Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore (MP)
Shri Vaishnav Institute of Information Technology
Department of Computer Science & Engineering

E - Croptar

Yajendra Prajapati

yajendrapcmc19@svvv.edu.in || 9691955861

Sanskar Singhai

sanskarscmc19@svvv.edu.in || 9691513053

Sakshi Rohida

sakshircmc19@svvv.edu.in || 9644909099

Vikram Abid

vikramacmc19@svvv.edu.in || 9165030271

Name of the Supervisor

Mr. Shyam Sundar Meena

ssmeena7@gmail.com || 9993111592

Mr. Sunil Parihar

sunielparihar@gmail.com || 9993117025

Name of the Department at SVIIT – SVVV- Indore

INTRODUCTION: -

Agriculture is the science, which mainly deals with the diverse processes or the methods used for cultivating different varieties of plants and livestock farming or animal husbandry on the basis of human requirements. Crop production supports the huge population of a country. All individuals depend on the crops for their food. It also provides employment to a large number of people. As we all know that due to lack of proper knowledge in crop production and soil many farmers face loss in the production.

So, it is very important to understand which crop variety we have to use and which crop is beneficial in which season. Which crop is healthier to eat and which crop will be beneficial and will increase the profit and production for farmers? In the current generation of applications as technologies grew the idea of self-learning software was introduces in a short time Machine Learning got born.

E-Croptar targets the information related to the crop with the help data analytics and provides appropriate information regarding crop production at a particular location/area. As we know that weather plays an important role in the crop production. Sometimes knowing only 10-15 days weather forecast will not help in an efficient way.

So, in our project we will use machine learning algorithms like Linear Regression and Logistics Regression to predict the weather for the coming 2 months or more to help the farmers for more accurate calculation in the weather that will help them to increase their production. Along with that E-Croptar also suggest which crop will be best suited in their soil and it will help them in their production. The main motive of our project is to enhance and increase the production and profit of the crops for the farmers.

LITERATURE SURVEY: -

The existing apps similar to E-Croptar gives the option of buying or selling crops, seeds, pesticides and plants.

It also provides facility of weather forecast for the next 15 days.

It enlisted all your farms added by you and provide necessary requirements needed to manage and maintain the farms.

It also shows daily tips to increase efficiency in farming along with glimpse for farming in form of videos like Reels feature on Instagram.

It also provides daily news related to Farming tools, technologies and Government Schemes. You can also post your problems in their news feed.

It also shows the current Mandi rate of the crops and seeds.

It also provides the information related to Seasonal Crops and Trending Crops.

It also provides a chatting system for easily contacting between the buyer and the seller.

Apart from these astonishing features of these apps, there are some downsides that should be overcome.

1) The app only supports one language that is Hindi which is the biggest drawbacks as there are so many peoples who don't know Hindi. They face very difficult in using this app.

2) The weather forecast for the next 15 days is not accurate (50-60% accuracy) which leads to miscalculation at the time of sowing.

3) Due to single language support only the User Interface is not eye catchy and easy to use.

4) The information of the products in the store is not correct. For example, if you want to buy a tractor from someone listed in the app there are 80% chances that the information given in the app is wrong.

5) The current Mandi rate shown by the app is also not accurate which leads to loss for farmers. For example, if you want to sell 10 quintals of wheat in the Mandi the app shows you 4000rupees per quintal but in actuality the rate is of 2000rupees only.

Keeping these things in mind we will aim to make our project which will overcome all these problems.

PROBLEM DOMAIN: -

An application for users must be of level which can solve all their problems. Previous application solved the problems of the farmers to some extent but not completely.

In India there are around 90-100 crores farmers in which only 40-50% percent farmers knows Hindi and the rest are Tamil, Telugu, etc. What about them? This app fails there. Only one language support is not enough. The application must be multilingual. The weather forecast accuracy is not up to the mark. Sometimes it shows Sunny but it started raining. This will lead to loss in the production.

At the time of buying some products the app shows the contact number and price of the product. On calling the owner they say that they don't have any product. This happens 2 in 10 cases not always but even a single fake information can be a loss for the app and farmer both. In case if a farmer needs a tractor for very urgent basis than the fake information provided by the app will lead him only waste of time. So, this must be fixed.

