PLANT DISEASE PREDICTION AND FERTILISER RECOMMENDATION

LITERATURE SURVEY

1.Plant Disease Prediction and classification using Deep Learning ConvNets

Authors: A. Lakshmanarao, M. Raja Babu, T. Srinivasa Ravi Kiran

Link : https://ieeexplore.ieee.org/document/9670918/authors#authors

Summary : In this work, "Convnets" were employed to identify and classify plant diseases. The PlantViallge dataset from Kaggle was used to train the model. It contains pictures of 15 different plant leaf classes, including those from the tomato, pepper, and potato. The dataset was divided into three smaller datasets, and Convnets was applied to each of them. We achieved 98.3%, 98.5%, and 95% accuracy for the detection of tomato, pepper, and potato plant diseases, respectively.

2.Detecting Turmeric Taphrina Maculans Disease using Machine Learning Algorithms

Authors: C.N. Vanitha; S. Malathy; P. Shenbagavalli; S.A. Krishna; K. Kavin

Link : https://ieeexplore.ieee.org/document/9793291

Summary:
The dataset of the turmeric leaf has been created after the collection of example photos.The primary focus of this work is on identifying plant illnesses. The identification of plant diseases requires careful observation, thus this research discusses innovations to manage infections of turmeric plants caused by microbes and to promote the production of superior crop yields. To identify and group the diseases in turmeric leaf, several image processing and machine learning techniques are used. To promote productive component extraction, the leaf images of different classes are pre-handled and sectioned.

3.An Identification Method of Apple Leaf Disease Based on Transfer Learning

Authors : Jinsheng Su; Mingjun Zhang; Wenjing Yu

Link : https://ieeexplore.ieee.org/document/9778876

Summary :

The identification problem of apple disease detection was resolved using a method based on a light network structure. The design of MobileNetV2 was centred on apple leaf pathology, which included, badly hurt and afflicted by spotted leaf litter disease, brown spot disease, mosaic disease, grey spot disease, and rust. This method uses data enhancement to increase the number of original components while investigating the application of convolutional neural networks for crop pathology diagnosis using transfer learning. A deep learning model suitable for mobile devices like smartphones enables the diagnosis of diseases on apple leaves. The experiment's findings show that deep separable convolutional neural networks are capable of completing this task in order to meet manufacturing demands.

4.Plant Disease Prediction using Transfer Learning Techniques

Authors :A. Lakshmanarao; N. Supriya; A. Arulmurugan

Link : https://ieeexplore.ieee.org/document/9807956

Summary : In this work, plant diseases are predicted using the transfer learning method with the "plantvillage" dataset from Kaggle. This gallery features images of fifteen different leaf variations from three different plants (including tomato, potato, and pepper bell). the original dataset was separated into three pieces for three different plants using the three transfer learning techniques VGG16, RESNET50, and Inception, and achieved an accuracy of 98.7%, 98.6%, and 99%, respectively. The algorithms produced better results compared to past approaches.

5.Plant disease detection using computational intelligence and image processing

Authors: Vibhor Kumar Vishnoi, Brajesh Kumar

Link: https://link.springer.com/article/10.1007/s41348-020-00368-0

Summary : To automatically identify plant illnesses from leaf pictures, many researchers use soft computing and computer vision techniques. This study gives a general review of the advantages and disadvantages of various study elements. Along with typical ailments, the research environment for such detection systems at various stages is evaluated. The most recent feature extraction algorithms are evaluated to identify those that appear to perform well across a range of crop kinds. The work will help researchers better understand how computer vision is used to identify and categorise plant illnesses.

6.Deep Neural Networks Based Recognition of Plant Diseases by Leaf Image Classification

Authors : Srdjan Sladojevic, Marko Arsenovic,Andras Anderla, Dubravko Culibrk and Darko Stefanovic

Link : https://www.hindawi.com/journals/cin/2016/3289801/

Summary: This paper is concerned with a new approach to the development of plant disease recognition model, based on leaf image classification, by the use of deep convolutional networks.Innovative training methods and the methodology employed make it simple and quick to implement the system in real-world settings. With the ability to differentiate between plant leaves and their surroundings, the developed model can identify 13 different types of plant illnesses from healthy leaves. This approach to identifying plant diseases has, as far as we know, never been put forth before. The entire process of putting this disease recognition model into practice, from obtaining photos to building a database that has been approved by agricultural specialists, is comprehensively documented throughout the publication.

7.Plant Disease Detection Using Machine Learning Algorithms

Authors : P. Prathusha , K. E. Srinivasa Murthy , K. Srinivas

Link: https://link.springer.com/chapter/10.1007/978-3-030-46943-6_25

Summary: Disease detection is a critical task for farmers. They follow shortcuts of using chemical pesticides which give side effects to consumable foods. So In this work we have used machine learning algorithms for plant disease detection. 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.

8. Detection of Potato Disease Using Image Segmentation and Machine Learning

Authors : Kamul Hasan, Talukder, Md. Asif Iqbal

Link : https://ieeexplore.ieee.org/document/9198563

Summary: Two common and popular leaf diseases of the potato plants are Early Blight (EB) and Late Blight (LB). If these diseases were identified at an early stage it would be very helpful for better production of this crop. To solve this problem by detecting and analysing these diseases, image processing is the best option. This paper proposes an image processing and machine learning-based automatic system that will identify and classify potato leaf diseases.

9.Tomato Leaf Disease Detection Using Convolutional Neural Networks

Authors: Nagaratna B. Chittaragi, Kandiraju SaiAshritha, Alla Pranathi

Link : https://ieeexplore.ieee.org/abstract/document/8530532

Summary: The LeNet convolutional neural network model is used in this study to detect and characterise illnesses in tomato leaves. The primary goal of the suggested study is to identify a simple method for detecting tomato leaf disease while using the least amount of computational power possible to produce results that are on par with those of state-of-the-art methods. Neural network models employ automatic feature extraction to aid in the classification of the input image into respective disease classes. This proposed system has achieved an average accuracy of 94-95 % indicating the feasibility of the neural network approach even under unfavourable conditions.

10.A Deep Learning-based Approach for Banana Leaf Diseases Classification

Authors: Amara, J., Bouaziz, B. & Algergawy, A

Link : https://dl.gi.de/handle/20.500.12116/944

Summary: It proposes a deep learning-based approach that automates the process of classifying ba- nana leaves diseases. In particular, we make use of the LeNet architecture as a convolutional neural network to classify image data sets. The preliminary results demonstrate the effectiveness of the proposed approach even under challenging conditions such as illumination, complex background, different resolution, size, pose, and orientation of real scene images.