PRIOR KNOWLEDGE

Team ID	PNT2022TMID42096
Project Name	Fertilizers Recommendation System For Disease Prediction

Fertilizer Recommendation System For Disease Prediction: - Prior Knowledge:

Detection and recognition of plant diseases using provides Deep learning technique "Neural network algorithm" for predicting the plant disease. Using collection of image segmented values predicting the disease in the leaf. Main objective of the proposed method is to calculate percentage of disease affected pixels of a paddy leaf.

To do this, a digital camera has been used to capture images of the leaves. But in field condition, it is difficult to keep optical axis of camera vertical with leaf plane. So the leaf is separated and placed horizontally on white background to take the photograph.

Generally, plant diseases are caused by the abnormal physiological functionalities of plants. Therefore, the characteristic symptoms are generated based on the differentiation between expected physiological functionalities and abnormal physiological functionalities of the plants. Mainly, plant leaf diseases are caused by Pathogens positioned on the plants' stems. Different methods in image processing predict these different symptoms and diseases of leaves. These different methods include different fundamental processes like segmentation, feature extraction and classification and so on. Mainly, the prediction and diagnosis of leaf diseases depend on segmentation, such as segmenting the healthy tissues from diseased tissues of leaves.

1. **Image Classification**

    The proposed image classification technique is divided into the following steps.

2. **Image acquisition**

    The purpose of image preprocessing is improving image statistics so that undesired distortions are suppressed and image capabilities which are probably relevant for similar processing are emphasized. The preprocessing receives an image as input and generates an output image as a grayscale, an invert and a smoothed one.

3. **Segmentation**

    Implements Guided active contour method. Unconstrained active contours applied to the difficult natural images. Dealing with unsatisfying contours, which would try and make their way through every possible grab cut in the border of the leaf. The proposed solution is used the polygonal model obtained after the first step not only as an initial leaf contour but also as a shape prior that will guide its evolution towards the real leaf boundary

4. Disease Prediction

A Convolution Neural network Deep learning based approach is proposed for predicting leaf disease. The developed approach was evaluated with actual datasets collected from the images while capturing the crops. The evaluation process is conducted with manually labeled data and the proposed active deep learning shows a favorable performance.

The accuracy of leaf disease prediction is to be above 95% using neural network algorithm.

From this we can get better performance analysis.

5. Fertilizer Recommendation

The proposed approach to measure disease severity of the leaves of other crops that will be helpful for the farmers to produce better quality crops. Recommend. Fertilizers may be organic or inorganic. Admin can store the fertilizers based on disease categorization with severity levels. The measurements of fertilizers suggested based on disease severity.