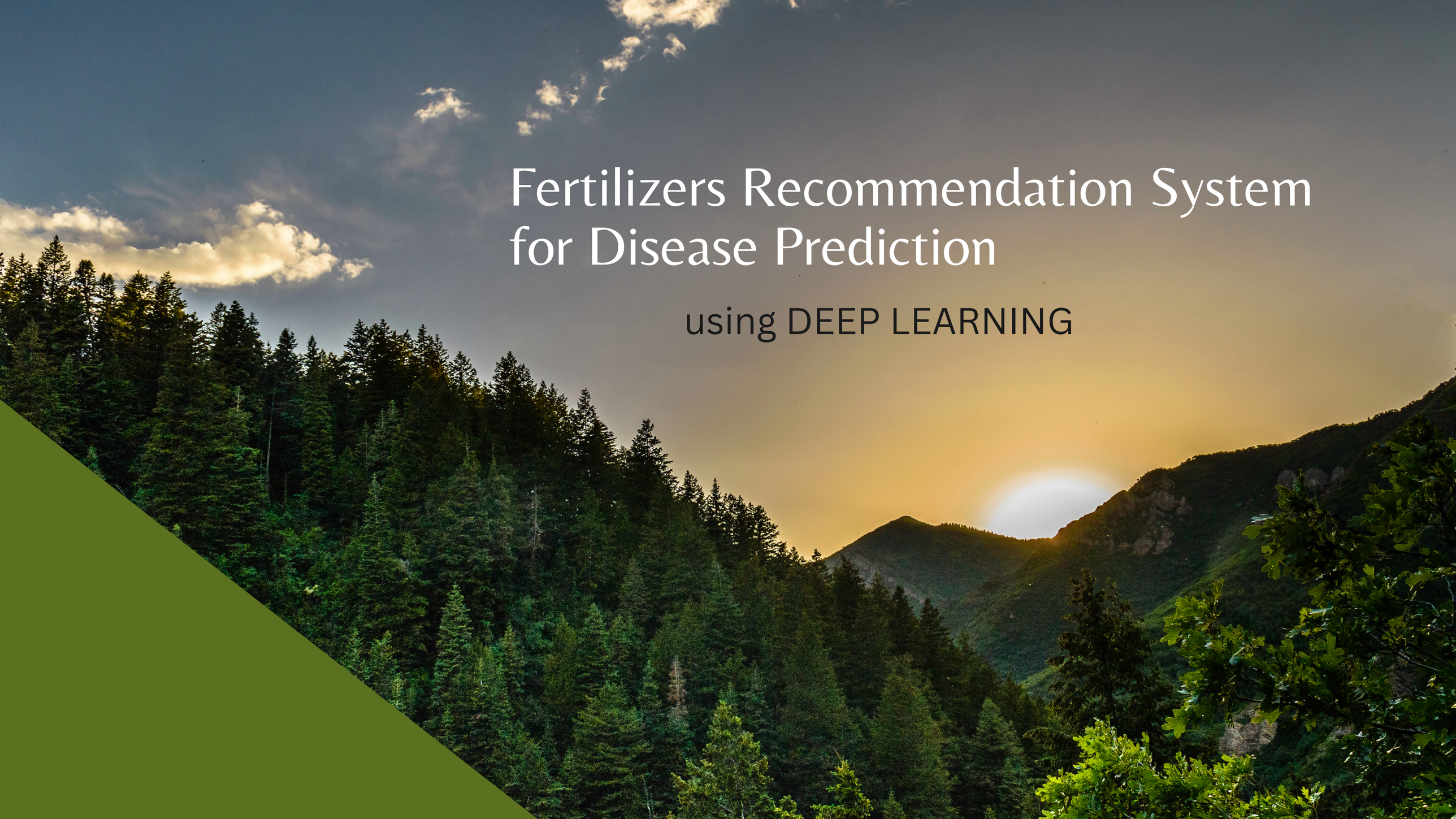
