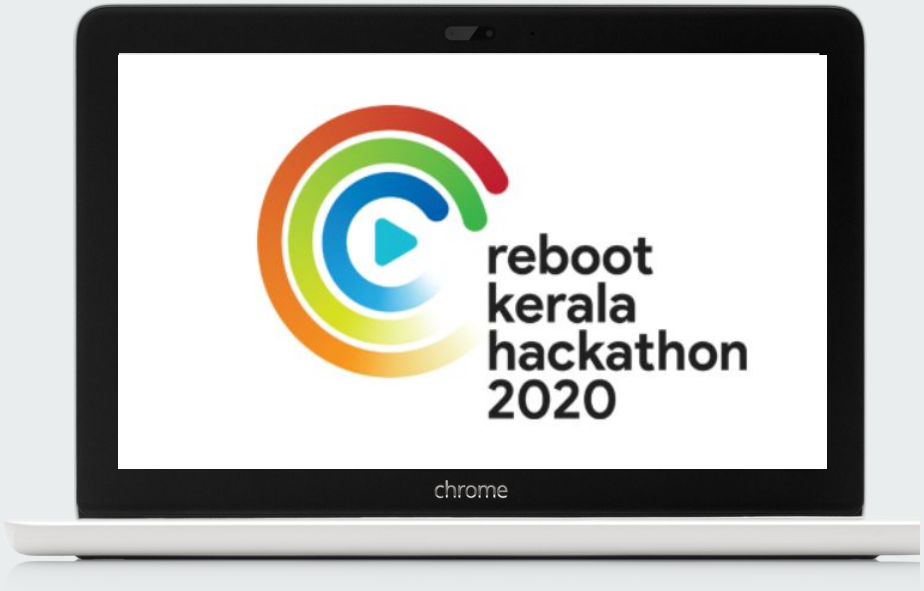
Team Abhyudaya

When Something is important enough ,
we do it even if the odds are not in favour.

Kisaan Rakshak



TEAM

This Team of five , consists of Btech students from Amrita Vishwa Vidyapeetham , currently pursuing Electronics and Communication Engineering .

We team Abhyudaya are:

→ Dhumsapuram Saikrishna Reddy
→ Vedhakrishna Yarasuri
→ Kavya Garlapati
→ Preethi Gutha
→ Naveena Kota

