

## PRIOR KNOWLEDGE

Date	16 NOVEMBER 2022
Team ID	PNT2022TMID43230
Project Name	Fertilizers Recommendation System For Disease Prediction
Maximum Marks	

Detection and recognition of plant diseases at their earliest. Plant pathologists can analyze digital images using digital image processing to diagnose plant diseases. Application of computer vision and images processing strategies assists farmers in all agriculture regions. 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 plant's 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**

Leaves are affected by bacteria, fungi, virus and other insects. Suppose vector machine(SVM) algorithm classifies the leaf images as normal or affected. Vectors are constructed based on leaf features such as color, shape. Then hyperplane constructed with conditions to categorize the preprocessed leaves and also implement multiclass classifier, to predict diseases in leaf image with improved accuracy.

### **5.Fertilizer Recommendation**

Recommended the fertilizer for affected leaves based on severity level. 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.