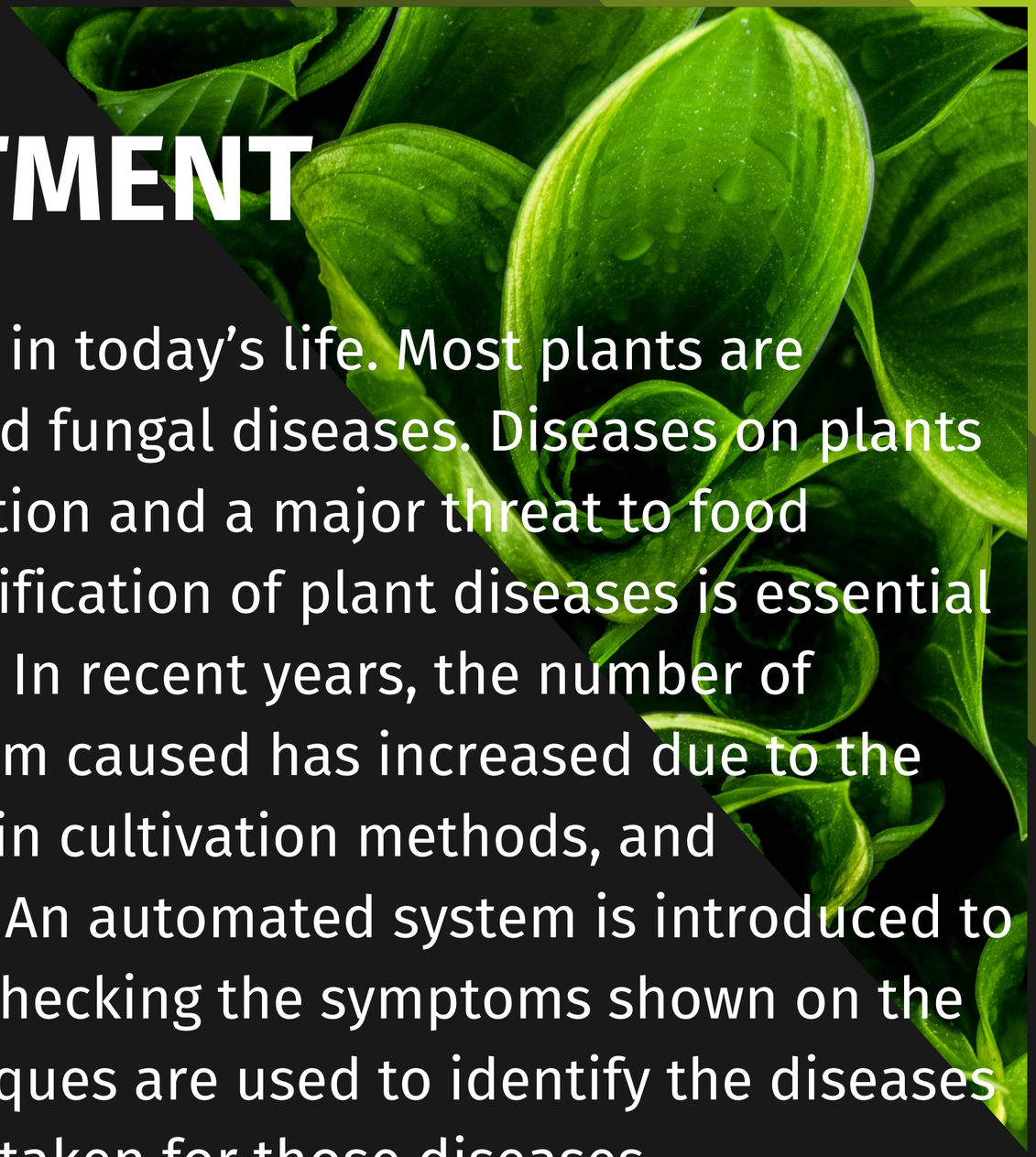


