

LEAF DISEASE DETECTION USING ARTIFICIAL NEURAL NETWORK

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Abstract — *The proposed system is used to detect diseases of leaf using ANN, image recognition of plant diseases could reduce the dependence of agricultural production on the professional and technical personnel in plant protection field and is conducive to the development of plant protection information.*

Keywords- ANN, Image recognition.

I. INTRODUCTION

Detection of leaf diseases is very important in today's world scenario because the epidemics of plant diseases cause severe losses in agricultural production . It also affects food quality. We proposed a system which detects the diseases of the leaf by just providing the image of the affected leaf. Basic features of image are extracted from the affected region of leaf image . These features are then applied to Backpropagation Neural Network algorithm for training in database or detecting disease from database.

II. SYSTEM MODEL.

First step in model is image load.Then this goes through various image processing algorithm.Then features are extracted and this features are tested for diseases using classifier.



Fig. 2.1 System model

III. PREVIOUS WORK

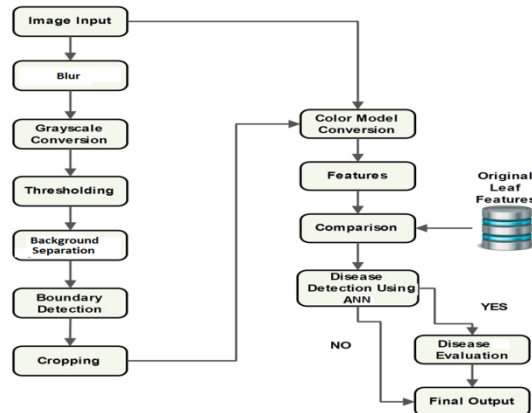
Fuzzy logic:[2] Fuzzy logic was used as a classifier of leaf diseases. But the main drawback of fuzzy logic was it was not stable system.Fuzzy logic system designing has no systematic approach. Fuzzy logic is used when there are limited number of inputs. For large number of inputs it does not give proper output .

Support Vector Machine: [3] In SVM, the input data is non-linearly mapped to linearly separated data. The marginal distance between different classes is maximised using SVM The samples closest to the margin that were selected is known as support vectors. Classifier SVM takes long training time. The learning function in SVM is also difficult

IV. PROPOSED METHODOLOGY

In this paper we propose a system in which the image of the leaf is loaded as input .This image is then processed by applying algorithms like block detection ,grey scale conversion ,RGB to HSV conversion and the features are extracted from the interested regions of leaf image. These features are applied as inputs to the Artificial Neural Network algorithm . Artificial Neural Network algorithm contains two phases :training phases and detection phase . In training phase these

features are trained to the database using back propagation algorithm. In detection phase the features of input image whose disease is to be recognized are compared with the features in database using Artificial Neural Network. First we grayscale the image. Then blur it. Then HSV values are calculated. After Blur we use Blob detection technique. The values that we get in blob detection is the block of interest (it contains rectangle coordinates). After this we select rectangle from the original image from the coordinates of blob detection and get their HSV values which were calculated before. Then NN are used in the automatic detection of leaves disease using Back propagation algorithm. It is accurate than fuzzy logic. It is accurate then SVM. It is fast then SVM. The disadvantage of ANN is it requires large storage space.



V. CONCLUSION

Our proposed system is used to recognize leaf disease using ANN and other Algorithms. For future research, Work can be extended for development of more hybrid algorithms such as other K means clustering method and NNs in order to improve the recognition rate of the final classification process. And in future we can also use client server technology. So that images will be sent from client to server. And algorithms will be stored at server and result can be sent to client again.

VI. FUTURE SCOPES

In future client server application can be implemented for leaf disease detection.

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