Outline

Problem Statement

Introduction

Block diagram

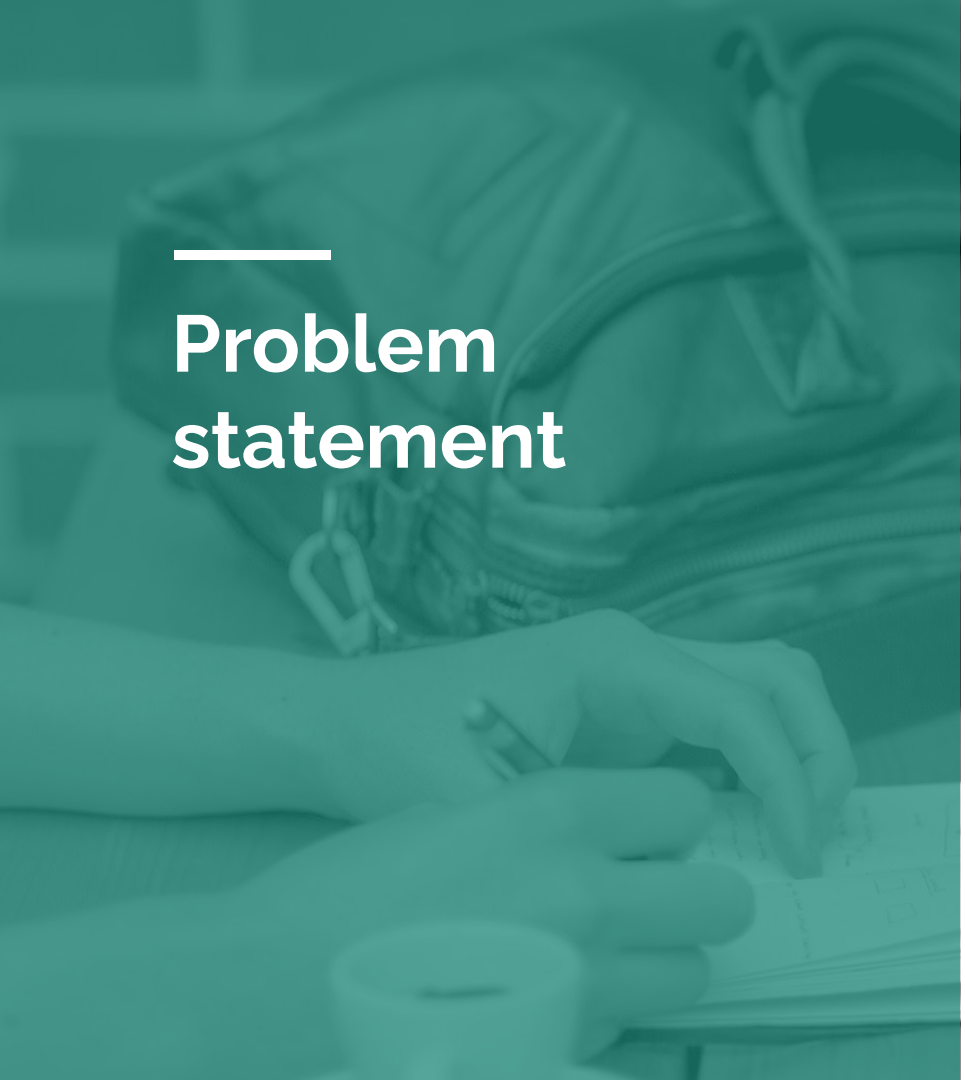
Interfacing sensors

Prediction of climatic conditions

Web server

Advantages