The Mandi Rate must be accurate because farmers come from very long distance to sell their crop and any miscalculation in the rate will lead them to loss only.

SOLUTION DOMAIN: -

As the problem explained in the Problem Domain, we have to fix them for better efficiency in the production. We have proposed some additional services which could increase the applicability of the current generation.

1) **Predicting the Weather using Latest Technologies: -**The greatest challenge the farmer faces are the abnormalities in weather which destroys the crop in a day only. To overcome these abnormalities, we put some research on various datasets related to Temperature, Wind, Rainfall and Humidity on which we will use Machine Learning algorithms to provide the weather information for coming 1-2 months which will help the farmer for choosing the crops more wisely.

2) **Providing the Correct crop details according to weather: -** Once we know everything about the weather now it's time to choose which crop to choose. The good health of the crop depends on the contents present in the soil. The main content present in the soil are Nitrogen, Potassium and Phosphorus. All these helps for the suitable crop. So, hence using Machine Learning algorithms on various datasets related to crop production, soil information and Crop recommendation we will predict the best crop suited for the soil present on their land.

3) **Making it multilingual: -** The most important crucial part for a farmer while using the app is to understand the language on it. The previous app uses only Hindi language we will try to make our app multilingual especially English which is widely used. As everyone can easily search for the conversion from English to their language.

4) **Displaying the information in a graphical way: -** When the user will register their location in our app we will try to display the content present in their soil using predictive analysis in a graphical way.

SYSTEM DOMAIN: -

According to our proposed ideas, we require following technology requirements: -

1) The tools we have used: -
   - Flask Python Web Framework (v2.0.3) – We require this framework to develop our web application.
   - Git (v2.35.2)
   - Visual Studio Code (v1.164.2)
   - GitHub
   - Jupyter notebook

2) The languages we have used: -
   - Python (v3.10.2)
   - HTML
   - JavaScript
   - Bootstrap
   - SQLite and MySQL for database

3) Hardware Configurations: -
   - Processor: 1 gigahertz (GHz) or faster with two or more cores on a compatible 64 bit processor or system on a chip (Soc).
   - RAM: 4 Gigabytes (GB)
   - Storage: 64 GB
   - Operating System: Windows 10/11

APPLICATION DOMAIN: -

This project has the following application: -

When the farmer/user will login in the app and provide his/her location. Firstly, it will display the information of the soil and their content of the user area in a visualization way. After that it will try to predict the weather at that particular area and will display it on the screen.

When all the predictive analysis is done the app will display all the information like Profit, Loss and production of previously used crop and will provide a better variety of crop to be used so that the production of the crop should increase to an extent such that the farmers doesn't face any loss as previous.

The user only has to provide Location and login credentials for the processing.

EXPECTED DOMAIN: -

This application will help all the users who are not able to understand Hindi language and can take benefits from this application.

Our weather prediction algorithm provides a rough but closest approximate weather detail so that there is no miscalculation at the time of sowing.

The soil information displayed on the screen will help the user to understand the type of soil preset on their land more accurately.

References: -

1) https://datasetsearch.research.google.com/ - For data set research

2) https://data.gov.in/ - For State wise Dataset

3) https://www.kaggle.com/ - For Weather data sets

4) https://data.world/ - For datasets.

5) https://www.tutorialspoint.com/machine_learning_with_python/index.htm - For Machine Learning Algorithms

6) https://www.youtube.com/watch?v=_u-PaJCpwiU&list=PLu0W_9lII9ai6fAMHp-acBmJONT7Y4BSG – For Real Time Machine Learning project

7) https://www.youtube.com/watch?v=DD3ou9sa3Z8&list=PLu0W_9lII9agAiWp6Y41ueUKx1VcTRxmf For Web development with Flask and Python

8) https://openweathermap.org/api - For weather testing using APIs

9) https://developer.accuweather.com/?gclid=CjwKCAiA6seQBhAfEiwAvPqu15yvBRKUfjAjv4jvssBfoK yNzlYOOAoEEJ6Mwiu9IumKSJXUtWGAWRoCjBMQAvD_BwE – For Weather testing using APIs.

10) https://www.weatherapi.com/ - For weather testing using APIs.