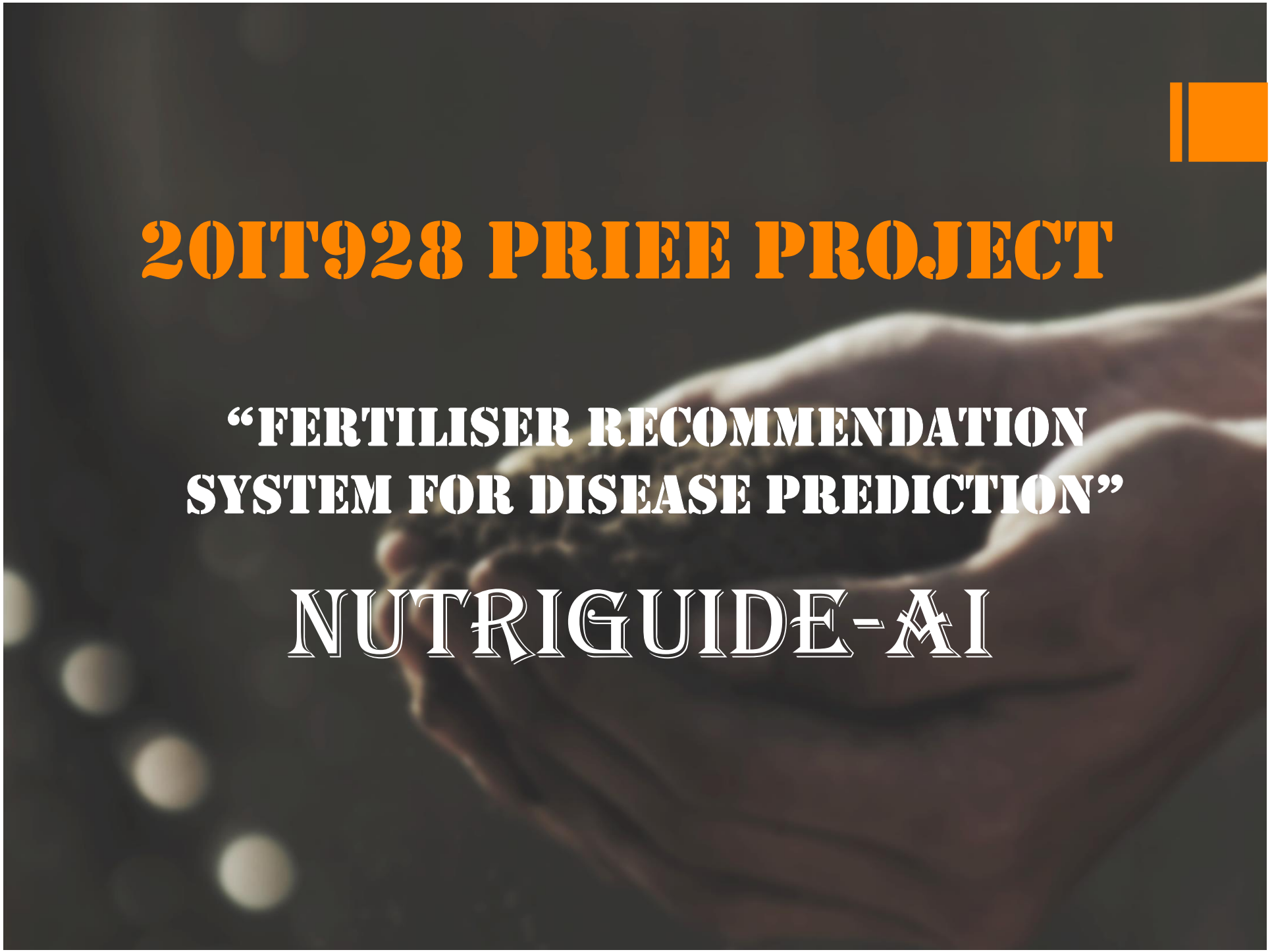


20IT928 PRIEE PROJECT

"FERTILISER RECOMMENDATION SYSTEM FOR DISEASE PREDICTION"

