

# DIGITALISATION IN AGRICULTURE SECTOR



## TEAM-THINKER\_BOTS

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# DIGITALISATION IN AGRICULTURE SECTOR

## TRACK-AI/ML

### PROBLEM STATEMENT-

Farming is one of the oldest economic activity in our country. our country is the 2<sup>nd</sup> largest producer of agricultural products in the world. But they have to face many problems which leads decrease in their productivity and due to which they are unable to maximise their productivity.

Major problem faced by the problem are:

- 1) Crop failure- due to disease
- 2) An over reliance on traditional crops
- 3) Lack of information causes economic loss
- 4) Middleman reaping the bulk of the revenue.





# OBJECTIVE AND SOCIAL IMPACT



- With the help of our mobile app(Krishi-dost) which is connected to our machine learning model, farmers just need to click the picture of the leaf and our app will tell you the disease and cure for the same.
  -
- Our IOT device connected with our machine and deep learning model helps farmers to know the fertility of their soil by checking on different parameters and forecast the best crop for that region.
- Our web application Krishi-dost packed with ml model provide large number of feature of farmers-
  - a) Krishi-dost provide a platform where can purchase anything related to farming.
  - b) Farmers can connect directly to consumers(customers) and sell their yield directly to them eliminating the role of middleman.
  - c) Website offer best farming practices on the basis of result recieved from IOT device and ML model. ◆
  - d) It enables farmers to monitor the output of their farms and grow their business and access a larger market.





# METHODOLOGY/APPROACH



## OUR APPROACH

- 1) **To detect diseases**, we will create a ml model that will be trained to identify diseases using leaf image processing. Our disease detection and treatment service is built on the foundation of **image recognition** and **cognitive searching**. This model will be able to quickly distinguish between a wide range of diseases. In order for farmers to save their crops by taking necessary action, model also suggest the best treatment for diseases.
- 2) **Crop recommendation**- Our IOT is connected with ML model which is trained to evaluate soil quality based on several parameters. **Supervised machine learning algorithms** like **Random forest classifiers** and **logistic regression(or logit regression)** are used in crop recommendation model helping to achieve **greater accuracy**.
- 3) **AI Chatbot** that will serve as a customer support system and respond to queries posed by farmers.
- 4) Through our website, farmers can connect directly to consumers and sell their yield directly to them eliminating the role of middleman.

## METHODOLOGY

Our website as well as the app is made keeping in mind that farmers find it user friendly and easy to use. The facilities and services offered will boost output in terms of both quantity and quality, which will ultimately result in higher profitability.

Our app helps farmers to detect the disease in simplest way possible. Farmers just need to click pic of the leaf or select from gallery and our app will tell you the disease and also the best treatment. Our app is so simple and user friendly.



# TECH STACK



## MODEL TRAINING-

LIBRARIES- pandas, OS, scikit learn, matplotlib, seaborn, numpy, kereas, tensorflow

## WEBSITE-

DESIGN AND INTERFACE- HTML and CSS

PROGRAMMING LANGUAGE – PHP

SCRIPTING LANGUAGE- Javascript, Ajax

DATABASE- My SQL server

FRAMEWORK- Bootstrap, Pytorch, Fast API, Flask and Adobe

## MOBILE APP-

ANDROID STUDIO- JAVA, XML

## DEPENDENCIES-

- |            |             |                                 |
|------------|-------------|---------------------------------|
| 1)Database | 3)Consumers | 5)Internet                      |
| 2)Farmers  | 4)Workers   | 6)Basic knowledge of computers. |





# CROP FAILURE- DUE TO DISEASE

## Problem-

In India, between 28 to 30% percent of fruits, vegetables, and crops are lost each year owing to various diseases that, if detected early enough, may be treated efficiently.

## Our solution-

To address this, we have created a machine learning model that is trained to identify diseases using leaf image processing. This model will be able to quickly distinguish between a wide range of diseases. In order for farmers to save their crops by taking the necessary action, this algorithm also suggests the best treatments for diseases.



To help farmers to detect diseases we will create our mobile app which will be connected with our ML model. Farmers just need to click the picture of leaf or select from gallery to detect disease and know the best treatment.

## Future scope-

Future plan include for the addition of drone imagery, which will enable rapid coverage of a sizeable field.

# AN OVER RELIANCE ON TRADITIONAL CROPS



## Problem-

farmers in India have been producing the same crops for a very long time because of which soil composition and nutrients decreases, they are unable to maximize their profits and occasionally have to deal with crops failing completely.

## Our solution-

We have created a ML model to address the issue that is taught to evaluate soil quality based on NPK (nitrogen, potassium, and phosphorus) levels in the soil and forecast the best crop for that area to farmers so they may maximize their income.



## Future Aims-

By connecting an IOT device to our model, farmers will be able to check their results by simply inputting a soil sample.



# TEAM DETAILS

## THINKER\_BOTS

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