Further Work



Problem statement

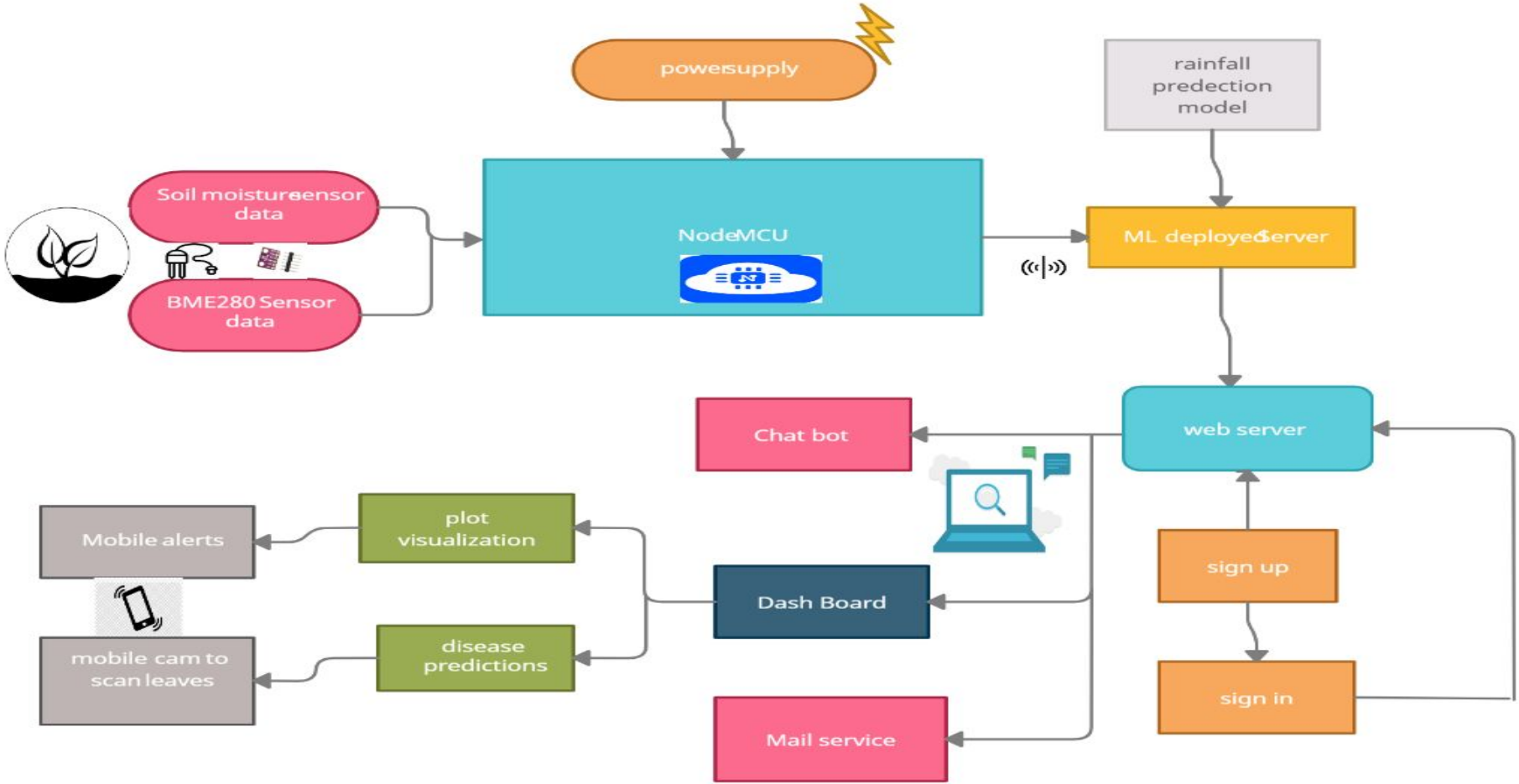
Developing an intelligent solution to monitor various parameters that affect the cultivation of crops.

