AgriConnect

Survey Report

- We studied around 20 research papers on this topic. Link to existing research papers- https://drive.google.com/drive/folders/1ECaumbzxnRkLU8kcmEAvTAswR1t8Hgkn?usp=sharing
- We studied various existing government websites and mobile applications which show the schemes that can be availed by the farmers. We noticed that there are a plethora of schemes and it becomes difficult for the farmer to find the schemes applicable to them. Considering the high illiteracy rate amongst the farmers in India, we came up with a graphical (i.e. pictorial interface) user-friendly product with features such as voice-based HMI recommendation system, text to speech for farmers who cannot read completely or partially, with audio language options and other features. We also studied the existing applications and their features implemented to make the functioning of the agricultural industry a smoother process.
- The government websites which we studied for the schemes were- https://kisan.gov.in/(S(tdziez52j11t5yvb2rlyucfm))/Home.aspx http://agricoop.nic.in/programmes-schemes-listing
- The most relevant literature survey papers we studied are summarized below
  - **Agriculture Marketing Using Web and Mobile Based Technologies -** This paper aims at providing a marketplace for farmers to directly sell their produce to the customers, thus eliminating the middle-man. This would ensure fair prices. Products are rated before they are added on the web/mobile platform, by the system administrators; so that customers are assured about the quality of products.
  - **Agro App: An Application for Healthy Living -** The product developed in this paper aims to be a guide book for any farmer. This app provides information about crops to be grown (and how to grow them) according to the season, information about insecticides, pesticides & financial sector. It also provides weather forecast and frequently asked section to further aid the farmers
  - **Weather Forecasting Using Artificial Neural Network -** Here LSTM (Long short term memory) neural network is used to perform predictions on the weather. The network is trained on combinations of important features like wind speed, humidity, temperature, pressure, dew, etc to provide accurate weather forecasting which will be helpful for mainly agricultural and some other industries. It was inferred that LSTM based neural networks provide the best accuracy amongst other weather prediction techniques.
  - **Future Weather Prediction Using Genetic Algorithm and FFT for Smart Farming -** This paper provides a desktop and android based system for providing weather monitoring and subsequent crop damage alerts to the farmers. Each registered user acts as a data point and the location (GPS) and weather data is continually sent to the server, which would increase form the dataset. On the client's request, FFT (Fast Fourier Transform) and Linear extrapolation is used to provide accurate weather predictions and alerts.
  - **Plant Disease Detector**- This paper shows methods for farmers to automatically detect plant diseases in their large fields. They implemented a mobile application which uses image processing to determine the infected

plants. Once an image was uploaded, it was classified as a diseased or healthy plant and then the disease was predicted.
- **Soil Sampling Mobile Platform for Agriculture 4.0** -
  A robot was used to analyse the soil and find out its constituents, the nutrients it contains and the composition. The main aim of this robot was to provide nutrient-related data so that accordingly crops could be grown.
- **An m-Agric Application for Broadcasting Agricultural Information for Subsistence Farmers in Rural Areas of Eastern Cape** -
  A mobile and web application was developed to assist farmers by providing them with answers to their questions, data about related information, fertilizer details and allowed them to advertise the crops they would like to sell. It provided support to the framers in the rural areas.
- **Krishi Ville- Android-based Solution for Indian Agriculture** -
  The paper proposed an android based mobile application to provide farmers with agricultural updates, news alerts, weather forecasts, current marketplace prices and provide services to the farmers.

- We noticed that there are many applications existing for farmers to make them aware of how to grow crops, give them timely reminders, soil analysis, weather predictions, etc. But the agriculture industry has many stakeholders and the connectivity between them is very minimalistic.
  Hence our solution provides a single platform incorporating all the stakeholders in the agriculture field.
- The innovations in our products are as follows:
  - Automatic sorting of the infected crops from the rest of the crops to decrease manual labour
  - Voice-based HMI Recommendation system
  - Text to speech for schemes
  - Direct connections between the farmers and markets directly to avoid the middleman i.e the farmer can directly put their produce in the marketplace in our application.
  - Recommending the shortest route and most optimised route to reduce the Agri logistic loss.
  - Create a geofence so that warehouses can pick up crops from all the farmers on the way rather than making several trips.
  - Weather prediction, crop analysis and satellite image processing.