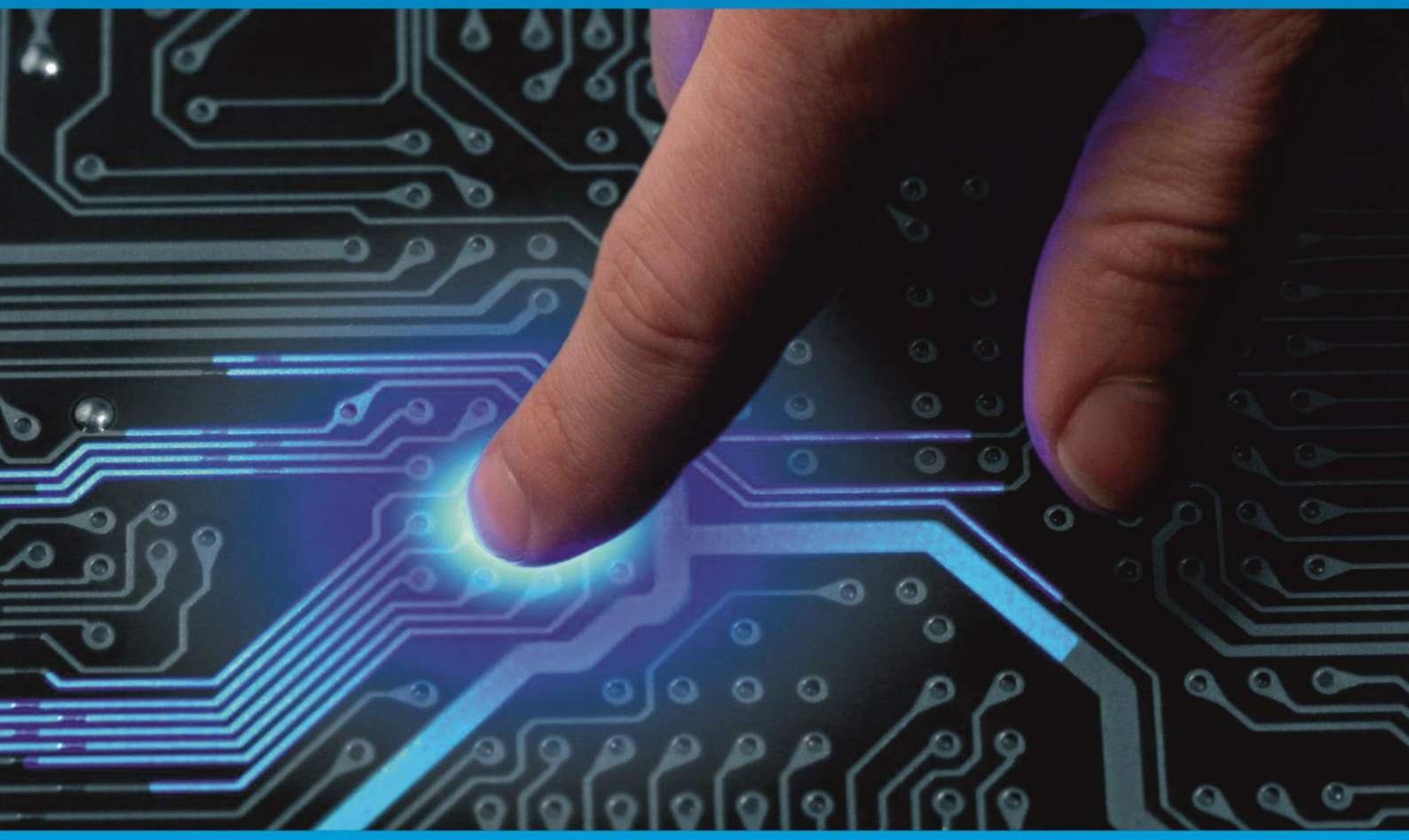
IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 3, March 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 3, March 2021 ||