The Challenges that farmers face Today

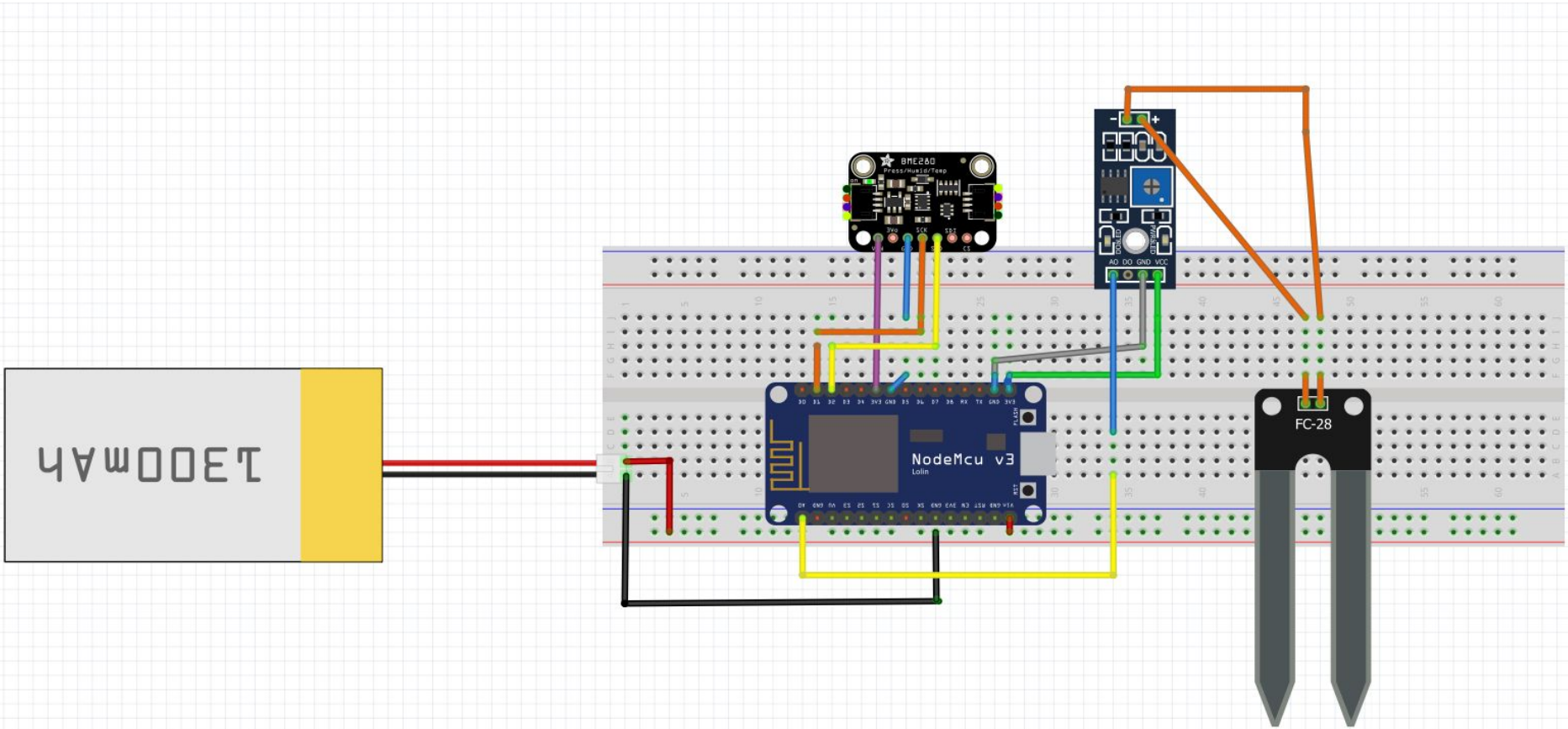
- ➔ **Lots of physical maintenance required** Many trips have to be taken in order to manually check the soil humidity on a regular basis.
- ➔ **Difficult and inaccurate water estimates** Many trips have to be taken in order to manually check the soil humidity on a regular basis.It can be difficult to know the exact amount of water to give plants, thus causing stress for the crops by over or underwatering
- ➔ **Unexpected costs and water waste** Over watering crops could lead to higher water costs than what is really needed..
- ➔ **Planting times** It is sometimes difficult to know the optimal time to plant without data.
- ➔ **It is hard to manually track soil temperature and moisture levels** Manually measuring key data points about crops is often difficult, time-consuming, and more likely to be inaccurate.

