Project Design Phase-
ISolutionArchitecture

Date	27October2022
Team ID	PNT2022TMID31104
ProjectName	Project–FertilizerRecommendationSystemForDiseasePrediction
MaximumMarks	4 Marks

PROBLEMDISCRIPTION:

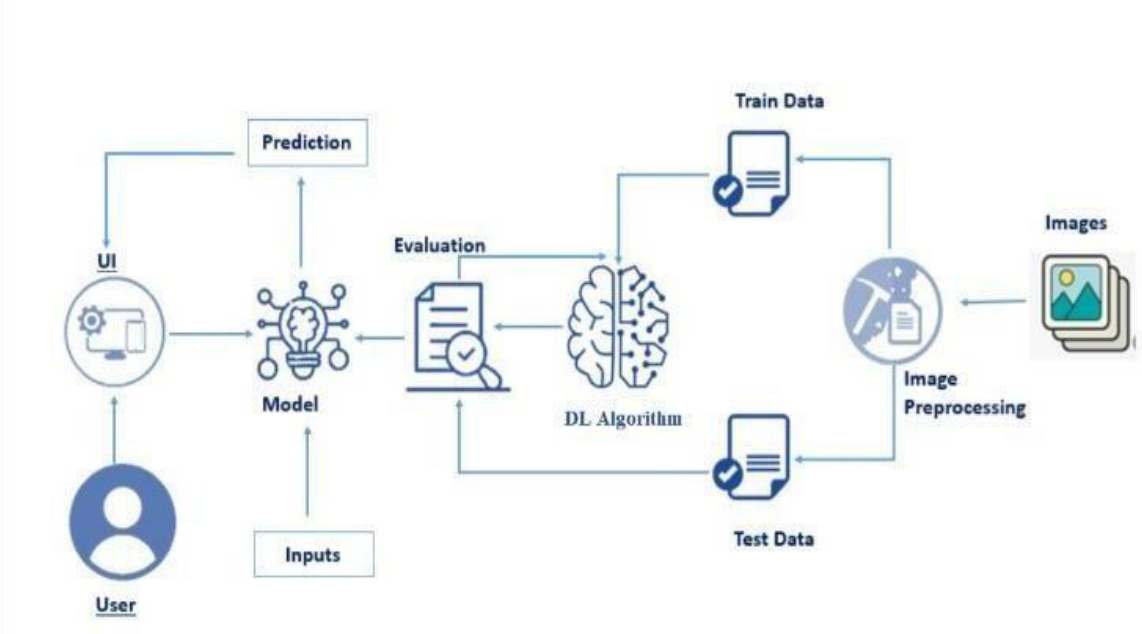
Agriculture is the most important sector in today's life. Most plants are affected by a widevariety of bacterial and fungal diseases. Diseases on plants placed a major constraint on the productionand a major threat to food security. Hence, early and accurate identification of plant diseases is essentialto ensure high quantity and best quality. In recent years, the number of diseases on plants and thedegree of harm caused has increased due to the variation in pathogen varieties, changes in cultivationmethods,andinadequateplantprotectiontechniques.

An automated system is introduced to identify different diseases on plants by checking thesymptoms shown on the leaves of the plant. Deep learning techniques are used to identify the diseasesandsuggestthe precautionsthatcanbetakenforthosediseases.

CHARACTERISTICS:

A fertilizer recommendation is the research-based set of guidelines, or managementpractices, for supplying fertilizer to the crop to achieve yield and quality goals (economic) in a mannerthatminimizes nutrientlosses totheenvironment.

SOLUTIONARCHITECTURE:



DEVELOPMENTPHASE:

1. DATACOLLECTION:

Data collection is the most efficient method for collecting and measure the data from different resourceslike kaggle and UCI machine learning repository. To get an approximate dataset for the system. Thisdataset must contain the following attributes i.) Images of fruit diseases ii.) Images of vegetable diseasesetc.,inwhichthoseparameterswillconsiderfordiseaseprediction.

2. DATAPRE-PROCESSING:

After collecting datasets from various resources. Dataset must be pre-processing before training to themodel. The data pre-processing can be done by various stages, begins with reading the collected datasetthe process continues to data cleaning. In data cleaning the datasets contain some redundant attributes,those attributes are not considering for disease prediction. So, we have to drop unwanted attributes anddatasets containing some missing values we need to drop these missing values or fill with unwantedvalues in order to get better accuracy. Then define the target for a model. After data cleaning the datasetwillbesplitintotrainingandtestset by usingspecificlibraries.

3. DEEPLEARNINGALGORITHMFORPREDICTION:

Machine learning predictive algorithms has highly optimized estimation has to be likely outcome basedon trained data. Predictive analytics is the use of data, statistical algorithms and machine learningtechniquestoidentifythelikelihoodof future outcomesbased on historicaldata.

4. FERTILIZERRECOMMENDATION:

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 being with the loading theexternal fertilizers datasets. Once the dataset read then pre-processing will be done by various stages asdiscussed in 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 a variousfactor such as temperature, humidity, soil PH and predicted crop to be grown. Those are the inputparameter for a system that can be entered by manually or taken from the sensors. Predicted crop andinput parameter valueswillbe appended inalist

RESULT:

The proposed system recommends the best suitable fertilizer for particular land by consideringparameters such as various historical image data's. Among these parameters the crop disease ispredicted by system itself by using previous data with SVM algorithm and other parameters are have tobe entered by the user. In the output section the system displays a suitable fertilizer and varioussuggestionsbased ontheseverity level ofthediseases.