

FARMTELL

An app for data driven farming

1 INTRODUCTION

1.1 Overview

My project is called farmtell, a node red built, IBM cloud based application that can be used by farmers, students, researchers and anybody else who is interested in approaching the farming in a data driven and predictive modelling based way. It uses the IBM based tools for predicting, forecasting, integrating, analyzing and finally giving the output.

1.2 Purpose

The purpose of building this application is to help farmers get the predictive results about the farming techniques and tactics they use and to save them from various demerits of unpredictable farming. Also, this app is built on ideology to promote the farm based researches and help the researchers get their part done. Last but not least, the app tries to encourages the newbies and budding farmers to help them out during farming so they can get most out of it.

2 LITERATURE SURVEY

2.1 Existing Problem

Farmers always find them trapped in the un predictive nature of the farming whether be it prices, weather reports or better ways of farming. There are various ways farmers use to get most out the their farming like weather forecast, daily list of the farming crops, datasets on the internet about crops but all this scattered form of data, most of which is unapproachable and hard to understand ends up farmers in the dilemma of what to do and what not to do. Even new comers to farming find it hard what to do and what not to ending up in leaving farming and making it unapproachable for many thus resulting in an alarming rate of leaving farming and few farmers on board.

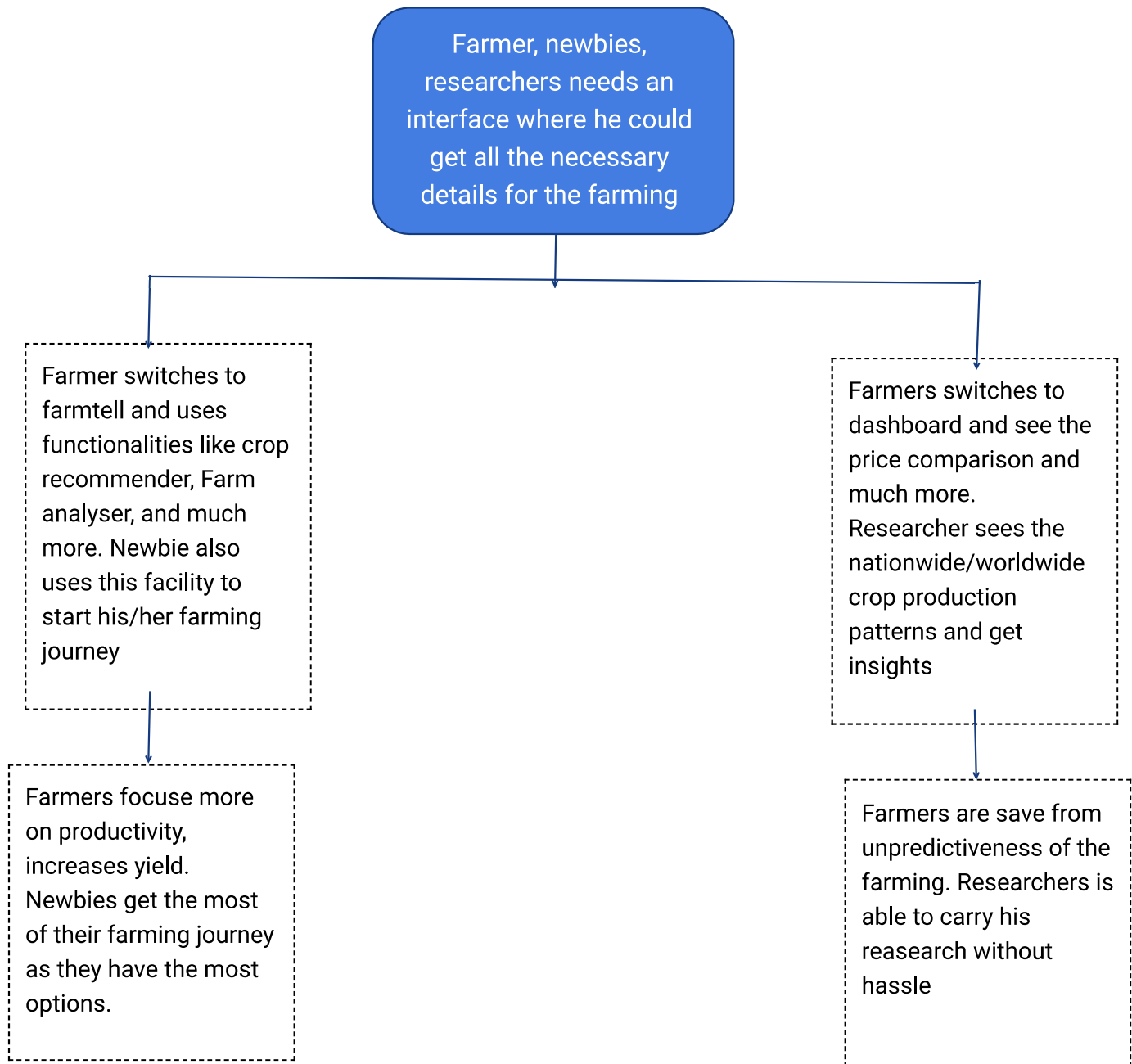
2.2 Proposed Solution

There should be an interface where all the data could be refrained in a structured, easy to understand manner and is easily accessible to farmers so that farmers could get all the necessary details about what to do and how to do, increasing their production and decreasing