Fertilizers Recommendation System for Disease Prediction

using DEEP LEARNING

IDEA ABOUT THE STATMENT



- 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.

project description

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 idendification of plant diseases is essential to ensure high quantity and best quality.

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To preprocess the images.

Applying the CNN algorithm to the dataset.

How deep neural networks detect the disease.

You will be able to know how to find the accuracy of the model.

You will be able to build web applications using the Flask framework

Functional Requirements:

Following are the functional requirements of the proposed solution

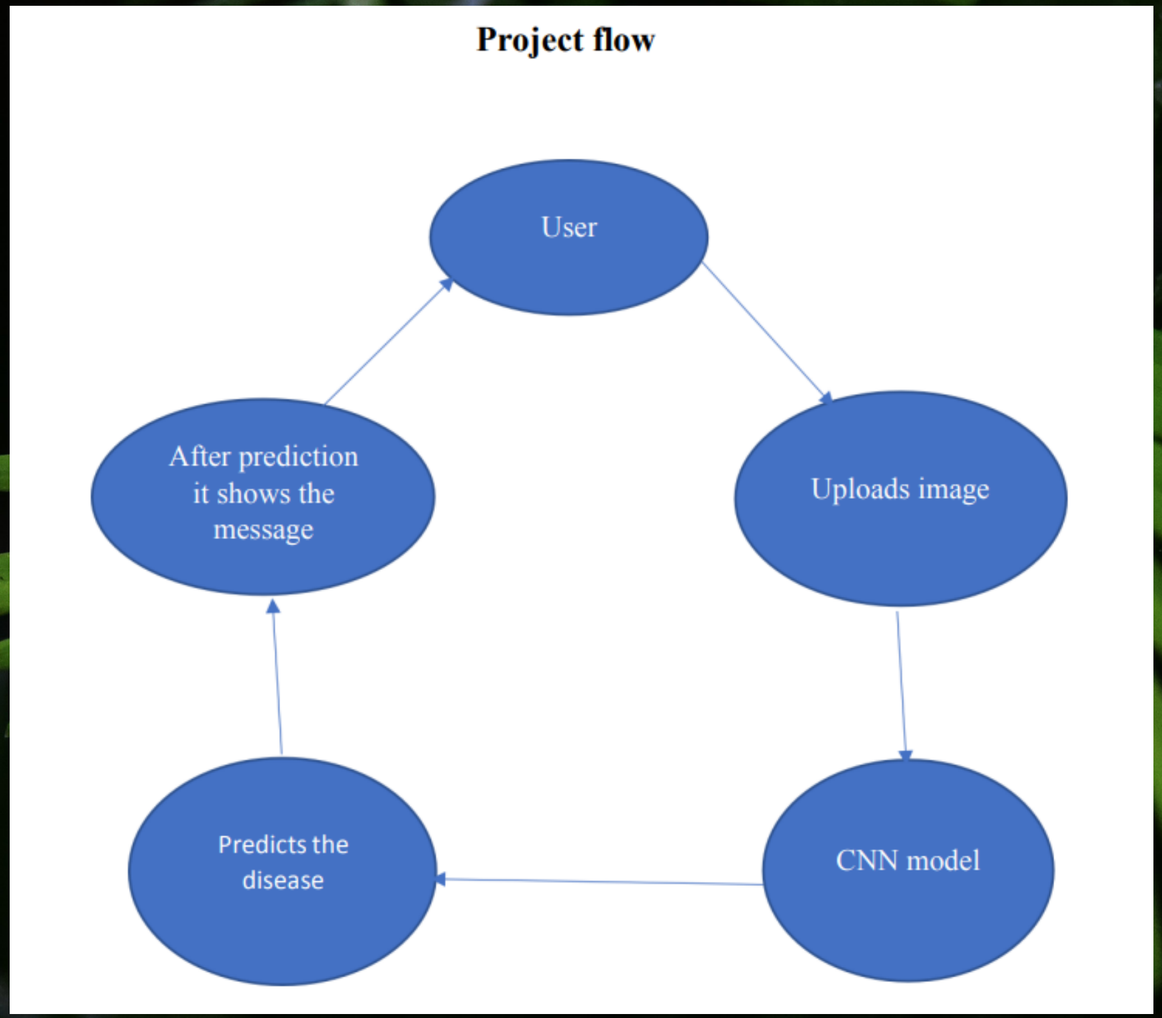
Fr.no	Functional requirement	Sub requirement (story/subtask)
Fr-1	User registration	Registration through form Registration through Gmail
Fr-2	User confirmation	Confirmation via OTP Confirmation via Email
Fr-3	Capturing image	Capture the image of the leaf And check the parameter of the captured image.
Fr-4	Image processing	Upload the image for the prediction of the disease in the leaf.
Fr-5	Leaf identification	Identify the leaf and predict the disease in leaf.
Fr-6	Image Description	Suggesting the best fertilizer for the disease.