NUTRIGUIDE-AI

TEAM INTRODUCTION

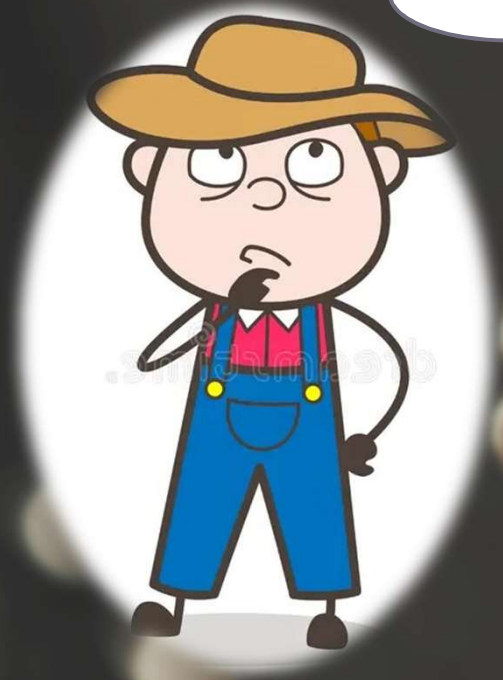
1. VETRIVEL M
2. YEGNESHWARAN B
3. HEMANTH KRISHNA
4. SATHYAMOORTHY S
5. UDHAYAN N

ABSTRACT

Food security and sustainable farming practices depend heavily on agricultural productivity and crop health. In recent years, advancements in artificial intelligence (AI) have revolutionized the agricultural sector by enabling sophisticated prediction models for fertilizer recommendation and disease detection. This paper provides an overview of AI-driven methods for recommending fertilizers. AI methods use real-time and historical data on crop types, weather, and soil characteristics to make recommendations for fertilizers. To analyze the intricate connections between input features and nutrient needs, several machine learning algorithms like linear regression and random forest methods are used in this system, which enable accurate comparison, assist farmers in suggesting fertilizer, and detect plant disease. The outcome of the learning process is used by farmers for corrective measures for yield optimization.

PROBLEM STATEMENT:

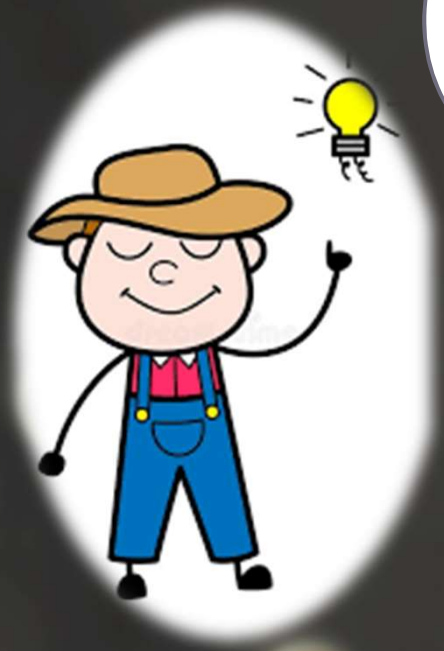
According to a study by the Associated Chambers of Commerce and Industry of India, annual crop losses due to pests amount to Rs. 50,000 crore



1. Farmers are generally unaware about the organic fertilizers or standard fertilizers to use as per soil requirements.

2. Due to inadequate and imbalanced fertilization, soil degradation is occurring, which leads to nutrient mining and the development of second-generation problems in nutrient management.