their research time. Also, a newbie should be able to collect all the necessary information from it.

3 Theoretical Analysis

3.1 Diagrammatic Overview of the project



3.2 Hardware/ Software Requirement

Hardware require to access the software

A mobile phone/laptop/ any device which has VDU is required to access the app.

Hardware require to access the Farm Analyzer

A section of app called Farm analyzer is based on connecting a smart sprinkler to the app so that a farmer could track the surrounding temperature and humidity of the farm as well as the temperature of the smart sprinkler to detect its working condition.

Software requirement to access the software

Internet with a browser.

4 EXPERIMENTAL INVESTIGATIONS

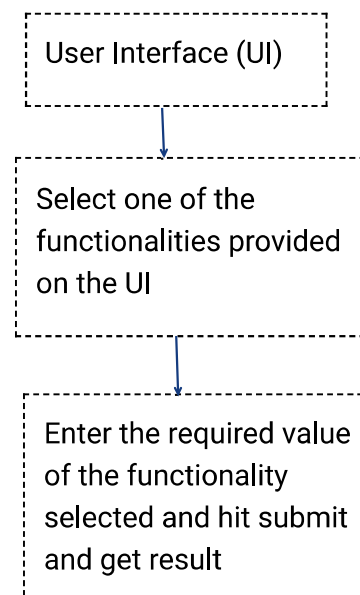
For Node red built application

I have brainstormed and researched for various parameters that farmers find it difficult to analyses or get or have no knowledge of and turned them into functionalities that farmers could use for their benefit. Also, I have collected data sources (datasets) from various sites as well as prepared some datasets based on my research. Also, I have kept an special attention for research person so that they can get most of their farming researches using my application

For Dashboard

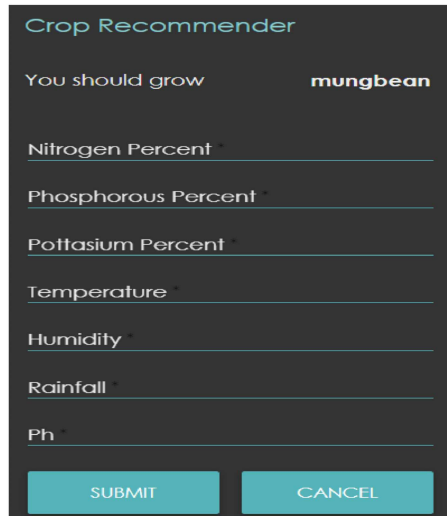
I have brainstormed and researched for various parameters that are unpredictable or takes a lot of time to be predicted and included them in dashboard in a presentable manner. I have collected and generated huge amount of data, made their analysis and put them forth in a presentable and easily understandable manner. The dashboard is based on the ideology that anybody could access to get the results.