Proposed Solution:

He wants to know the better recommendation for fertilizers for plants with the disease.

Sino.	Parameter	Description
1.	Problem Statement (Problem to be solved)	An automated system is introduced to identify different diseases on plants by checking the symptoms shown on the leaves of the plant.
2.	Idea / Solution description	In agricultural aspects, if the plant is affected by leaf disease, then it reduces the growth and productiveness. Generally, the plant diseases are caused by the abnormal physiological functionalities of plants.
3.	Novelty / Uniqueness	During the development of the crops as they will be affected by various diseases
4.	Social Impact / Customer Satisfaction	The issue occurs in agriculture practicing areas, particularly in rural regions.
5.	Business Model (Revenue Model)	It is required for the growth of better quality food products. It is important to maximize the crop yield.
6.	Scalability of the Solution	Deep learning techniques are used to identify the diseases and suggest the precautions that can be taken for those diseases.

project flow



project design phase-

01. 1.DATA COLLECTION: Data collection is the most efficient method for collecting and measuring the data from different resources like kaggle and UCI machine learning repository. To get an approximate dataset for the system. This dataset must contain the following attributes i.) Images of fruit diseases ii.) Images of vegetable diseases etc., in which those parameters will be considered for disease prediction.

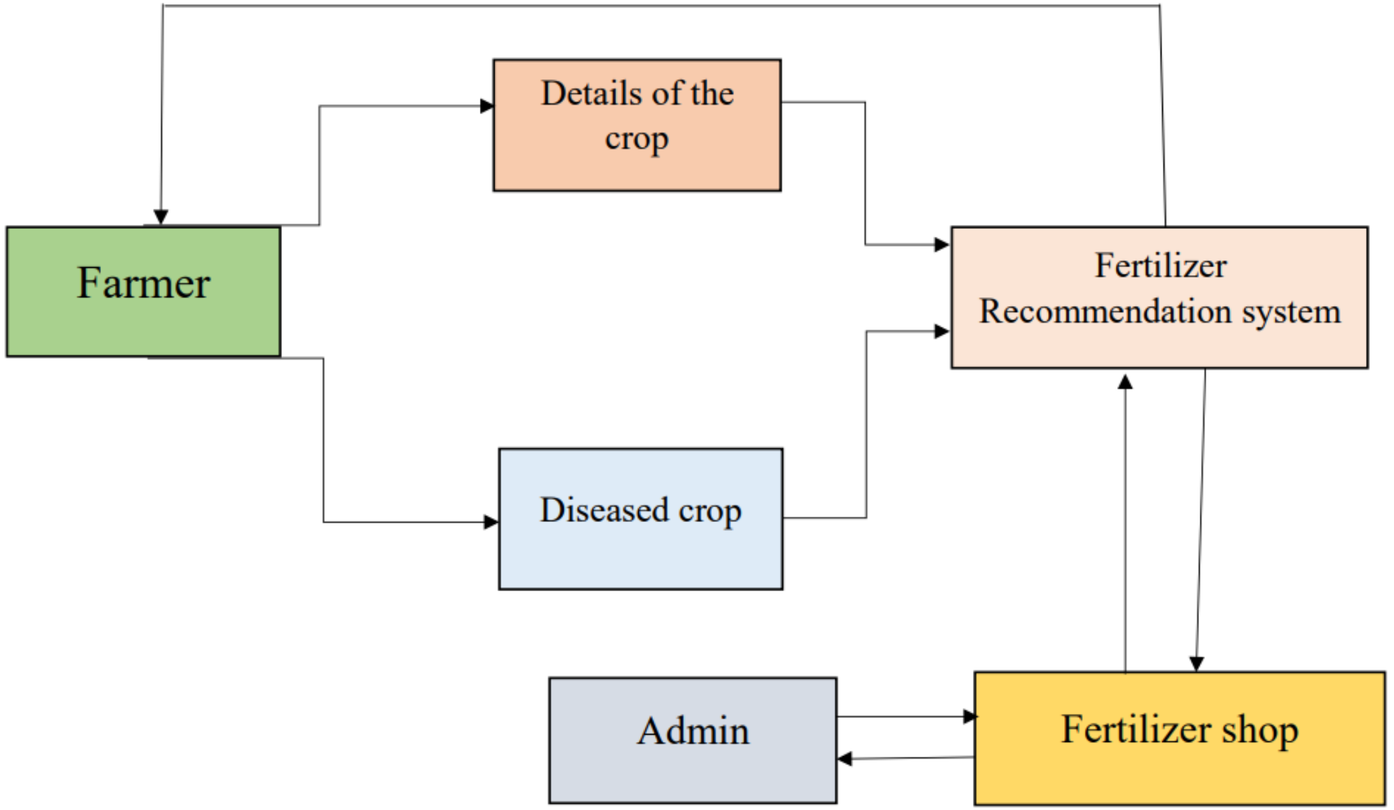
02. **3. DEEP LEARNING ALGORITHM FOR PREDICTION:**
Machine learning predictive algorithms have highly optimized estimation that has to be a likely outcome based on trained data. Predictive analytics is the use of data, statistical algorithms and machine learning techniques to identify the likelihood of future outcomes based on historical data.