Solution Proposal

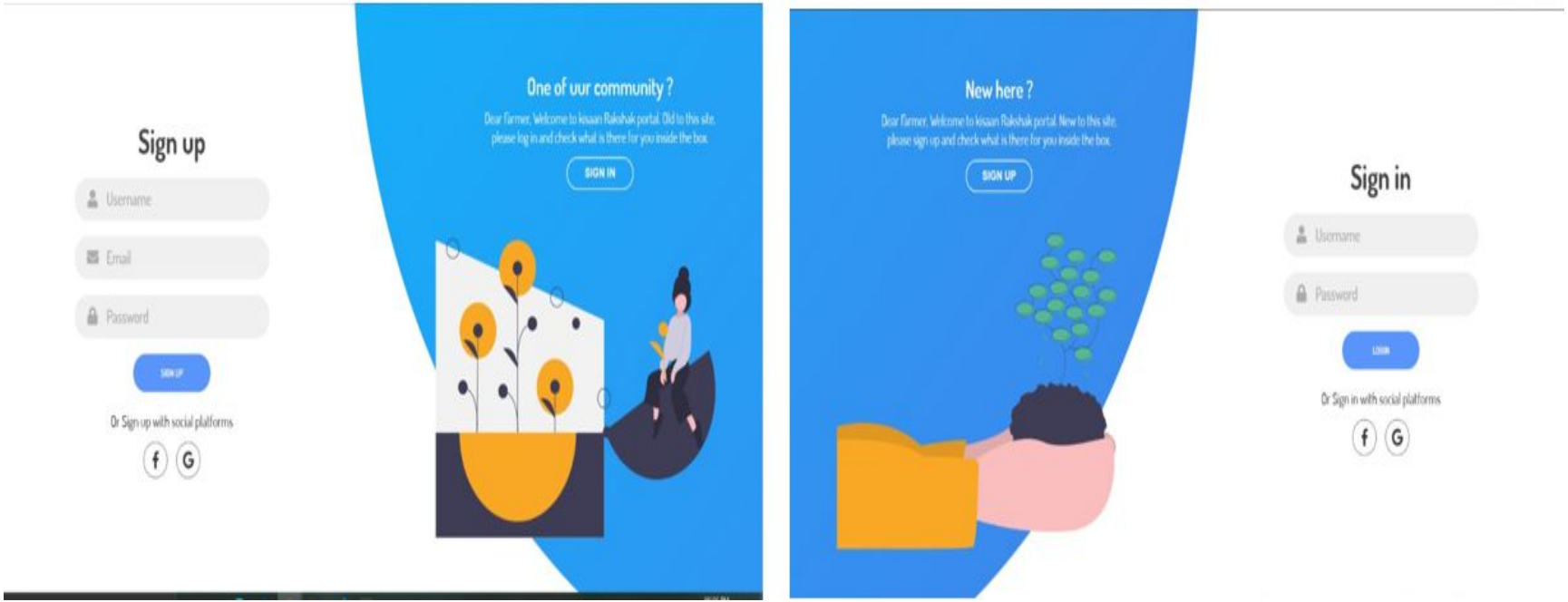
- An IoT solution by providing affordable sensors that monitor soil humidity, moisture , air temperatures and automatically report it directly to the Internet .
- where the analysis of all the sensor data will be done using sophisticated machine learning models to predict the suitable measurements if necessary, and alert message will be sent to farmer.
- To monitor all this we have a user friendly web application. To predict diseases and take appropriate actions. we have scanner interfaced with this web application to get details from their own hardware.


powersupply
rainfall predection model
Soil moisture sensor data
BME280 Sensor data
NodeMCU
ML deployed server
web server
Chat bot
Mobile alerts
plot visualization
Dash Board
sign up
mobile cam to scan leaves
disease predictions
sign in
Mail service

