is an element descriptor utilized as a part of PC vision and image processing for the sake of object detection. Here we are making utilization of three component descriptors:

Keywords: Machine Learning, Image processing, Random Forests, HOG, Object detection, Histogram graph

INTRODUCTION

Plant disease detection is an Innovative and Enlightening System helping the users to know the disease, training or any interesting things taking place around their Area. This Organization aids the native community to keep themselves up to date about the events around their localityor zone or in their town. There are 2 things for this method to work; one for the image processing and another is machine learning.

The user is permitted to sight the disease only of his town while user can supplement disease connected to any town. Admin will show if any misuse or inappropriate or false disease added by any users and will take specific act. The Front end used is Android Studio and backend as SQLServer. The user has to record into the system to using this app and can bring up-to-date his details as well.The healthy leaf is shown first and so on, the user can also restore the disease resultant the latest one shown first and current disease will be shut. The user can add a image and a title connected to the leaf.

The user can use only 500 words to give a lecture on disease. The Appearance and texture of evaluation the disease is thrilling and amazing as the system offers swipe to move to the next or earlier disease with transition properties. The agriculturist in provincial regions may think that it's hard to differentiate the malady which may be available in their harvests. It's not moderate for them to go to agribusiness office and discover what the infection may be. Our principle objective is to distinguish the illness introduce in a plant by watching its morphology by picture handling and machine learning.

LITERATURE SURVEY

A literature review is a text of a scholarly paper, which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. Literature reviews use secondary sources, and do not report new or original experimental work.

1.Paper name: "A Cotton Leaf Disease Identification using Pattern Recognition Techniques"
Author: P. R. Rothe and R. V. Kshirsagar

which Uses snake segmentation, here Hu's moments are usedas distinctive attribute. Active contour model used to limit the vitality inside the infection spot, BPNN classifier tackles the numerous class problems. The average classification is found to be 85.52%.

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2.paper name: "Leaf Disease Detection and Grading using Computer Vision Technology &Fuzzy Logic,"
Author: Aakanksha Rastogi, Ritika Arora and Shanu Sharma

K-means clustering used to segment the defected area; GLCM is used for the extraction of texture features, Fuzzy logic is used for disease grading. They used artificial neural network (ANN) as a classifier which mainly helps to check the severity of the diseased leaf

3.paper name: Classification of Pomegranate Diseases Based on Back Propagation Neural Network
Author: S. S. Sannakki and V. S. Rajpurohit

A "Classification of Pomegranate Diseases Based on Back Propagation Neural Network" which mainly works on the method of Segment the defected area and color and texture are used as the features. Here they used neural network classifier

4.paper name: Automated Vision-Based Diagnosis of Banana Bacterial Wilt Disease and Black Sigatoka Disease

Author: Godliver Owomugisha, John A. Quinn, Ernest Mwebaze and James Lwasa
Automated Vision-Based Diagnosis of Banana Bacterial Wilt Disease and Black Sigatoka Disease "Color histograms are extracted and transformed from RGB to HSV. Peak components are used to create max tree, five shape attributes are used and area under the curve analysis is used for classification.
They used nearest neighbors, Decision tree, random forest, extremely randomized tree, Naïve bayes and SV classifier. In seven classifiers extremely, randomized trees yield a very high score, provide real time information provide flexibility to the application

5.paper name: SVM-based Multiple Classifier System for Recognition of Wheat Leaf Diseases

Author: uan Tian, Chunjiang Zhao, Shenglian Lu and XinyuGuo

"SVM-based Multiple Classifier System for Recognition of Wheat Leaf Diseases," Color features are represented in RGB to HIS, by using GLCM, seven invariant moment are taken as shape parameter. They used SVM classifier which has MCS, used for detecting disease in wheat plant offline.

