

# PROJECT

## Fertilizers Recommendation System For Disease Prediction

### 1. ABSTRACT:

Agriculture is the main aspect of country development. Food is considered as the basic need of human being which can be satisfied through farming. This paper presents an extensive survey of Artificial Intelligence, by using the Convolutional neural network and computer vision predict the plant disease and recommend the fertilizers for the plant.

### 2. INTRODUCTION:

Detection and recognition of plant diseases using AI are very efficient in providing symptoms of identifying diseases at its earliest. Plant pathologists can analyze the digital images using digital image processing for diagnosis of plant diseases. Application of computer vision and image processing strategies simply assist farmers in all of the regions of agriculture. Generally, the plant diseases are caused by the abnormal physiological functionalities of plants. Therefore, the characteristic symptoms are generated based on the differentiation between normal physiological functionalities and abnormal physiological functionalities of the plants. Mostly, the plant leaf diseases are caused by Pathogens which are positioned on the stems of the plants. These different symptoms and diseases of leaves are predicted by different methods in image processing. These different methods include different fundamental processes like segmentation, feature extraction and classification and so on. Mostly, the prediction and diagnosis of leaf diseases are depending on the segmentation such as segmenting the healthy tissues from diseased tissues of leaves.

### 3. HARDWARE / SOFTWARE

#### a. Hardware

- Pc/Laptop
- Operating System – Window

#### b. Software

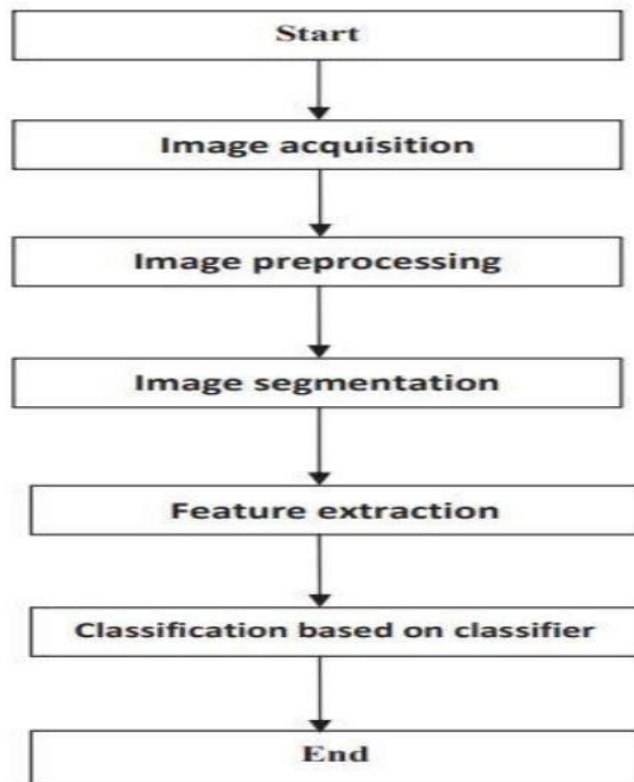
- IBM Cloud Account
- IBM Academic Initiative Account
- Internet Connection with optimum bandwidth

### 4. AI TECHNIQUES USED FOR DISEASE PREDICTION

#### a. Image Processing

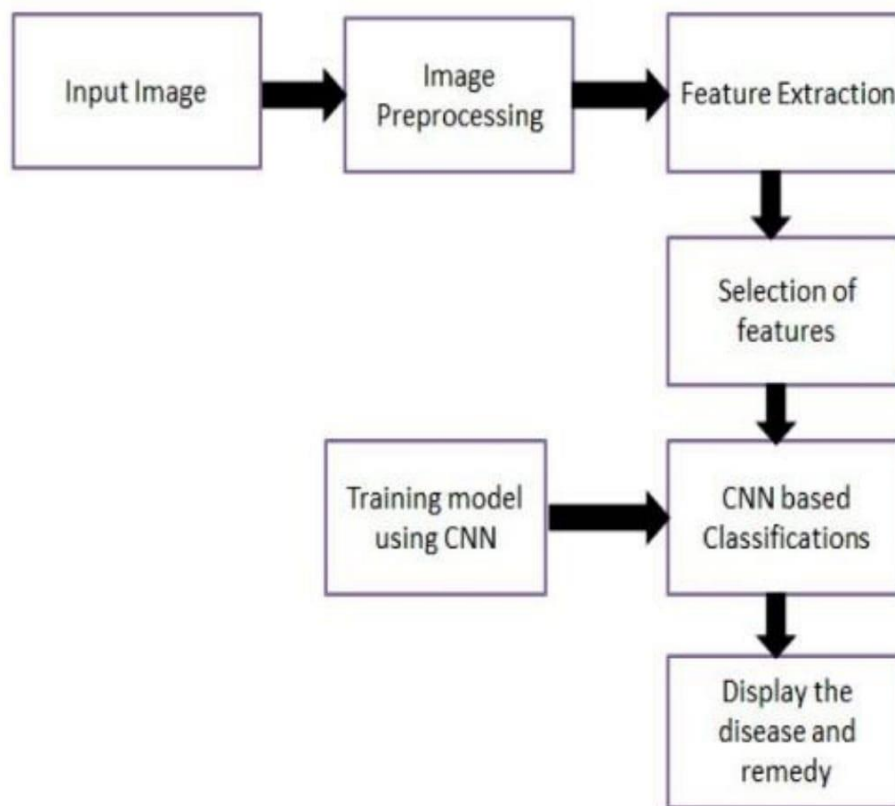
Images of the infected leaves are obtained. This database has different types of plant diseases, and the images are stored in JPEG format. These images are then read in MATLAB using the read command. Image pre-processing is used to erase noise from the image or other object exclusion, different pre-processing techniques.

Image scaling is used to convert the original image into thumbnails because the pixel size of the original image is large and it requires more time for the overall procedure hence after converting the image into thumbnails the pixel size will get decreases and it will require less time.



## b. Convolutional Neural Networks

To perform plant disease detection and diagnosis using simple leaves images of healthy and diseased plants Convolutional Neural Network (CNN) models were created, through deep learning methodologies. First user has to capture the plant leaf image from app. The application will send this image to our AI system. The image goes through number of processing steps like preprocessing, feature extraction, selection of feature etc. A novel method of creating a visual database that has been successfully used to train CNN which is a deep residue with 97.8% accuracy in detecting four species of insects. Convolutional neural networks can receive any form of data as input, such as audio, video, images, speech and natural language. CNN constitutes a class of deep, feed forward ANN that has been applied successfully to computer vision applications. CNN reached high precision in the large majority of the problems where they have been used, scoring higher precision than other popular image-processing techniques.



BLOCKDIAGRAM OF CNN

## 5.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 artificialintelligence 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

## 6.FUTURE SCOPE:

India population is expected to reach more than 1.6 billion by 2030. With this huge hike in population, one can expect massive demand for agricultural consumption as well. With the advancement in the service sector, there is a big migration of workforce from the primary sector to the tertiary sector. In addition, the ignorance of rising diseases in crops is decreasing the yield of cultivation as well. Food being the primary necessity of human life, future researches need to take direction for reviving the agriculture arena.

Artificial Intelligence should be the major tools for the researchers to address the above-mentioned issues. With the great diversity in agronomy species, a detailed database needs to be obtained for various portions of agriculture. By using proper tools of artificial intelligence and with the proper dataset, farming can be made more efficient for farmers. These methods can be considered as the major implementations to solve the future crisis.

## 7.REFERENCES:

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