PROBLEM OBJECTIVES

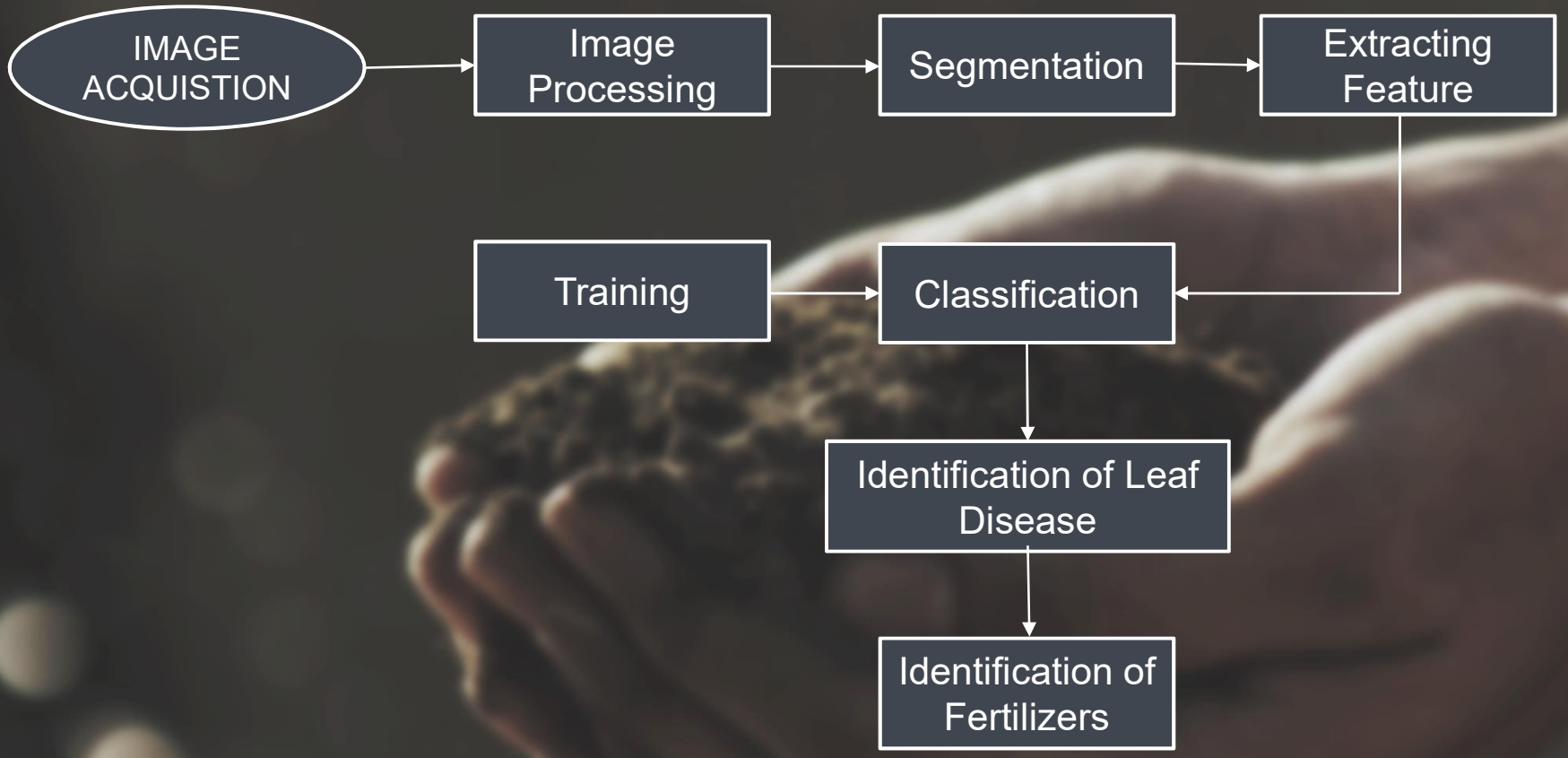


To solve the problem by proposing a recommendation system through an ensemble model with majority voting technique crop for the site specific parameters with high accuracy and efficiency.

Machine learning techniques are used to identify the diseases and suggest appropriate fertilizer that can be taken for those diseases by recommending organic fertilizer on the basis of N, P, K values and crop.

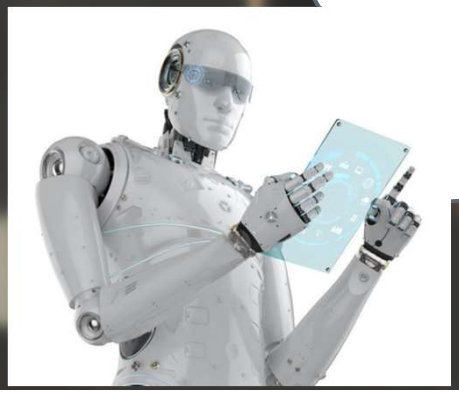
So we planned to design a web application for achieving above objectives.

