Fertilizer recommendation system

Introduction:

The early identification of disease symptoms is made possible by the detection and recognition of plant diseases using machine learning. For the purpose of diagnosing plant diseases, plant pathologists can examine digital photographs utilising digital image processing. implementation of Simply put, computer vision and image processing techniques help farmers in all regions of agriculture. In most cases, aberrant physiological functioning of plants is what causes plant diseases. Therefore, the difference between the plants' regular physiological capabilities and abnormal physiological functionalities leads to the generation of the specific symptoms. The pathogens that typically infect plant leaves are found on the stems of the plants. Different image processing techniques can forecast these various leaf signs and diseases. These different methods include different fundamental processes like segmentation, feature extraction and classification and so on. Mostly, the prediction and diagnosis of leaf diseases are depending on the segmentation such as segmenting the healthy tissues from diseased tissues of leaves.

Literature Survey:

S.No	Title	Proposed System	Advantages	Disadvantages
1.	Semi-automatic leaf disease detection and classification system for soybean culture IET Image Processing, 2018	The suggested approach employs SVM to categorise tree leaves, pinpoint the disease, and provide fertiliser. The suggested approach is contrasted with the currently available CNN-based leaf disease prediction. When compared to current CNN methods, the suggested SVM technique produces better results. The accuracy of identifying leaf illness using CNN is 0.6 and SVM is	The prediction and diagnosing of leaf diseases are depending on the segmentation such as segmenting the healthy tissues from diseased tissues of leaves.	The proposed algorithm is being implemented in this new study using openly available datasets. Additionally, different segmentation methods might be used to increase accuracy. To detect diseases that affect other plant organs, such stems and fruits, the proposed method might be further developed.

		0.8 for the same set of photos. F-Measure for CNN is 0.7 and 0.8 for SVM.		
2.	Shloka Gupta, Nishit Jain, Akshay Chopade, Farmer's Assistant: A Machine Learning Based Application for Agricultural Solutions	In this study, we present the "Farmer's Assistant," a user-friendly online application system built on machine learning and web scraping. We are able to offer numerous functions with our system, including crop recommendation using the Random Forest algorithm, fertiliser advice using a rule-based categorization method, and crop disease detection. utilising the EfficientNet model on photos of leaves. The user can input data using forms on our user interface and receive responses immediately. Additionally, we employ the LIME interpretability approach to	Regarding fertiliser and crop recommendations, We can let users know that the products are available on well-known shopping websites and perhaps even let them purchase crops and fertiliser right from our app.	To identify fine-grained segmentations of the dataset's sick area. The absence of such data makes this impractical. However, we may incorporate a segmentation annotation tool within the application so that users may be able to fill in the gaps. Additionally, unsupervised methods may be employed to identify the image's sick regions.

		explain our predictions on the disease detection image, which may help explain why our model makes the predictions it does and allow us to use this understanding to enhance datasets and models.		
3.	Cloud Based Automated Irrigation And Plant Leaf Disease Detection System Using An Android Application. International Conference on Electronics, Communication and Aerospace Technology, ICECA 2017.	Detection of Leaf Diseases and Classification using Digital Image Processing International Conference on Innovations in Information, Embedded and Communication Systems(ICIIECS), IEEE, 2017.	The system detects the diseases on citrus leaves with 90% accuracy.	System only able to detect the disease from citrus leaves.
4.	Swapnil Jori1, Rutuja Bhalshankar2, Dipali Dhamale3, Sulochana Sonkamble , Healthy Farm: Leaf Disease Estimation and Fertilizer Recommendation System using Machine Learning, International Journal of All Research Education and	In the current study, image processing techniques for spotting plant diseases in various plant species are examined and described. The most popular techniques for identifying plant diseases include BPNN, SVM, K-means clustering, and SGDM.		These methods have problems, some of which include the effect of background information on the final result, refinement of a methodology for a particular plant leaf disease, and automation of a system for ongoing,

	Scientific Methods (IJARESM), ISSN: 2455-6211			automatic monitoring of plant leaf diseases in actual field settings.
5.	Ms. Kiran R. Gavhale, Ujwalla Gawande, Plant Leaves Disease detection using Image Processing Techniques, January 2014.	Semi-automatic leaf disease detection and classification system for soybean culture IET Image Processing, 2018	The system helps to compute the disease severity	The system cannot be implemented in real time since it needs leaf photos from an online dataset.
6.	R. Neela, P. Fertilizers Recommendation System For Disease Prediction In Tree Leave International journal of scientific & technology research volume 8, issue 11, november 2019	The author suggests a strategy that, by recommending the best crops, aids in agricultural production prediction. In order to determine what crop should be put in the field to enhance productivity, it also focuses on soil types. Soil types are crucial for crop yield. Information about the soil can be acquired by factoring in the weather information from the previous year.	It enables us to foresee which crops might thrive in a specific climate. Crop quality can also be increased using data sets relating to weather and disease. We can categorise the data using prediction algorithms according to the disease, and we can predict soil and crops using the data that was taken from the classifier.	Accurate results cannot be predicted because of the varying climatic circumstances through this method.
7.	Duan Yan-e, Design of Intelligent Agriculture Management Information	Cloud Based Automated Irrigation And Plant Leaf Disease Detection	It is simple and cost effective system for plant leaf disease detection	The performance of the system may be impacted by

	System Based on IOT‖, IEEE,4th, Fourth International reference on Intelligent Computation Technology and Automation, 2011	System Using An Android Application. International Conference on Electronics, Communication and Aerospace Technology, ICECA 2017		any hardware issues. With the help of the cloud and IoT, the current paper suggests an Android application for plant disease diagnosis and watering. They use soil moisture and temperature sensors, and the sensor data is sent to the cloud, for the purpose of monitoring irrigation systems. Additionally, the user can identify plant leaf disease. K-means clustering is used to extract features.
8.	Soil Based Fertilizer Recommendation System for Crop Disease Prediction System International Journal of Engineering Trends and Applications (IJETA) – Volume 8 Issue 2, Mar-Apr 2021	The proposed system was designed to examine the soil type, identify diseases in the leaves, and then advise the farmers on the fertiliser that would be most helpful to them. One of the main causes of lower yields in both quality and	By balancing crop production, yielding the proper crop at the right time reducing crop scarcity through economic expansion, plant disease control, and planning. Therefore, it is vital to provide symptoms in order to identify the disease in its early stages in order to detect and diagnose plant	It cannot be extended to incorporate several cultivable crop kinds and performance analysis.

		quantity is plant disease, particularly on the leaves. as well as the size of the food crops. Finding the leaf disease is a crucial part of keeping agriculture alive. In agriculture, clever analysis and thorough prediction models assist the farmer in producing the right crop at the right time.	diseases and to propose fertiliser.	