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Product Scope

This project permits the farmers to have a direct conversation with the customer and make a deal that come up with good interest. Farmers are the stakeholders of this project. As they can get information about crops. Crop will be predicted based on temperature, humidity, UV index and soil moisture values of that area. They will get weather updates on daily basis in the form of notification. They will get water remainders for the crop based on sensors and moisture level. The nursery farmer will buy their crop seeds, fertilizer on an online agricultural cloud in fewer prices with no third-party interference. Farmer will get disease detection on their crop leaf by using image processing and they will be able to control these diseases.

Problem Statement

The society in which we live, have many social issues that we are facing today. One of the main issues is farming system in Pakistan. Farmers are facing a lot of problems in their production of crops. Old farming techniques for crop prediction and crop production. They were not able to predict diseases in crops which results in less production. They were not able to suggest best crop for particular area. They have to sell their product to third parties on fewer prices which costs farmer badly but very helpful for third parties as they sell the products in market on double prices. Our software solves all these problems as we will be providing a complete platform to them. We are developing this software because farming is the most social issue in Pakistan and we want to solve this issue. Software exits already but these software are single purpose like crop prediction software only predicts but we are providing a complete platform which provide crop prediction, disease detection and market place at same place. We will be using advanced algorithms and technologies to remove problems that were in old systems. From this software we will be fetching Data from API's, using machine learning Algorithms, image processing Algorithms, and Development concepts in this project.

Modules:

Crop Prediction:

There is a requirement for economic framework to anticipate and enhance the yield of crops. To take the full advantage of the soil kind, moisture, humidity, climate etc. Machine Learning algorithms will be used, which is becoming the hip of various agriculture areas, where straight applied math is not applicable. We will analyze different algorithms for better accuracy. By using these algorithms, we can predict the soils which are best suited for a particular seed. In that way we can best utilize the data in order to get the most suitable seed that can grow in the particular area. We will be detecting 20 crops. All the majors crops produces in Pakistan like rice, wheat, mango, oranges, potato's, cotton, Apple, Apricot, Banana, Bean, carrot, sugarcane, chili pepper, Eggplant, Kiwi, Mint, Onion, soybean, tomato and watermelon. A sensor will be used for the prediction of soils and crops. The data about the PH values of crops and soils, temperature and NPK values of soil will be get from sensor.

Disease Detection:

Disease detection is used to detect the disease in the leaf of the crop. For this we use image processing algorithm that helps to predict the disease in the leaf of crop. We will analyze different algorithms for better accuracy. Image processing algorithms require the picture of the leaf crop affected. Infection of the leaf could be of 3 types:

- Fungus infection (when the color is white)
- Bacterial infection(when the color is brown)
- Virus infection(when the color is yellow)

We will be detecting major disease in crops in Pakistan includes Aphids, Bacterial leaf streak, Powdery mildews, Rusts, citrus greening, Botrytis leaf blight, Anthracnose ,Spider mites, Asochyta blight and Mint rust

Online agriculture cloud (سانیک آ سان)

Online agricultural cloud is a system that registers vendors, farmers and customers and allows them to communicate with each other. The website contains different variety of crops, pesticides and fertilizers that are managed by the vendor. The vendor is able to add and update the crops and fertilizers and make a deal with the farmer. Framer is also able to add and update his products and standing crops and make a deal with the customer. The website also helps the farmers to predict the crop disease.

Fertilizers:

Online agriculture Cloud contains different types of fertilizers that are updated and managed by the vendors.

Crops (grains and Nuts):

Online agriculture Cloud comprises of different types of grains that will be updated and managed by the vendors.

Pesticides Spray

Anti-Disease sprays will be available to protect and avoid the crops from the external disease.

Pay management

There will be two types of methods available to pay:

- Cash on delivery
- Credit card

Vendor Management:

Vendor is a stake holder who oversees products of the customer. Vendors update and sell products (fertilizers and grains of different types) on the website. There are more than one vendor, each with a unique login and are managed by the user management.