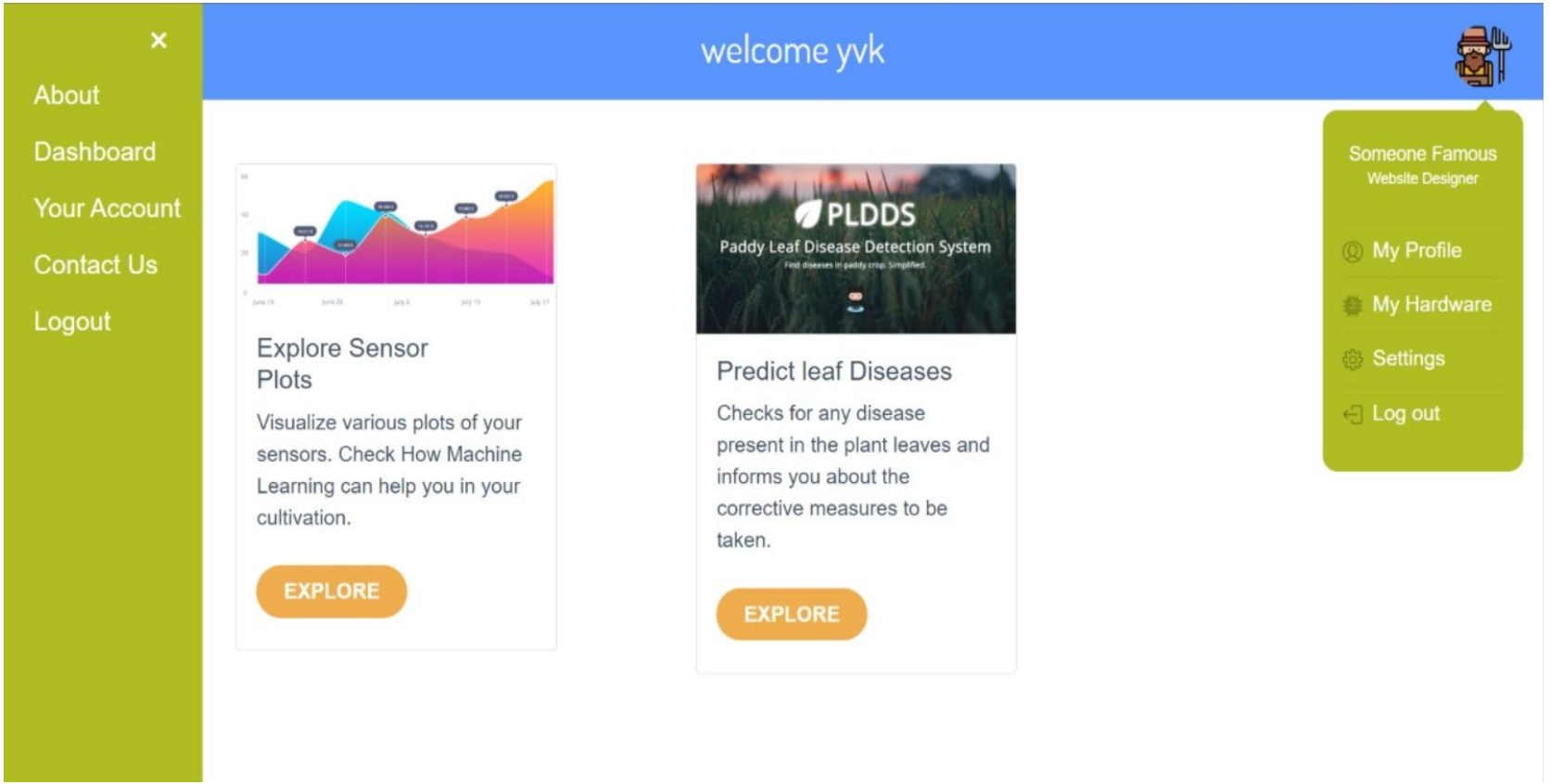
WORKFLOW



Hardware Setup



Website Sign up, Sign in pages.


About
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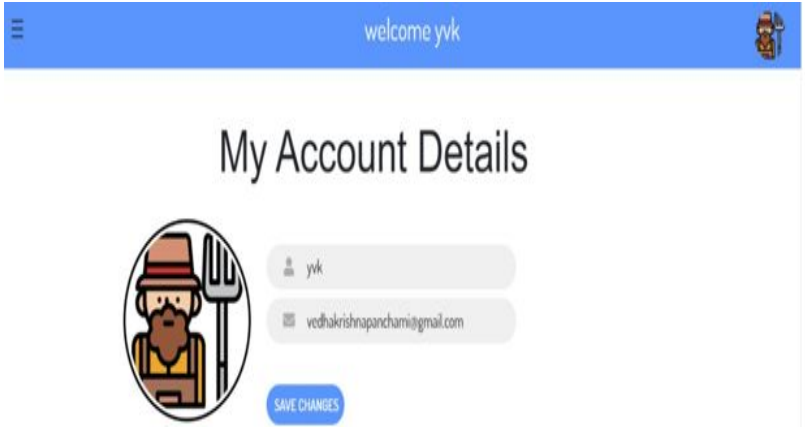
welcome yvk
Someone Famous
Website Designer
My Profile
My Hardware
Settings
Log out
Explore Sensor Plots
Visualize various plots of your sensors. Check How Machine Learning can help you in your cultivation.
EXPLORE
PLDDS
Paddy Leaf Disease Detection System
Predict leaf Diseases
Checks for any disease present in the plant leaves and informs you about the corrective measures to be taken.
EXPLORE

