A REVIEW OF THEORETICAL LITERATURE

Done by:
S.K.MADHESHWARAN K.SELVAKUMAR
M.SATHISH
J.JUSTIN JEGAN

Abstract:
The field of agriculture is in a great threat this includes the diseases that attack the plant leaf. Our system finds the area of leaf that has been affected and also the disease that attacked the leaf. This is achieved by using Image Processing; there are systems that predict the diseases in the leaf. Our system uses K-Medoid clustering and Random Forest algorithm to produce more accuracy in the detection of disease in the leaf. The image is first pre-processed and then the clustering method is applied to find the affected area of the leaf. This is then processed to fetch 13 characters like Mean, SD, Entropy, RMS, Variance, Smoothness, Kurtosis, Skewness, IDM, Contrast, Correlation, Energy and Homogeneity through this we will

measure the accuracy and find the disease.

Introduction :

Artificial intelligence has a huge impact in all Industrial Sectors. Lately, Artificial Intelligence (AI) has been progressing at an outstanding speed. AI accomplished solving numerous problems and saving a profitable resource by minimizing environmental deterioration. Artificial Intelligence is making a revolution in agriculture by replacing traditional

methods by using methods that are more efficient and helping the world to become a better place . Agriculture is the principal foundation of subsistence for about 58% of India's population. The population is expanding enormously with this expansion the interest of food and business is likewise expanding. Intervening of AI in Agriculture is serving farmers to recover their farming efficiency and diminish environmental hostile influences . Disease infection is the main drawback of Agriculture. Due to this drawback, the Quality and Quantity of agriculture products are degraded . To identify and detect the disease on agriculture product, the AI technique is introduced. In this paper, we are presenting a survey for application of artificial intelligence in detection of diseases in agriculture.

Literature Survey :

Deep Learning in Computer Vision:

Deep learning in computer vision has seen significant advancements, especially with the creation of the ImageNet dataset and the ILSVRC challenge. ImageNet is a popular dataset for pre-training deep learning models, which is currently the conventional way of handling computer vision problems with lack of data. ImageNet aims to populate the majority of the 80,000 synsets of WordNet with an average of 500–1000 clean and full resolution images. Since its

beginning, several deep convolutional neural networks have been designed to tackle the challenge. AlexNet has 5 convolutional layers, whereas the VGG network has 19 layers. The introduction of ResNet took care of the Vanishing/Exploding gradient problem using residual connections. MobileNet is mindful of the restricted resources and is designed for mobile and embedded vision applications. EfficientNet proposes a model scaling method that

uses a highly effective compound coefficient to scale up CNNs in a more structured manner.

Fertilizer Recommendation

A lot of research has been done in fertilizer recommendation and a majority of them use the N, P, K, pH values of soil sometimes in addition with depth, temperature, weather, location, precipitation. The usual approach is to use rule based classification, but some approaches also use clustering on fertilizer data using K-Means and Random Forests for recommendation

Interpretability in Deep:

Learning The LIME approach is a simple interpretability technique which uses a local linear regression surrogate for the original model. The linear model is trained on original model predictions on masked versions of the image. The scores for the image segments are based on their corresponding weights. Positive and higher scoring segments are important towards the predicted class, while the lower

scoring ones hurt the confidence of the model. The GradCAM uses the average of gradients at the last convolutional layer of a CNN-based model to weight the activation maps at that layer, and performs a linear combination to find the postivey influence regions for a particular class. This provides a coarse heatmap of important regions towards a prediction.

Conclusion:

Present review study summarize the different applications of artificial intelligence in agriculture sector. The main motive of this study was to brief the applications and available techniques of artificial intelligence to solve the problems of farmers in getting the required yield. The paper also highlights the different literatures, which reflects various methodologies to detect the diseases in crops. From the literature, it is concluded that artificial intelligence is a great tool for a nation’s agronomics. Hence, future researchers should organize a proper dataset covering all arena of agriculture and enhance the available technologies to increase the productivity of primary sectors.

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