Related Work:

Through the application of artificial intelligence (AI) and machine learning (ML), growers can access increasingly sophisticated data and analytics tools, which enables better decisions, improved efficiencies, and reduced waste in food and biofuel production, all while minimizing negative environmental consequences.

Name	Authors	Year	Abstract
An Improved Deep Learning model for plant disease detection	-Anjanadevi Bondalapati	March 2020	In this paper, we have focused on plant data images in agricultural field. Agriculture is one of major living source in India. To increase the yield by preventing diseases and detection of diseases place major role in agriculture domain. By using Improved and customized DCNN model (improved-detect), We trained plant Doc and plant village datasets. Mainly we used Tomato, Corn and potato plant for model training and testing. we have experimented on plant image data set tomato leaves both healthy and diseased ones. Experimental results are compared with state of the architectures like Mobile Net, Dark Net-19, ResNet-101and proposed model out PERFORMS in location and detection of plant diseases.

Using Deep Learning for Image-Based Plant Disease Detection	-Sharada Prasanna Mohanty. -David Peter Hughes. -Marcel Salathe	April 15, 2016	Using a public dataset of 54,306 images of diseased and healthy plant leaves collected under controlled conditions, we train a deep convolutional neural network to identify 14 crop species and 26 diseases (or absence thereof). The trained model achieves an accuracy of 99.35% on a held-out test set, demonstrating the feasibility of this approach. When testing the model on a set of images collected from trusted online sources - i.e., taken under conditions different from the images used for training the model still achieves an accuracy of 31.4%. While this accuracy is much higher than the one based on random selection (2.6%), a more diverse set of training data is needed to improve the general accuracy.
Plant Disease Detection with Deep Learning and Feature Extraction Using Plant Village	-Mohamet Faye. -Chen Bingcai. -Kane Amath Sada	January 2020	The combination of high-end smart-phones and computer vision via Deep Learning has made possible what can be defined as “smartphone-assisted disease diagnosis”. In the area of Deep Learning, multiple architecture models have been trained, some achieving performance reaching more than 99.53% . In this study, we evaluate CNN’s architectures applying transfer learning and deep feature extraction. All the features obtained will also be classified by SVM and KNN. Our work is feasible by the use of the open-source Plant Village Data set. The result obtained shows that SVM is the best classifier for leaf disease detection.

Plant Disease Detection Using Machine Learning	-Shima Ramesh Maniyath. -Vinod P V	April 2018	we make use of Random Forest in identifying between healthy and diseased leaf from the data sets created. Our proposed paper includes various phases of implementation namely dataset creation, feature extraction, training the classifier and classification. The created datasets of diseased and healthy leaves are collectively trained under Random Forest to classify the diseased and healthy images. For extracting features of an image, we use Histogram of an Oriented Gradient (HOG). Overall, using machine learning to train the large data sets available publicly gives us a clear way to detect the disease present in plants in a colossal scale
Plant Disease Detection Using Machine Learning Algorithms	P. Prathusha. K. E. Srinivasa Murthy. K. Srinivas	July 2020	Machine learning is a trending area where the technological benefits can be imparted to the agriculture field also. It is rather inexpensive to detect the diseases in plants using machine learning techniques rather than using chemical pesticides. This paper makes a review on the existing techniques and also suggests the best technique which can be implemented by farmers to recognize the disease faster and which proves to be economical to them. In this work we use KNN algorithm which is one of the best machine learning algorithms.

Plant Disease Detection and Classification Using Deep Neural Networks	-Aravindhan Venkataramanan. -Pooja Agarwal	August 2019	we present a Deep Learning approach to detect and classify plant diseases by examining the leaf of a given plant. The classification is performed in multiple stages to eliminate possibilities at every stage, hence providing better accuracy during predictions. A YOLOv3 object detector is used to extract a leaf from the input image. The extracted leaf is analysed through a series of ResNet18 models. These ResNet18 models were trained using transfer learning. One layer identifies the type of leaf and the following layer checks for the possible diseases that could occur in the plant.
Plant disease detection and its solution using image classification	G.Saradhambl. R. Dhivya. S. Latha. R. Rajesh.	January 2018	We propose an enhanced k-mean clustering algorithm to predict the infected area of the leaves. A colour-based segmentation model is defined to segment the infected region and placing it to its relevant classes. Experimental analyses were done on samples images in terms of time complexity and the area of infected region. Our project is used to detect the plant diseases and provide solutions to recover from the disease. It shows the affected part of the leaf in percentage. We planned to design our project with voice navigation system, so a person with lesser expertise in software should also be able to use it easily.

Image-Based Detection of Plant Diseases: From Classical Machine Learning to Deep Learning Journey	-Rehanullah Khan. -Khalil Khan. -Waleed Albattah. -Ali Mustafa Qamar	June 2021	The technology used in medical procedures has not been adequate to detect all diseases on time, and that is why some diseases turn out to become pandemics because they are hard to detect on time. Our focus is to clarify the details about the diseases and how to detect them promptly with artificial intelligence. We discuss the use of machine learning and deep learning to detect diseases in plants automatically. Our study also focuses on how machine learning methods have been moved from conventional machine learning to deep learning in the last five years. Furthermore, different data sets related to plant diseases are discussed in detail. The challenges and problems associated with the existing systems are also presented.
Deep learning models for plant disease detection and diagnosis	Konstantinos Ferentinos	February 2018	convolutional neural network models were developed to perform plant disease detection and diagnosis using simple leaves images of healthy and diseased plants, through deep learning methodologies. Training of the models was performed with the use of an open database of 87,848 images, containing 25 different plants in a set of 58 distinct classes of [plant, disease] combinations, including healthy plants. Several model architectures were trained, with the best performance reaching a 99.53% success rate in identifying the corresponding [plant, disease] combination (or healthy plant).

- **https://www.researchgate.net/publication/342601699_An_Improved_Deep_Learning_model_for_plant_disease_detection**

- https://www.researchgate.net/publication/301879540_Using_Deep_Learning_for_Image-Based_Plant_Disease_Detection
- https://www.researchgate.net/publication/342234677_Plant_Disease_Detection_with_Deep_Learning_and_Feature_Extraction_Using_Plant_Village
- https://www.researchgate.net/publication/327065422_Plant_Disease_Detection_Using_Machine_Learning
- https://www.researchgate.net/publication/342710656_Plant_Disease_Detection_Using_Machine_Learning_Algorithms
- https://www.researchgate.net/publication/337858290_Plant_Disease_Detection_and_Classification_Using_Deep_Neural_Networks
- https://www.researchgate.net/publication/325580687_Plant_disease_detection_and_its_solution_using_image_classification
- https://www.researchgate.net/publication/352108134_Image-Based_Detection_of_Plant_Diseases_From_Classical_Machine_Learning_to_Deep_Learning_Journey
- https://www.researchgate.net/publication/322941653_Deep_learning_models_for_plant_disease_detection_and_diagnosis