Dashboard



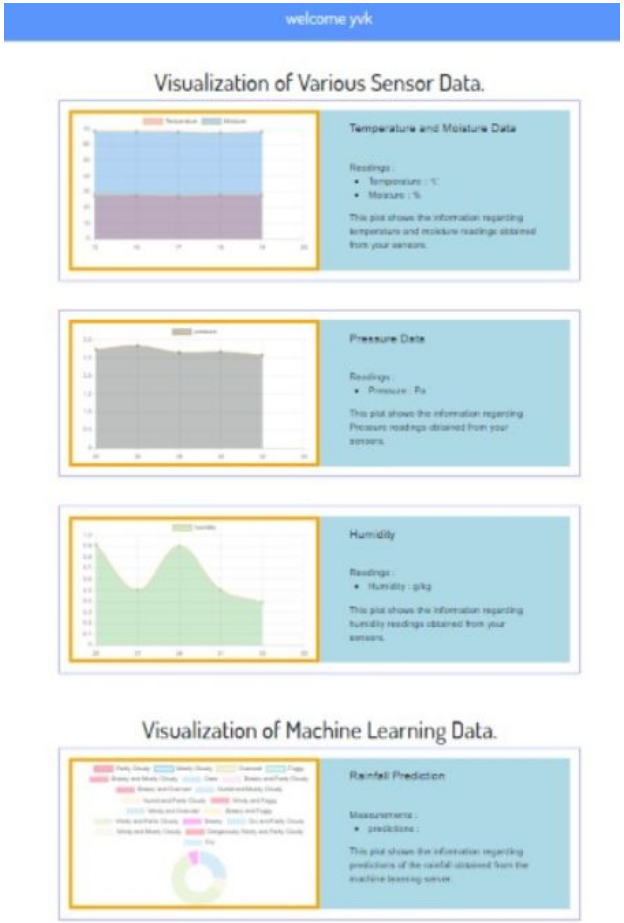
My profile and my hardware

Choose File DSC_0366.jpg Choose file

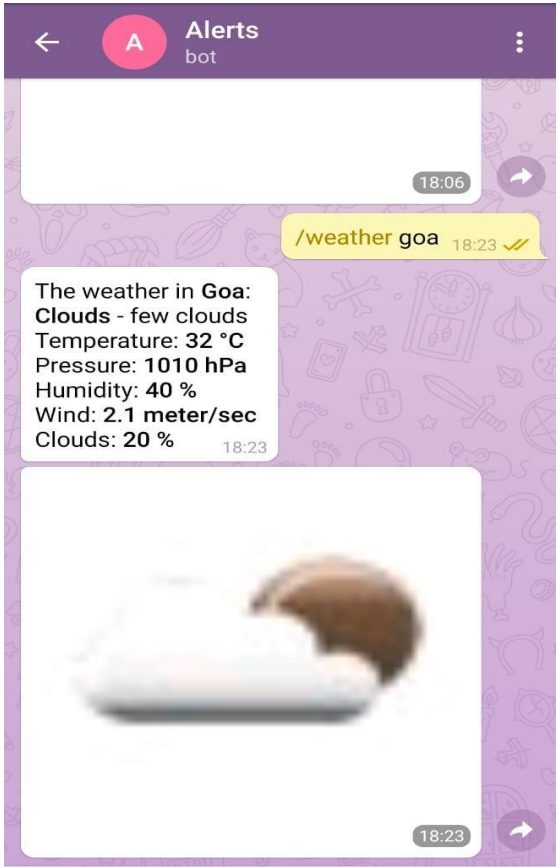
Predict

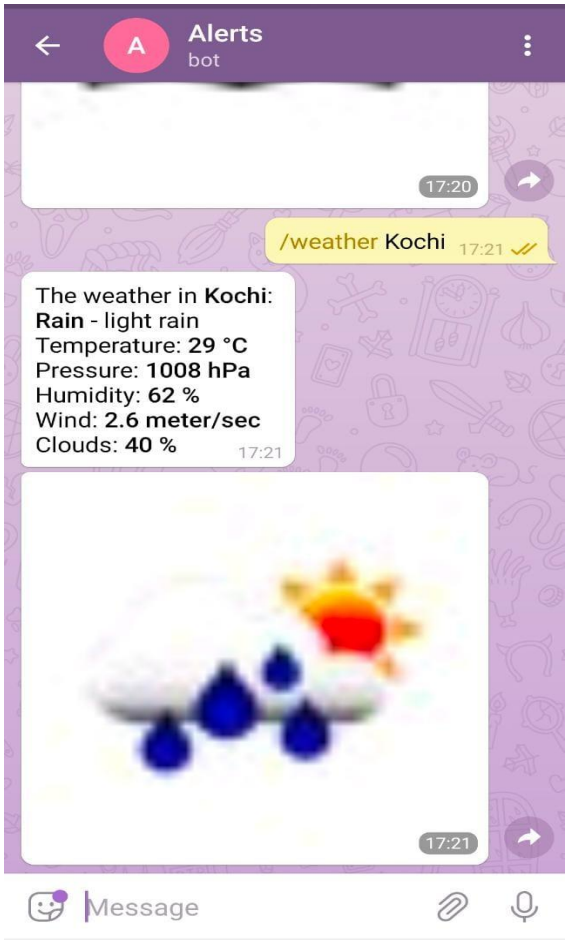
This leaf is effected by **Bacterial leaf blight**

Disease prediction from leaf Image



Visualize Sensor Data and Rainfall Prediction using Machine Learning





TELEGRAM CHAT BOT. USERNAME: alerts_kissan_rakshak_bot

Advantages :

- ➔ Soil volumetric water content can be better monitored by using connected sensors sending data through the IoT and web Interface.
- ➔ Crops could be planted and grown at their ideal temperature. Sensors can monitor underneath ground level temperature for an optimum reading..
- ➔ Tracking average air temperatures assist in determining ideal planting and watering times (and anticipating pests).(For this we have used weather api).
- ➔ Having real-time data can help landowners and farmers reduce manpower, water usage, and other maintenance costs, thus reducing costs and environmental impact.

Why it's better than existing solutions

- ➔ It is very user friendly and easy to understand and access. The user's interface is easily accessible and secured for the respective end users.
- ➔ The electronics which which we have used are cost efficient and also for web application, we have only used open sources without depending on any paid platforms or services.
- ➔ So farmer only requires the internet services which is common to everyone these days.
- ➔ We have various types of information regarding weather, soil moisture, disease prediction in same application and take appropriate actions.
- ➔ Farmers can combine data (like weather forecasts) with their own land parcel data to optimize crop watering and maintenance.
- ➔ Farmers have healthier crops by optimizing water and soil care.

TECHNOLOGIES USED

Electronics:

→ Node Microcontroller Unit(ESP8266)
→ Sensors(BME280, Soil moisture sensor)

Website:

→ Telegram Chatbots, email-services
→ HTML
→ Node.js
→ mongoDB
→ Bootstrap,CSS
→ Javascript

Machine learning:

→ANN , CNN and Logistic regression
→ Transfer Learning
→ Tensorflow
→ Tensorflow js
→ API

THANK YOU

Questions?

Team Abhyudaya