ARCHITECTURAL DIAGRAM



TECHNOLOGY STACK

- **Programming Language :** Python
- **Frontend**: HTML, CSS, JavaScript
- **Backend**: PHP
- **IDE**: VS Code / Jupyter Notebook
- **Version Control**: Git and GitHub



LITERATURE SURVEYS

[1] An Overview of the Research on Plant Leaves Disease detection using Image Processing Techniques

This paper mainly focuses on the detecting and classifying the leaf disease of soybean plant. Using SVM the proposed system classifies the leaf disease in 3 classes like i.e. downy mil- dew, frog eye, and septoria leaf blight etc. The proposed system gives maximum average classification accuracy reported is ~90% using a big dataset of 4775 images.

ADVANTAGES:

The system helps to compute the disease severity.

DISADVANTAGES:

The system uses leaf images taken from an online dataset, so cannot implement in real time.

LITERATURE SURVEYS

[2] Fertilizers Recommendation System For Disease Prediction In Tree Leave

The author proposes a method which helps us predict crop yield by suggesting the best crops. It also focuses on soil types in order to identify which crop should be planted in the field to increase productivity. In terms of crop yield, soil types are vital. By incorporating the weather details of the previous year into the equation, soil information can be obtained.

ADVANTAGES :

It allows us to predict which crops would be appropriate for a given climate. Using the weather and disease related data sets, the crop quality can also be improved. Pre- diction algorithms help us to classify the data based on the disease, and data extracted from the classifier is used to predict soil and crop.

DISADVANTAGES :

Due to the changing climatic conditions, accurate results cannot be predicted by this system

LITERATURE SURVEYS

[3] Design of Intelligent Agriculture Management Information System Based on IOT

The current paper proposes an android application for irrigation and plant leaf disease detection with cloud and IoT. For monitoring irrigation system they use soil moisture and temperature sensor and sensor data send to the cloud. The user can also detect the plant leaf disease. K means clustering used for feature extraction. K-means clustering algorithm is used here. Other than this there are some other levels which can be used for sentimental analysis these are document level, sentence level, entity and aspect level to study positive and negative, interrogative, sarcastic, good and bad functionality, sentiment without sentiment, conditional sentence and author and reader understanding points

ADVANTAGES:

It is simple and cost effective system for plant leaf disease detection.

DISADVANTAGES:

Any H/w failures may affect the system performance.

LITERATURE SURVEYS

[4] Detection of Leaf Diseases and Classification using Digital Image Processing

The proposed method uses SVM to classify tree leaves, identify the disease and suggest the fertilizer. The proposed method is compared with the existing CNN based leaf disease prediction. The proposed SVM technique gives a better result when compared to existing CNN. For the same set of images, F-Measure for CNN is 0.7and 0.8 for SVM, the accuracy of identification of leaf disease of CNN is 0.6 and SVM is 0.8.

ADVANTAGES :

The prediction and diagnosing of leaf diseases are depending on the segmentation such as segmenting the healthy tissues from diseased tissues of leaves.

DISADVANTAGES :

This further research is implementing the proposed algorithm with the existing public datasets. Also, various segmentation algorithms can be implemented to improve accuracy. The proposed algorithm can be modified further to identify the disease that affects the various plant organs such as stems and fruits.

LITERATURE SURVEYS

[5] Farmer's Assistant: A Machine Learning BasedApplication for Agricultural Solutions

In this paper, we propose a user-friendly web application system based on machine learning and web-scraping called the 'Farmer's Assistant'. With our system, we are successfully able to provide several features - crop recommendation using Random Forest algorithm, fertilizer recommendation using a rule based classification system, and crop disease detection using Efficient Net model on leaf images. The user can provide the input using forms on our user interface and quickly get their results. In addition, we also use the LIME interpretability method to explain our predictions on the disease detection image, which can potentially help understand why our model predicts what it predicts, and improve the datasets and models using this information.

ADVANTAGES :

For crop recommendation and fertilizer recommendation, we can provide the availability of the same on the popular shopping websites, and possibly allow users to buy the crops and fertilizers directly from our application.

DISADVANTAGES :

To provide fine-grained segmentations of the diseased portion of the dataset. this is not possible due to lack of such data. However, in our application, we can integrate a segmentation annotation tool where the users might be able to help us with the lack.

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THANK
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