| DOI: 10.15680/IJIRCCE.2021. 0903092 |

Detection of Plants Leaf Disease Using LSSVM Algorithm

A.Mahalakshmi, E.Sowmiya , B.Vinetha, R.Nathea

UG Students, Dept, of ECE, GRTIET, Thiruttani, Tamil nadu, India

Assistant Professor, Dept, of ECE, GRTIET, Thituttani, Tamil nadu, India

ABSTRACT:.The main objectives of this research is to develop a prototype system for detect the mango disease which are Mango Blast Disease, Brown Spot Disease, Narrow Brown Spot Disease. This paper concentrate on the image processing techniques used to enhance the quality of the image and neural network technique to classify. The methodology involes image acquisition ,pre-processing and segmentation, analysis and classification of the mango disease. All the mango sample will be passing through the RGB calculation before it proceed to the binary conversion. If the sample is in the range of normal mango RGB, then it is automatically classify as type 4 which is Normal. Then, all the segmented mango disease sample will be convert the binary data in excel file before proceed through the neural network for training and testing. Consequently, by employing the neural network technique, the mango disease are reconginzed about 92.5 percent accuracy rates. This prototype has a very great potential to be further improved in the future.

KEYWORDS: Adaptive, IPTV, mobile, multicast, on-demand, heterogeneous MAC protocol, LTE

I. INTRODUCTION

the mango leafThis chapter discuss about an overview of the study.The title is my project mango Disease Detection System Using Image Processing . It consists of background, problem statements, objectives and the scope of study. The background briefly describes the identification of projects and related issues. Problem statements describes the problems that arise and make the selected projects to be undertaken. The objectives are the goals list for the projects to be achieves. Scope of study discuss about the limitations of projects and users. Lastly, thesis organization gives a summary of the sequence for each chapter in the thesis.

A product quality control is fundamentally required in order to gain more value-added products [2]. Many studies show that quality of agricultural products can be reduced from many causes. One of the most important factors of such quality is plant disease. Consequently, minimizing plant diseases allow substantially improving quality of the products.

Rice known as Oryza Sativa (specific name), is one of the most utilized food plant sand widely grown originated in ASIA. [4] Rice is an important crop worldwide and over half of the world population relies on it for food. Many people in the world including Malaysia eat rice as staple food. However, there are many factors that make mango rice production becomes low and less productive. One of the main factors is mango disease.

Anabnormal condition that injures the plant or leads it to function improperly is called as a disease. Diseases are readily recognized by their symptoms. There are a lot of mango disease types which are Bakanae, red disease virus, brown spot disease and manymore.[1]Image processing and computer vision technology are very beneficial to the agricultural industry. They are more potential and more important to many are as in agricultural technology[1].

Mango Disease Detection System is one of the very beneficial systems. It can help ngofarmer detect the disease faster. This study aims to develop a prototype system to automatically detect and classify the mango diseases by using image processing technique as an alternative or supplemental to the traditional manual method

II. METERIALS AND METHODS

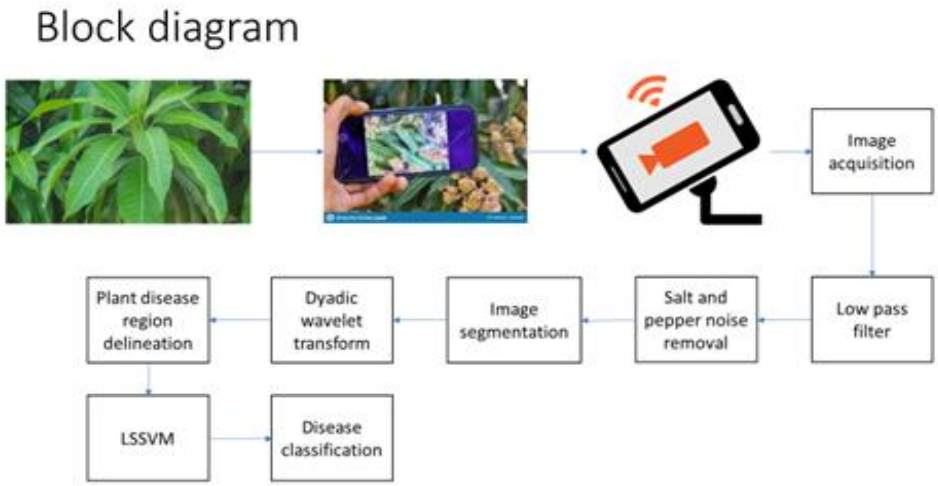
The entire procedure of developing the system for plants leaf disease detection using LSSVM and also disease segmentation are described further in detail. The proposed architecture is shown in Fig. 1.

