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REVIEW ON GRAPE LEAF DISEASE DETECTION USING MACHINE LEARNING

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Abstract: We can call India an agriculture country because over 70% of our population relies on agriculture and agricultural activity. According to a recent survey, agriculture and agricultural activity account for roughly 33.33 percent of national income. Farmers are losing money these days due to issues such as environmental changes, heavy rain, various crop diseases, and a lack of water. Farmers' income is directly linked to the quality of their produce, as we all know. As a result, we chose to concentrate our efforts on issues such as crop diseases. Crop diseases have a negative impact on crop quality, thus early detection and control can help avoid crop loss and wasteful fertiliser use. Techniques like image processing were previously used to detect crop diseases. For detection and classification, we use a machine learning method and image processing technologies. The many processes of image processing include image capture, picture pre-processing, image feature extraction, and feature categorization.

Keywords - *Image Processing, Machine Learning.*

I INTRODUCTION

A web application is what we're proposing. Machine learning techniques appear to be better possibilities for identifying and classifying crop illnesses in this case. Our project's goals are to train a classifier using a deep learning algorithm and analyse the results of the detection and classification stages. Crop diseases attack the leaves, stems, seeds, fruits, and other parts of the plant.

For categorization, support vector machines, homogeneous pixel counting techniques, and neutral networks can be employed. Previous proposed efforts for illness detection had some drawbacks, such as low accuracy and a small number of images utilised as input. The leaves and the fruits are the most vulnerable parts of any illness. Nearly 85% of illnesses have an impact on the leaf. Alternaria leaf spot, Foliar leaf on leaf, and pesticide (tudtude, mawa) fungus are examples of illnesses. The application makes use of a variety of algorithms. One of the most essential methods for segmenting an image into objects and backgrounds is image processing.

II RELATED WORK

Wan Mohd Fadzil et al. [1], discussed a disease detection method for orchid plant leaves. The orchid plant leaflet images are received from the use of digital camera. The algorithm makes use of an aggregate of various strategies inclusive of border segmentation method, morphological processing and filtering technique used for categorizing input images into two disease class as black leaf spot and solar scorch.

Aditya Parikh et al [2] authors' primary focus is detection of disease and estimate its stage for a cotton using images. Mostly diseases or its symptom are observed on the leaf.

This works uses cascaded classifiers with the use of local statistical data, first classifier is trained for detecting disease and find its stage. The algorithm can be applied for any disease.

Bhumika S.Prajapati et al [3], This paper presents an overview on characterization and identification of cotton leaf illnesses. It is difficult to recognize the specific sort of leaf illness which for the most part happens on the leaf of plant. For distinguish the cotton leaf infections precisely the picture handling and AI procedures can be valuable. The information were taken from the computerized camera. In pre-handling strategies, foundation expulsion technique is applied on the picture to eliminate foundation from the picture.

P. R. Rothe et al [4], Leaf diseases on cotton plant must be diagnosed earlier and with accuracy as it can prove detrimental to the yield. This paper speaks to an example acknowledgment framework for arrangement and recognizable proof of three cotton leaf infections for example Alternaria, Myrothecium,Bacterial Blight. The information were taken from the fields at Central Institute of Cotton Research Nagpur, and the cotton fields in Buldana and Wardha area. The form model is utilized for picture division.

Melike Sardogan et al [5], This work represents a Learning Vector Quantization (LVQ) algorithm and Convolutional Neural Network (CNN) calculation based technique for tomato leaf infection order and recognition. The information contains almost 500 pictures of tomato leaves with four indications. They have used a CNN for automatic feature extraction and classification.

Norfarahin Mohd Yusoff et al [6], It incorporate constant edge location strategy for recognizing Hevea leaves illnesses (elastic tree leaves) in pictures and its execution in

equipment. There are three Hevea leaves sicknesses which are Corynespora Leaf Spot, Bird's Eye Leaf Spot and Colletotrichum Leaf Disease utilized in this investigation for picture correlation. Sobel edge discovery calculation is utilized for edge location and sickness on leaves.

Indumathi.R et al [7], The proposed framework finds the zone of leaf which has been influenced and furthermore the sickness that assaulted the leaf which is accomplished by utilizing Image Processing method and there are a few frameworks which predicts the infections in the leaf. The framework utilizes Random Forest calculation and K-Medoids grouping to create exact yield in the identification of infection. The picture is experiencing pre-prepared procedure and afterward the bunching technique is utilized to locate the influenced region on the leaf.

Gayatri Kuricheti et al [8], This paper presents an algorithm for preventing and detecting the diseases to the whole crop and its productions high quality crop. The k-means image segmentation is used for creating and processing the databases different leaf image. The GLCM is used for leaf image textural. The SVM classifier is used to classify the feature extracted images.

Chaowalit Khitthuk et al [9], This work represents disease diagnosis system from colour imagery using unsupervised neural network. The colour and texture features are used for processing image. The system execute disease classification and disease feature extraction. Four types of grape leaf disease images are used to test which are rust, scab, downy mildew and no disease.

PENG JIANG et al [10], In this paper, the apple leaf infection dataset (ALDD), which is comprise of complex pictures and research facility pictures under genuine field conditions, is first developed through picture explanation and information increase advancements. Another apple leaf illness discovery model that utilizes profound CNNs is proposed by presenting the Rainbow connection and Google Net Inception structure. Utilizing dataset of 26,377 pictures of sick apple leaves, the proposed INAR-SSD model is prepared to recognize these five regular sicknesses.

III PROPOSED APPROACHES:-

The methodology entails multiple steps, including image pre-processing, picture acquisition, image feature extraction, and leaf disease classification based on picture features like as texture, shape, and colour. The picture obtaining stage is the most important, as it involves transferring images from multiple leaf datasets. Pre-handling is done in the next stage photo. Extraction for the contaminated bit of the leaf is included in the image, and it is based on specified features among pixels in the image or their surface. Following this, factual inspection tasks are

completed in order to rank the highlights that relate to the given image utilising machine learning to compare image attributes. Finally, the classification output displays the leaf disease that has been identified.

IV CONCLUSION

The research of the different infections present on the leaves may be effectively distinguished in the beginning phase before it harms the entire plant, according to this research, which is devoted to how the illness examination is practical for the leaf sicknesses detection. Here, the method introduced may be used to more precisely detect the illness; we can state that we can achieve tremendous profitability by preventing the many diseases found on plant leaves using climatic datasets and image processing. The employment of grouping and highlight extraction measures has improved the framework's presentation, resulting in superior results.

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