5 FLOWCHART



6 RESULTS

Result for Crop prediction

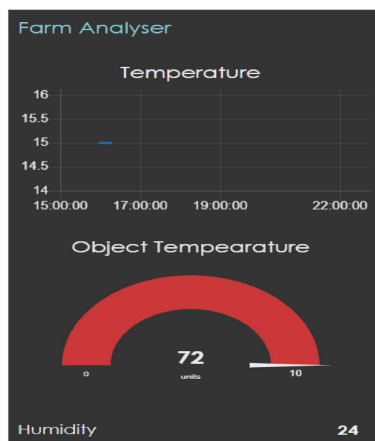


The screenshot shows a web form titled "Crop Recommender". It has a header "You should grow" followed by the text "mungbean". Below this are several input fields: "Nitrogen Percent", "Phosphorous Percent", "Potassium Percent", "Temperature", "Humidity", "Rainfall", and "Ph". At the bottom, there are two buttons: "SUBMIT" and "CANCEL".

This result can be generated by the user when he is more inclined towards research and farmers could generate the results but they need a detailed report of their farm and also data insights from the smart sprinkler.

User needs to input values for the parameters: Nitrogen, Phosphorous, potassium, rainfall, humidity, pH of soil and temperature and they will be recommended to plant a crop on this basis. On entering the values and hitting the submit button, recommended crop is shown

Result for Farm Analyzer



This result can be generated by user if he connects the smart sprinkler from the farm to the application and then the data can be displayed.

For demonstration purposes, I have connected the Farm Analyzer IoT based device to IBM Watson IoT and getting results from it.

Result from Dashboard



The user need to see the dashboard for various predictions which includes crops grown across India, Price comparison,



a graph for effect of using pesticide, doing organic farming, nitrogen content in soil and using potash vs. crop quality and growth rate is also given

7 ADVANTAGES AND DISADVANTAGES

Advantages of the Proposed solution

- Farmers get various farming aids functionalities under one platform
- Newbies gets benefits of data driven model of farming helping them ace their journey of farming
- Researchers could also get useful insights from the application.
- Overall productivity and farming index will increase.
- Overall depression due to farming un predictive behavior decreases
- A data driven approach attracts new comers to farming

Disadvantages of the Proposed solution

- The UI is based in English only, lacks regional language support which makes it difficult for some to use.
- A mobile phone with a internet facility is must which makes it inaccessible for many.
- Farm Analyser needs smart sprinkler which can add cost to the farmer.
- A person should have the detailed report of the farm to use crop recommender.
- New IoT devices registration request needs to be sent so they can be access accordingly.
- A person should have basic knowledge of using smart phones or internet enabled/accessible devices.
- Internet is a must amenity to use many services of the proposed solution

8 APPLICATIONS

1. This can be used by farmers to get recommendation and help during farming
2. This can be used by newbies to get advice on what essentials to be followed while making way to the farming
3. This can be used by researchers/students to get the insights for the farming
4. This can be used by farmers to get good crop results producing healthy food.
5. The dashboard can be used by marketers to adopt their pesticide manufacturing and selling tactics and see how the farmers adopt to organic farming and how not.
6. This can be used by farmers to get the righteous price of crop by observing hike in a certain crop.
7. The dashboard can motivate newbies to take a change by adopting organic farming techniques as they get the best results
8. This can be useful for students as they can observe and study about various crops across the region.

9 CONCLUSION

This project could bring a data revolution to the farming and farmers needs not to be in the dilemma of assistant, predictor as well as the helping hand in the farming. The project could also turns an asset for the marketers associated with the farming as they could use the functionalities to observe the current trends as well as insights from it to transform their market, their industries and their ways of doing business. With this project, everybody can expose himself/herself to the data approach of the farming.

There are various parameters such as crop recommendation, price prediction, growth index etc. which can be achieved as output from it.

10 FUTURE SCOPE

This project is based on lite version and thus limits some of the functionalities in it. If this project is provided support, various functionalities will be added such as

- Regional language support
- Total voice assistant farming insights
- Notifications for bad weather
- Real time price up and down
- Real time monitoring of the crop production
- Global comparison of data rather than national
- Connect services to connect across globe
- Image scanning of the Crop for insight storytelling

The project is also made global so farmers across the global can be benefited and know the power of IBM cloud.

11 BIBLIOGRAPHY

- Smart Internz platform : Problem statement/ Motivation to built the project
- Kaggle: Datasets
- Github: Datasets
- Personal MS Word: Collection of various data from the different website
- Google.com: For using services
- IBM cloud: To access the cloud

APPENDIX

SOURCE CODE

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