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 3, March 2021 ||

| DOI: 10.15680/IJIRCCE.2021. 0903092 |



A IMAGEACQUISITION

The RGB colour images of mango leaf are captured using a Canon Power Shot G2digital camera, with pixel resolution 768x1024. The digitized images are about 225 KB size each. Those images are cropped into a smaller image with dimension of 109 x 310 pixels. There have collected about 94 data samples. It consists of three types of mango diseases as shown in Fig. 2. Images are stored in BMP format. The prototype uses Matlab image processing library.

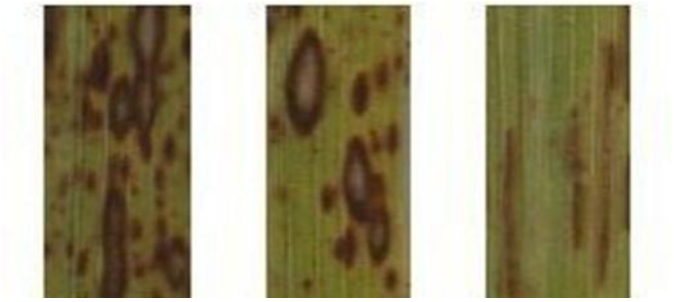


Fig 2:(a) Blast Disease;(b)Brown SpotDisease; (c)Narrow Brown Spot Disease

B. IMAGE SEGMENTATION The main objective of this process is to obtain the binary image with less noise or noise free. In order to achieve high accuracy, an appropriate silhouette should be obtained. The RGB image (Fig. 2.1(a)) is converted into a binary image using threshold method, asshown in Fig. 2.1(b). They used local entropy threshold methods of Eliza and Chang [11] and Otsu method. A morphological algorithm is used to remove noises by using region.filling technique

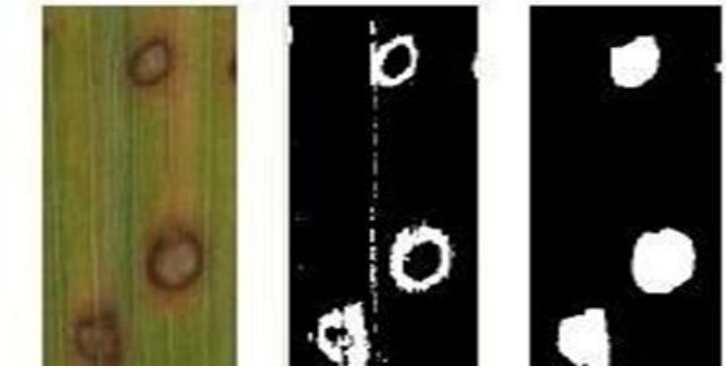


Fig 2.1 : (a) RGB image ; (b) Binary image with noise; (c) Binary image with noise free

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 3, March 2021 ||

| DOI: 10.15680/IJIRCCE.2021. 0903092 |

C IMAGE PREPROCESSING

Images are collected from the Internet were in different formats along with different quality and resolutions. In order to enhance image quality and get better feature extraction, the dataset of original images is pre processed for further analysis. Initially, the original leaf images are resized to 256×256 pixels. Some sources contain full images with disease. We crop the eye part from a facial image and resize the images. All the images are smoothed using median filter. This technique is used to reduce Impulsive noise that can preserve the suitable features and image edges. In other words, the median filter works by replacing each pixel of image with median of the intensity value of its neighbouring pixels. Then the pre processed images are used as training samples for LSSVM, so that the system automatically classifies plant leaf disease or without disease.

