FRUIT DISEASE DETECTION USING COLOR AND TEXTURE ANALYSIS BY CNN

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ABSTRACT:

Now-a-days as there is prohibitive demand for agricultural industry, effective growth and improved yield of fruit is necessary and important. For this purpose farmers need manual monitoring of fruits from harvest till its progress period. But manual monitoring will not give satisfactory result all the times and they always need satisfactory advice from expert. So it requires proposing an efficient smart farming technique which will help for better yield and growth with less human efforts. We introduce a technique which will diagnose and classify external disease within fruits. Whereas system that we have come up with, uses image processing techniques for implementation as image is easy way for conveying. In the proposed work, OpenCV library is applied for implementation, the images are catalogue and mapped to their respective disease categories on basis of four feature vectors colour, morphology, texture and structure of hole on the fruit. Convolutional Neural Network (CNN) concept is used for pattern matching and classification of diseases..

Keywords: CNN Algorithm ,OpenCV ,Image processing techniques

1.   INTRODUCTION

 The studies of fruit or plant can be determined by observable patterns of specific plant and it is critical to monitor health and detect disease within a plant. Through proper management strategies such as pesticides, fungicides and chemical applications one can facilitates control of diseases which interns improve quality. There are various techniques available such as spectroscopic and imaging technology, applied to achieve superior plant disease control and management. [1] With smart farming today's farmer can use decision tools and automation techniques which seamlessly integrate product, knowledge and services for better productivity, grading and surplus yield. The purpose of this paper is to monitor diseases on fruits and suggest better solution for healthy yield and productivity with the help of Artificial Neural Network concept. System uses two image databases, one for training of already

stored infected area image and other for execution of query images. Three fruits namely grapes, apple and pomegranate have been used for research in this paper

2 . LITERATURE SURVEY

[1] Image Processing for Smart Farming: Detection of Disease and Fruit Grading, Authors (Monica Jhuria, Ashwani Kumar, Rushikesh Borse), 2013:

As there is a need of high yield in agricultural industries improved yield of fruit is important, for this there is a need of automated technique which will find disease on fruits. For this artificial neural network methodology is suggested which can be helpful to categories fruit infection.

[2] A Review of Image Processing For Pomegranate Disease Detection, Authors (Manisha A. Bhange, Prof. H. A. Hingoliwala), 2015:

The process suggests a solution for the recognition of pomegranate fruit disease. In this process, web based technique is applied to help non experts in identifying fruit diseases which depends on the picture representing the symptoms of the fruit. Farmers can take image of fruit disease and upload it on the system. After this farmers would be able to see if the fruit is affected by bacterial blight or not.

[3] Fruit Detection using Improved Multiple Features based Algorithm, Authors (Hetal N. Patel, Dr. R. K. Jain, and Dr. M. V. Joshi), 2011:

This gives improved solution for locating the fruits on the plant based on multiple features. Multiple feature extortion technique can include steps like extraction of color and intensity feature, extraction of orientation feature, extraction of edge feature, extraction of area from feature maps. The process is entirely automatic and it can work without user involvement. To improve output it considers numerous features.

3.EXISTING SYSTEM

In existing system, it is very difficult for the farmers to manually identify many disease accurately with their limited knowledge. This difficulty can be overcome by deep learning techniques.

Disadvantages :

1. More Expensive.

2. Difficult to scale up

3.Time Consuming

4.   PROPOSED SYSTEM

In the proposed work, OpenCV library is applied for implementation, the images are catalogue and mapped to their respective disease categories on basis of four feature vectors color, morphology, texture and structure of hole on the fruit. Convolutional Neural Network (CNN) concept is used for pattern matching and classification of diseases..

Advantages:

1. Cheaper to operate.

2. It can be scaled up quickly.

3. Time minimising.

5.EXPERIMENTAL RESULTS

1.Home Page:

Fig-1

2.UserLogin:

Fig-2

3.Upload Image:

Fig-3

4.prediction:

Fig-4

6. CONCLUSION:

In conclusion, the project on fruit disease detection using colour and texture analysis by Convolutional Neural Networks (CNN) has demonstrated its effectiveness in accurately identifying and classifying diseases affecting fruits. However, it is important to acknowledge some limitations of the project. The accuracy of disease detection relies on the quality of input images, and factors such as lighting conditions can impact the system's performance. Additionally, the availability of a diverse and representative dataset is crucial for training the CNN model effectively.

7.References:

[1]   Monica Jhuria, Ashwini Kumar, Rushikesh Borse "Image Processing for Smart

Farming: Detection of Disease and Fruit Grading" Proceeding of the 2013 IEEE Second International Conference on Image Processing.

[2]   Shiv Ram Dubey, Anand Singh Jalal "Adapted Approach for Fruit Disease Identification using Images".

[3]   Manisha A. Bhange, Prof. H. A. Hingoliwala "A Review of Image Processing for

Pomegranate Disease Detection" International Journal of Computer Science and Information Technologies, Vol. 6 (1), 2015, 92-94.

For MySQL

- https://www.mysql.com/
- http://www.mysqltutorial.org

For XAMPP

- https://www.apachefriends.org/download.html