PROPOSED SYSTEM

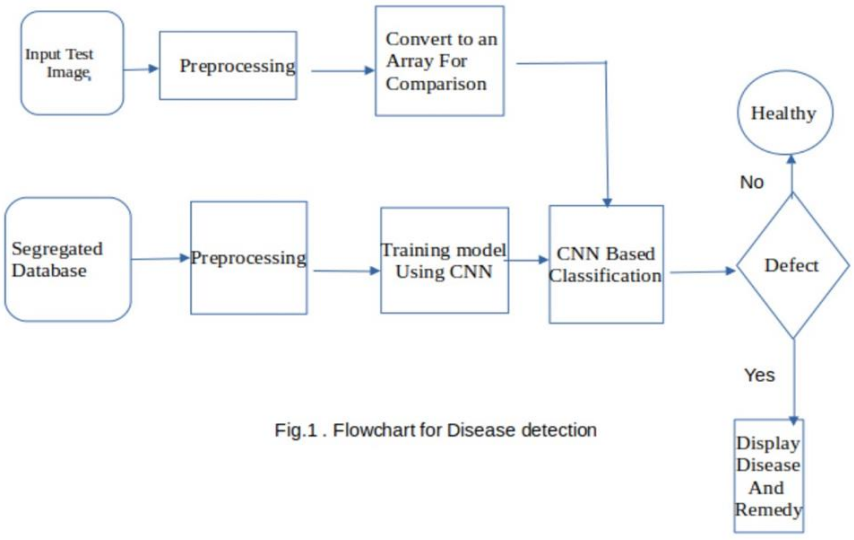

Fig.1 . Flowchart for Disease detection

To find out whether the leaf is diseased or healthy, certain steps must be followed. i.e., Preprocessing, Feature extraction, Training of classifier and Classification. Preprocessing ofimage, is bringing all the images size to a reduced uniform size. Then comes extracting features of a preprocessed image which is done with the help of HOG

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ALGORITHM

HOG (Histogram of Oriented Gradients:
The Histogram of oriented Gradients (HOG) is a feature of descriptor used in computer vision and image processing for the purpose of object detection. This method is similar to that of edge orientation histograms, scale-invariant feature transform descriptors, and shape contexts, but differs in that it is computed on a dense grid of uniformly spaced cells and uses overlapping local contrast normalization for improved accuracy. The technique counts accurances of gradients orientation in localized portions of an image.
HOG is a feature descriptor used for object detection. In this feature descriptor the appearance of the object and the outline of the Image is described by its intensity gradients. One of the advantages of HOG feature extraction is that it operates on the cells created.

Neural network:
The disease detection techniques are based on two main neural network technologies:
Self-Organizing map and multilayer perceptrons (the most widely used architecture).Neural network is a system of hardware and/or software patterned after the operation of neurons in the human brain. Neural network also called artificial neural networkof items as points in an n-dimensional space). The algorithm will categorize the items into k groups of similarity. To calculate that similarity, we will use the Euclidean distance as measurement .The algorithm works as follows: Convolutional Neural Network, also known as CNN, is a well-known method in computer vision applications. It is a class of deep neural networks that are used to analyze visual imagery. This type of architecture is dominant to recognize objects from a picture or video. It is used in applications like image or video recognition, neural language processing, There are three components of a Convolution

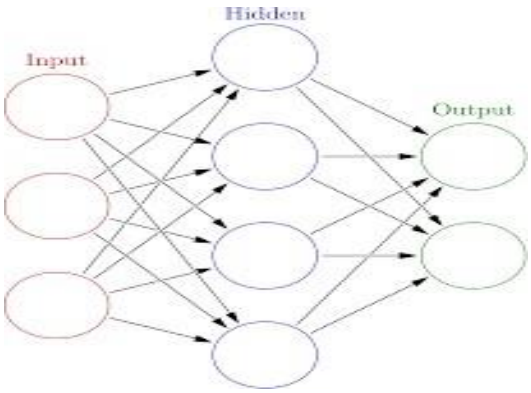

Fig. Neural Network.

CONCLUSION

Plant Diseases are major food threats that should have to overcome before it leads to further loss of the entire field. But, often framers unable to distinguish between similar symptoms but ace different diseases. We conclude that the find out the different diseases. The studies of that plants diseases of the visualize the observable pattern of the seen to the plants. Health monitoring and disease detection on plants is verify the diseases of the plants.

REFERENCES

[1] Ghaiwat Savita N, Arora Parul. Detection and classification of plant leaf diseases using image processing techniques: a review. Int J Recent Adv Eng Technol 2014;2(3):2347–812. ISSN (Online).
[2] Dhaygude Sanjay B, Kumbhar Nitin P. Agricultural plant leaf disease detection usingimage processing. Int J Adv Res Electr Electron Instrum Eng 2013;2(1).
[3] Mrunalini R Badnakhe, Deshmukh Prashant R. An application of K-means clustering andartificial intelligence in pattern recognition for crop diseases. Int Conf Adv Inf Technol 2011;20. 2011 IPCSIT.
[4] Arivazhagan S, Newlin Shebiah R, Ananthi S, Vishnu Varthini S. Detection of unhealthyregion of plant leaves and classification of plant leaf diseases using texture features. Agric Eng Int CIGR 2013;15(1):211–7.
[5] Kulkarni Anand H, Ashwin Patil RK. Applying image processing technique to detect plantdiseases. Int J Mod Eng Res 2012;2(5):3661–4.

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[6] Bashir Sabah, Sharma Navdeep. Remote area plant disease detection using image processing. IOSR J Electron Commun Eng 2012;2(6):31–4. ISSN: 2278-2834.

[7] Naikwadi Smita, Amoda Niket. Advances in image processing for detection of plantdiseases. Int J Appl Innov Eng Manage 2013;2(11).

[8] Patil Sanjay B et al. Leaf disease severity measurement using image processing. Int J EngTechnol 2011;3(5):297–301"

[9] Chaudhary Piyush et al. Color transform based approach for disease spot detection onplant leaf. Int Comput Sci Telecommun 2012;3(6).