FILTERING

Averaging filter is implemented in this process. The average filter computes the mean (average) of the gray-scale values within a rectangular filter window surrounding each pixel. This has the effect of smoothing the image (eliminating noise). The filtered pixel will be calculated by:

$$r=(a1 +a2+\ldots+a9)/9 \quad (1)$$

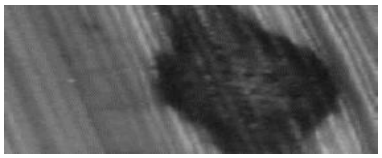


Fig.3:Filtering image

F ANALYSIS AND CLASSIFICATION OF MANGO DISEASE PSEUDO CODE

The next step is create a neural network that will learn to identify the mango disease. The feed forward network is used in this part for training and testing. Below is a picture of MLP structure with two hidden layer [2510] neuron sand sigmoid , line ar activation function. Now the network is ready to be trained. The samples are automatically divided into training, validation adtestset .The training set is used to teach network. Training continue as long as the network continue sim proving on the validation set. The test set provide acompletely independent measure of network accuracy.

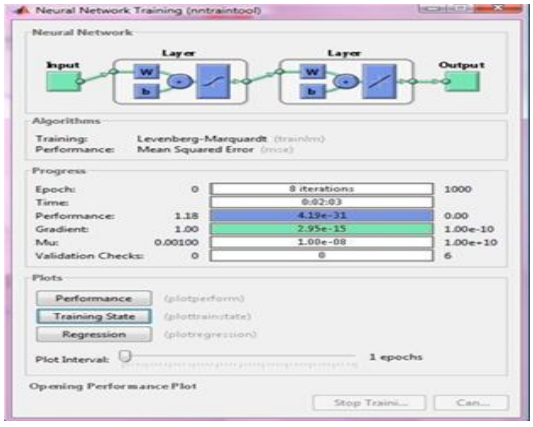


Fig.4:Training the Neuralnetwork

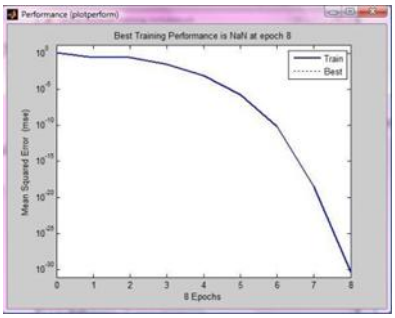


Fig.4.1:Neural Network performance plot

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 3, March 2021 ||

| DOI: 10.15680/IJIRCCE.2021. 0903092 |

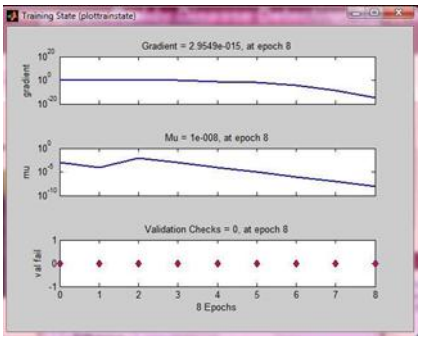


Fig.4.2:Neural network training state plot

Assumption and further research

The system should be published and used in the agricultural sector especially in mango industry to help the farmer detect the disease early. Farmer can protect their crop from being spread to the other crop area. Therefore, some assumption shave to be considered along with the development of this system. The camera must have a good pixel so that the picture was clear and easy to the system extract the feature.

In the view of the disadvantages stated, further research should be carried out to enhance the current research. The reare some suggestion and recommendation for further research to publish the system in the agriculture industry. This system must be improved on the threshold method so that there is less noise or free noise. There still a lot of technique beside the Otsu method that can be implement in this system

Further more, this systems should be implementing in the mobile application development. So that the mango farmers just carry their phone to know the types of mango disease.

SOFTWARE REQUIREMENT

	Software	Purpose
Operating System	Microsoft window vista TM Ultimate service pack1	As the operating system
Software	Microsoft Office Word 2010	For documentation
	Microsoft Office Project 2010	Gantt chart
	Microsoft Office Visio 2010	Flowchart
	Microsoft Power Point 2010	For slide presentation
	Adobe Acrobat Reader X	For reading from the internet resources
	MATLAB7.10	Developments tools