The sub modules of vendor are:

- Update products
- Insert products
- Delete products

Customer Management

The customer here depicts the farmer. Farmer will buy the fertilizers and crops and user management manage the farmers. The farmers login with their own unique id, choose the payment method suitable and buy the product.as well as the crop buyers that could be of two types listed below:

Hold crop buyers:

Hold crop purchasers purchase the yields in the wake of collecting on online agriculture cloud. They see the yields in the image and pick the ideal one. The nature of the yields is guaranteed.

Standing crop buyer:

Standing crop purchasers will have the option to purchase the yield before reaping, on agriculture cloud. The maker will transfer its standing yields in the agriculture cloud so the purchaser can get it before collect. The maker will convey a few, or all, of the creation from a predetermined number of sections of land according to purchaser request. It doesn't guarantee the nature of the yields.

Live Chat

Farmers and Customers will be given a live chat facility so they can interact with each other, farmer will share product's photos with the customers, so the customer will be satisfied by the product. In case of any issues they will resolve it online or in person if it's possible.

Live Video

Farmers and customers will be given video call facility that will ease the customer to see the condition of standing crop from different side of the crop so they will purchase it without any issue or misconception.

Farmer Management

There are two types of farmers who will sell their products to the customer and buy their product from the vendor. Farmer can add their crop product and standing crop details on the online agriculture market place. In this way farmer will deal directly with the market place and it will remove third party involvement. Each farmer will have unique login and are managed by user management.

The sub module of farmer is:

- Update products
- Upload products
- Delete Products

Crop Remainder/Alert

Crop remainder is software that will alert the farmer when the water level of the crop will go below the required level. To detect the level of water nutrients that are required are: Phosphorus, Nitrogen and Moisture. The datasets that are required for the testing will be crop seed data, sunlit temperature, and current year temperature.

Helpline

A help line will be provided to the customers and farmer to see procedure about using the online agriculture market place. It will contains details about vendor products buying procedure, Farmers products procedure and contact detail in case of any problem, so they will contact with vendor online. The helpline will be managed by the vendors who will upload the procedure. It will allow the farmer and customer different features like

Report a problem

It will provide farmers and customers to report their problems regarding the application whether it is not working properly or server is down etc.

Give feedback

Farmers and customers will give their feedback about the application and suggestion regarding the betterment of the application.

Application rating

Customers and farmers will rate the application.

FAQs

It will contain question and their answers that will frequently arise in the customers and farmers mind regarding the basic information for users of a website.

Contact Details.

It will show the contact details and a message form so customers and farmers will interact with vendor online.

User management

User management is used to manage the user access to the agricultural market. User can sign up as a vendor if he/she wants to update products such as grains, fertilizers on the site or sign up as a farmer if he/she wants to learn from this site and want to buy grains fertilizers or needs information about the crop disease. They have to fulfill certain requirements such as filling registration form which will ask your details before signup. Signing up as a vendor provides 3 options which user can choose: update the current products, Add new products and Delete products. Farmers are also provided with 2 options i.e. buy products from the vendor online, and sell their products to the external market. Customers with 2 options i.e. buy products online from Farmer, view products online.

Sign up

Log in

Vendor sign up

- Register online
- Update products
- Add new products
- Delete product

Farmer sign up

- Register online
- Buy products from vendor.
- Upload agree business (his own products).
- Crop prediction about disease.

Customer Signup

- Register online.
- Buy Products.
- View Products.

Results and Statistical Analysis

Results of statistical analyses indicate that the precision of the results, give further description of the data and demonstrate the statistical significance of growth comparisons. The system will generate charts, 2-D and 3-D graphs to show the growth of the crops, growth of the disease in a crops and market growth. The system will perform analytics on the growth of crop, production, market growth and disease growth in a crop.

We will use machine learning algorithm on our past data and future data set which we have scraped from weather API. Matplotlib and mplot3d will help us to perform statistical analytics.

The sub modules include

- 2-D Graph
- 3-D Graph
- Charts

Conclusion

After seeing all the product that are already developed contrasting these product with the previous ones we came to the conclusion that our final Product shall be a platform where farmer can buy everything that farmer needs for its crop production to enhance its productivity and also will be able to sell their crops in all forms online. Also a platform for customers to buy products directly.

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