

# **FertilizersRecommendation System For Disease Prediction**

## **1. INTRODUCTION :**

### **a. Overview :**

Agriculture is the most important sector in today's life. Most plants are affected by a wide variety of bacterial and fungal diseases. Diseases on plants placed a major constraint on the production and a major threat to food security. Hence, early and accurate identification of plant diseases is essential to ensure high quantity and best quality. In recent years, the number of diseases on plants and the degree of harm caused has increased due to the variation in pathogen varieties, changes in cultivation methods, and inadequate plant protection techniques.

### **b. Purpose :**

An automated system is introduced to identify different diseases on plants by checking the symptoms shown on the leaves of the plant. Deep learning techniques are used to identify the diseases and suggest the precautions that can be taken for those diseases.

## **2. LITERATURE SURVEY:**

### **a. Existing problem:**

In India, around 40% of land is kept and grown using reliable irrigation technologies, while the rest relies on the monsoon environment for water. Irrigation decreases reliance on the monsoon, increases food security, and boosts agricultural production. Due to climatic change, inconsistent rainfall patterns, pollution, and contamination in the water, farmers are experiencing issues with their irrigation systems. As we have seen in the past, an oversupply of water can sometimes cause agricultural damage.

Most research articles use humidity, moisture, and temperature sensors near the plant's root, with an external device handling all of the data provided by the

sensors and transmitting it directly to an external display or an Android

application. The application was created to measure the approximate values of temperature, humidity, and moisture sensors that were programmed into a microcontroller to manage the amount of water.

Pi Doctor: A Low Cost Aquaponics Plant Health Monitoring System Using Infragram Technology and Raspberry Pi present a low-cost aquaponics plant health monitoring system based on a modified web camera that gathers both infrared and visible data in a single image in this research. The NDVI is calculated from the NGB picture (near infrared, green, and blue) to quantify the health and state of the vegetation in the system. Exposing the system to diverse conditions, such as moderate, sunny, and dark, allows for the investigation of other factors in the aquaponics system, such as pH and nitrogen usage by the plants. The study also determines the ideal pH for the water in the fish tank and the soil in the aquaponics system's grow bed.

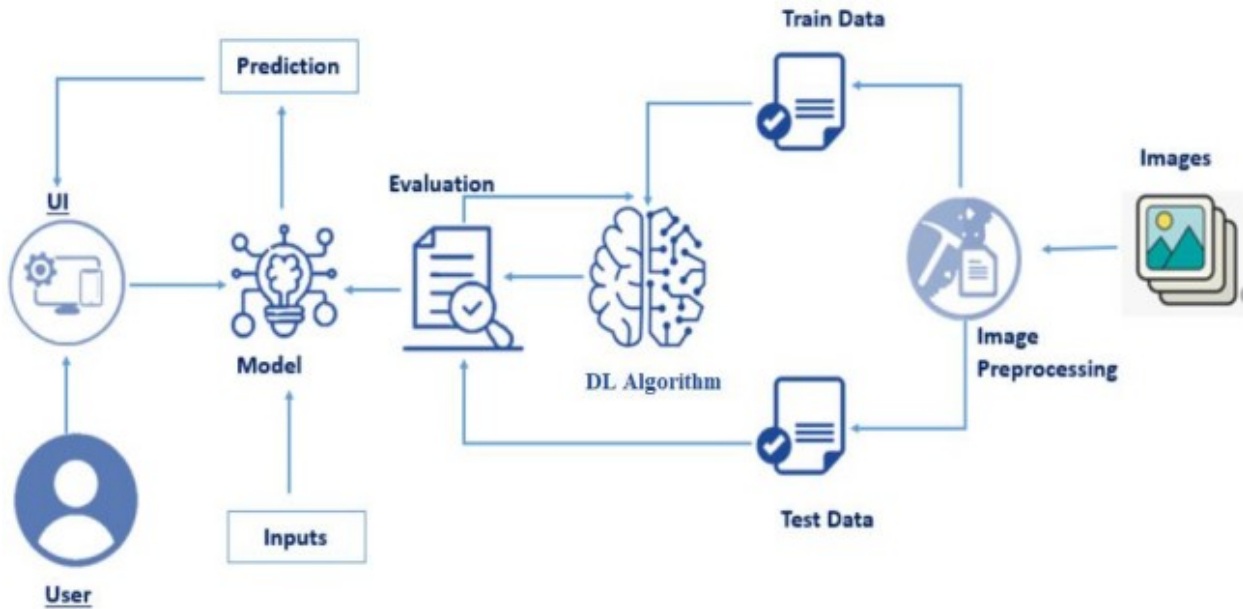
**b. Proposed solution:**

A web Application is built where:

- i. Farmers interact with the portal build
- ii. Interacts with the user interface to upload images of diseased leaf
- iii. Our model built analyses the Disease and suggests the farmer with fertilizers are to be used

**3. THEORITICAL ANALYSIS :**

**a. Block diagram :**



#### b. Hardware / Software designing:

##### **software :**

Anaconda  
 navigator Vs  
 code / py charm  
 Jupiternotebook  
 IBM watsonstudio