Table: Software requirement

III. PROPOSED SYSTEM

[1] There is a growing demand of image processing in diverse application areas, such as multimedia computing, secured image data communication, biomedical imaging, biometrics, remote sensing, texture understanding, pattern recognition, content-based image retrieval, compression and so on. To improve the quality of mango, there must be a system that can accurately detect the disease so that the mango farmer can cureit as soon as possible. The methodology consist so the pre-processing and segmentation of mango disease and classification of the disease. The techniques that will be applied for the classification of mango disease in this system are feed-forward neural network technique.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 3, March 2021 ||

| DOI: 10.15680/IJIRCCE.2021. 0903092 |

IV. CONCLUSION AND FUTURE SCOPE

CONCLUSION

A system for diagnosis the mango disease has been developeducing the Matlab application. The image processing techniques is applied to improve and enhance the image to a better quality. Besides, the neural network issused to classify the mango diseases which are mango blast , brown spot disease, narrow brown spot disease and normal mango leaf. The methodology involvesimageacquisition,pre-processingandsegmentation,analysisandclassification of the mango disease. All the mango sample will be passing through the RGB calculation before it proceed to the binary conversion. If the sample is in the range of normal mango RGB, then it is automatically classify as type 4 which is Normal. Then, all the segmented mango disease sample will be convert into the binary data in excel file before proceed through the neural network for training and testing. Consequently, by employing the neural network technique, the mango diseases are recognized about 92.5 percent accuracy rates. This prototype has a very great potential to be further improved in the future.

FUTURE SCOPE

Leaf disease feature extraction for detection has lot of advantages. The advantages are it will learn more complex function and it looks cool when you make your network deeper. The future scope should have chance to replace this method with Real time automated prediction system which use software and camera combined process instead of manual process.

REFERENCES

1. Kurniawati, N.N.Abdullah, S.N.H.S.Abdullah.S. Investigationon Image Processing Techniques for Diagnosing Mango Diseases".International Conference of Soft Computing and PatternRecognitionpg273-277,2009.
2. Meunkaewjinda,of the specific A.Kumsawat, P.Attakitmongcol,K.and Srikaew, A."Grape Leaf Disease Detection from Color Imagery using Hybrid Intelligent System" Poceeding of ECTI-CONpg513-516,2008.
3. Ju-WonL.,Han-WookL.,Jong-HoeL.,Ick-TaeK.,Gun-KiL.,"AStudyonLungNoduleDetectionusirlgNeuralNetworks"IEEETENCON(1150-1153),1999
Zhihao, Q.Minghua,Z.(2005)."Detection of rices heathblight forin-season disease management using multispectral remote sensing"
RetrievedOctober6,2011from
4. http://www.deepdyve.com/lp/elsevier/detection-of-rice-sheath-blight-for-in-season-disease-management-using-tbRKqaZuHk?key=elsevier#Download
5. http://en.wikipedia.org/wiki/Neural_networkRetrievedon8Disember2011
6. Zulhadi, Zakarian. Nor Ashidi Mat Isaand Shahrel A. Suandi, Member IEEE" A Study on Neural Network Training Algorithm for Multiface Detecttion in Static Images "World Academy of Science, Engineering and Technology 622010, pg170-173,2010
7. http://en.wikipedia.org/wiki/Image_processingRetrivedon8Disember2011
8. http://www.merriam-webster.com/dictionary/rice?show=0&t=1320089188
9. http://wiki.tnau.ac.in/groups/mangocroppinginpapanasam/wiki/23961/Mango_Diseases_Symptoms_and_Management.html
10. http://en.wikipedia.org/wiki/Segmentation_(image_processing)
11. ElizaYingzi Duand Chein-IChang.2003.An Unsupervised Approach to Colour Video Thresholding. IEEE Proc. International Conference on Multimedia and Expo ICME"033:III-337-40.
12. Perona, P.and Malik, J."Scale-space and edge detection using an isotropic diffusion,"IEEE Transaction on pattern Analysis and Machine Intelligence,vol.12,pp.629-639,1990
13. Doungchatom, B.Kumsawat, P.Attakitmongcol, K.and A.Srikeaw,"Modified Self-Organizing Map for Optical Flow Clustering System,"Proceeding of the 7th WSEAS International Conference on Signal, Speech and Image Proce

INNO SPACE

SJIF Scientific Journal Impact Factor

Impact Factor:
7.488

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details