03. **4. FERTILIZER RECOMMENDATION:**
To Predict the particular fertilizer to be used, we use input parameters like N,P,K temperature, humidity, moisture and soil type and also crop to be grown. Fertilizer prediction process begins with the loading of the external fertilizers datasets. Once the dataset is read then pre-processing will be done by various stages as discussed in the Data Pre-processing section. After the data pre-processing, train the models using SVM,
Random Forest classifier into training dataset. For a prediction of the fertilizers, we consider various factors such as temperature, humidity, soil PH and predicted crop to be grown

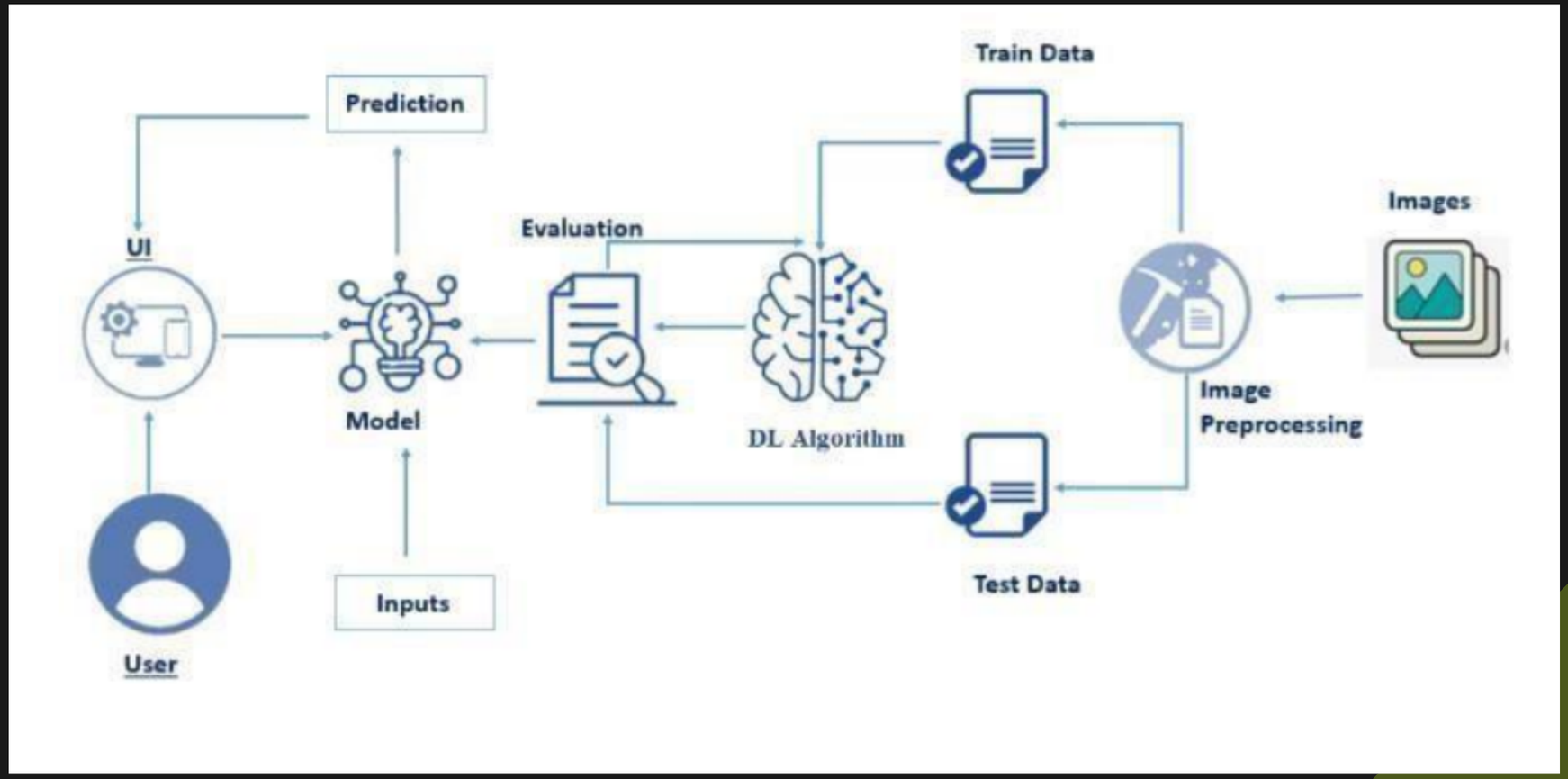
04. **2. DATA PRE-PROCESSING:**
After collecting datasets from various resources. Dataset must be pre-processing before training the model. The data pre-processing can be done by various stages, beginning with reading the collected dataset the process continues to data cleaning. In data cleaning the datasets contain some redundant attributes, those attributes are not considered for disease prediction. So, we have to drop unwanted attributes and datasets containing some missing values. We need to drop these missing values or fill them with unwanted values in order to get better accuracy. Then define the target for a model. After data cleaning the dataset will be split into training and test sets by using specific libraries

project data flow

Data Flow Diagrams:



SOLUTION ARCHITECTURE



customer journey

Customer Journey:

Fertilizer recommendation	Entice	Enter	Engage	Exit
Steps	The insight into how the fertilizer recommendation helps the crop yield	Searching the best fertilizer on market	Browsing the suitable fertilizer; Suitable for the farmer point of view	At the end the farmer gets proper fertilizer to get rid of the pest
Interaction	At the agricultural field; By farmer	At fertilizer recommendation web page	Recommendation about appropriate fertilizer; Managing the disease prediction	Service available for about 24/7
Goals	Solution for proper fertilizer recommendation	It begins with the field monitoring to take the fertilizer properly	Fertilizer is used on time; Farmer takes care of field	At the end they find a web page for fertilizer recommendation and disease
Positive moments	Farmer suggestion	User friendly Web app	Proper recommendation of fertilizer; Accurate prediction of disease	Helps to regularly keep track of the field
Negative moments	Hard to find best application for fertilizer recommendation	Difficult to operate the web application	Always need a proper internet connection to access the application; Farmer should always have the crops near them	Fertilizer recommendation and disease prediction only for farmers

miro

Thank you!