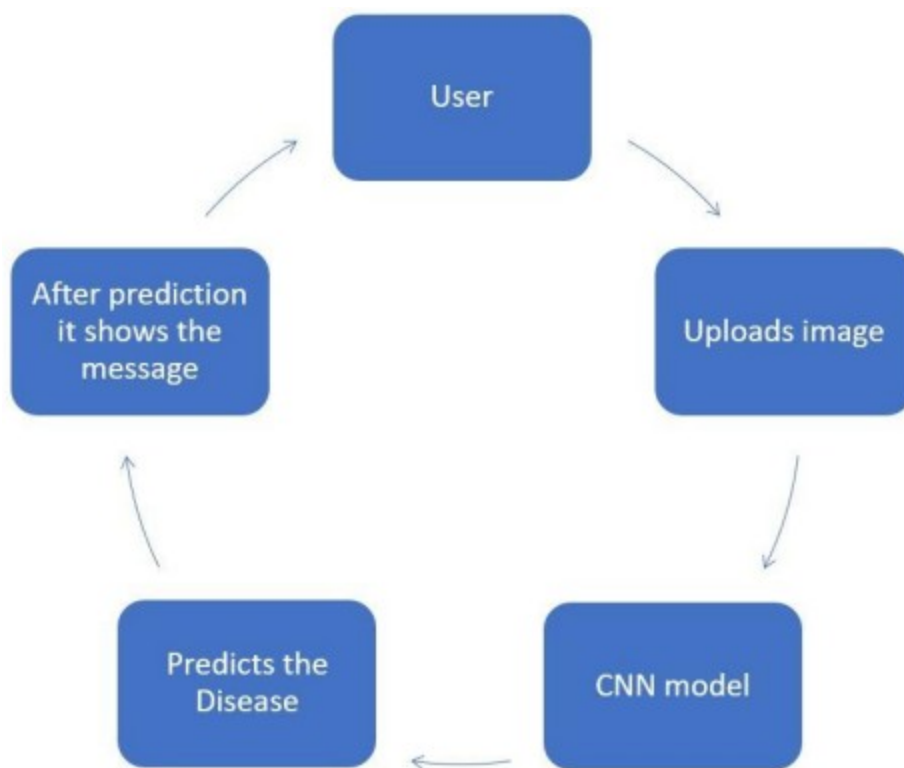
By using the above listed softwares we build this application to take the input (image) from the farmer and detects whether the plant is infected or not. Here we use Deep learning techniques and give the output to the user (Farmer).

#### 4. EXPERIMENTAL INVESTIGATIONS :

Agriculture is the most important sector in today's life. Most plants are

affected by a wide variety of bacterial and fungal diseases. Diseases on plants placed a major constraint on the production and a major threat to food security. Hence, early and accurate identification of plant diseases is essential to ensure high quantity and best quality. In recent years, the number of diseases on plants and the degree of harm caused has increased due to the variation in pathogen varieties, changes in cultivation methods, and inadequate plant protection techniques. An automated system is introduced to identify different diseases on plants by checking the symptoms shown on the leaves of the plant. Deep learning techniques are used to identify the diseases and suggest the precautions that can be taken for those diseases. Analysis or the investigation made while working on the solution.

## 5. FLOWCHART :



## 6. RESULT:

# Detect if your plant is infected!!

Agriculture is one of the major sectors works wide. Over the years it has developed and the use of new technologies and equipment replaced almost all the traditional methods of farming. The plant diseases effect the production. Identification of diseases and taking necessary precautions is all done through naked eye, which requires labour and laboratries. This application helps farmers in detecting the diseases by observing the spots on the leaves, which inturn saves effort and labor costs.



Drop in the image to get the prediction

Fruit

Choose...



Predict!

Activate Windows  
Go to Settings to activate Windows.

Drop in the image to get the prediction

Fruit

Choose...



Prediction: Ooops!! Your apple plant is infected by Black Rots. This infection is a fungal infection. To control balck rot, remove the cankers by pruning at least 15 inches below the end and burn or bury them. Treating the sites with the antibiotic streptomycin or a copper-based fungicide will be helpful.

## **7. ADVANTAGES & DISADVANTAGES:**

### **ADVANTAGES:**

1. The proposed model could predict the disease just from the image of a particular plant
2. Easy to use UI
3. Model has some good accuracy in detecting the plant just by taking the input (leaf).

### **DISADVANTAGES:**

1. Prediction is limited to few plants as we haven't trained all the plants

## **8. APPLICATIONS :**

This web application can be used by farmers or users to check whether their plant is infected or not and can also show the remedy so that the user can take necessary

precautions.

These kind of web applications can be used in the agricultural sector as well as for small house hold plants as well.

## **9. CONCLUSION :**

Agriculture is the most important sector in today's life. Most plants are affected by a wide variety of bacterial and fungal diseases. Diseases on plants placed a major

constraint on the production and a major threat to food security. Hence, early and accurate identification of plant diseases is essential to ensure high quantity and best quality. In recent years, the number of diseases on plants and the degree of harm caused has increased due to the variation in pathogen varieties, changes in cultivation methods, and inadequate plant protection techniques.

Usage of such applications could help the farmers to necessary precautions so that they don't face any loss as such.

## **10. FUTURE SCOPE :**

As of now we have just build the web application which apparently takes the input as an image and then predict the out in the near future we can develop an application which computer vision and AI techniques to predict the infection once you keep the camera near the plant or leaf this could make our project even more usable.

## **11. BIBLIOGRAPHY :**

1. <http://www.ijstr.org/final-print/nov2019/Fertilizers-Recommendation-System-For-Disease-Prediction-In-Tree-Leave.pdf>
2. <https://www.semanticscholar.org/paper/Fertilizers-Recommendation-System-For-Disease-In-Neela-Nithya/495379d3ef2b461fabd2de8d0605c164cb1e396f>
3. <http://www.ijetajournal.org/volume-8/issue-2/IJETA-V8I2P1.pdf>
4. <https://ieeexplore.ieee.org/document/8878781>
5. <https://www.sciencedirect.com/science/article/pii/S0168169921004245>
6. <https://www.irjet.net/archives/V7/i10/IRJET-V7I1004.pdf>