Smart Farming

By
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Motivation

Why smart farming?

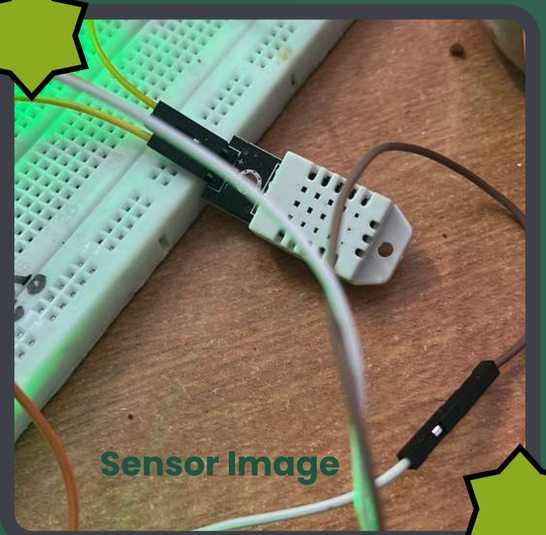
- Smart farming refers to an upcoming concept that combines conventional farms with new technologies such as IoT. The purpose of Smart farms is to increase the quality of agricultural products whilst optimising human intervention.
- To address the challenges of farmers, efforts and research are in place to improve the quality and quantity of agriculture products by making them ‘connected’ and ‘intelligent’ through “smart farming”.
- The IoT technology uses a *data-driven approach* and enables farm managers to keep a *detailed check* on their crops. It helps the farmers take appropriate *actions against unwanted pests* and *protect their cropns from various diseases.*
- The smart farming solution keeps an *eye on every activity of crop production*, which triggers instant alerts about its *health, condition, and temperature requirement*, and displays all the details on the interconnected smart gadgets.

Sensor: DHT22

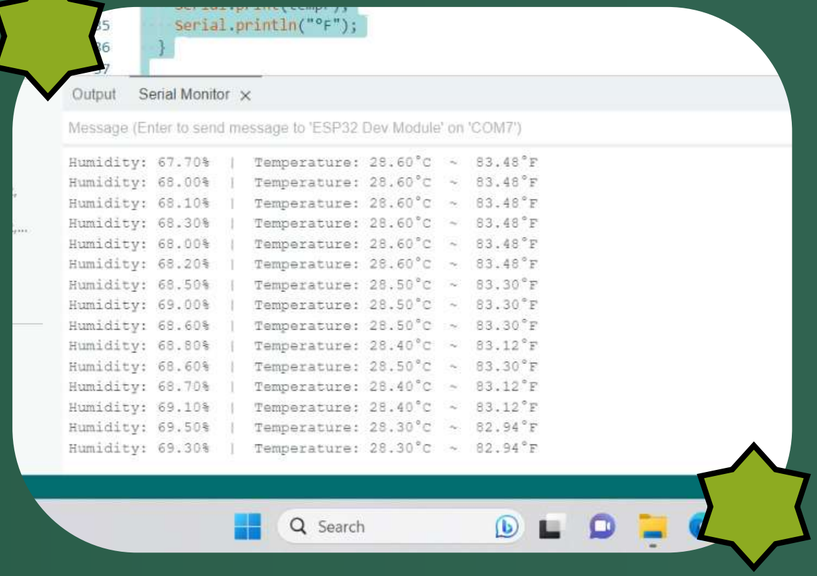
Use of sensor:

to measure temperature and humidity of surroundings

- Has two separate components for measuring the two
- Temperature measured using a *NTC thermistor*
- Capacitive humidity sensing element measures humidity- *has dielectric moisture holding substance between two electrodes*



Sensor Image

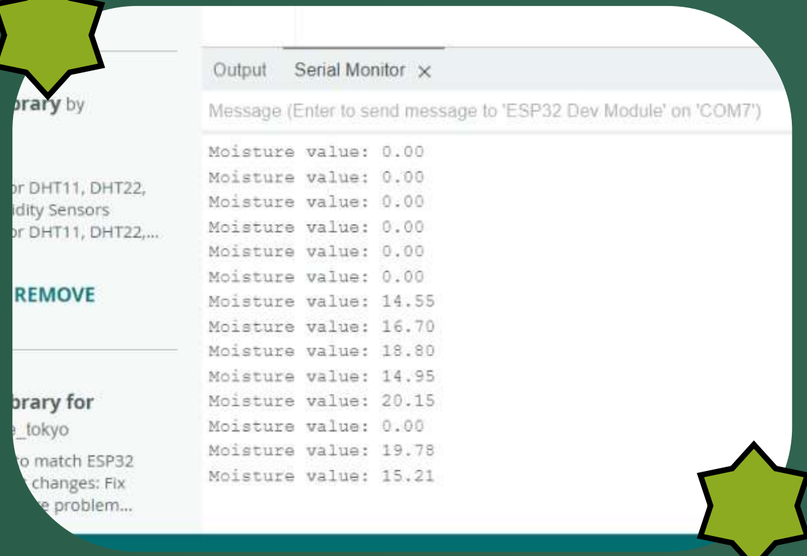


Sensor: Resistive soil moisture

Use of sensor:
to measure moisture in the soil

- consists of a fork shaped probe and a module
- each prong is a exposed conductors acting as a variable resistor whose resistance varies with the soil's moisture content.
- The sensor produces an output voltage according to the resistance, which by measuring we can determine the soil moisture level.

Sensor Image

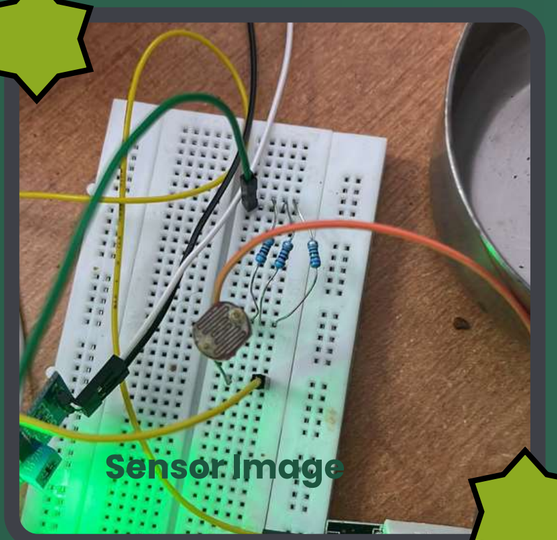


Sensor: LDR

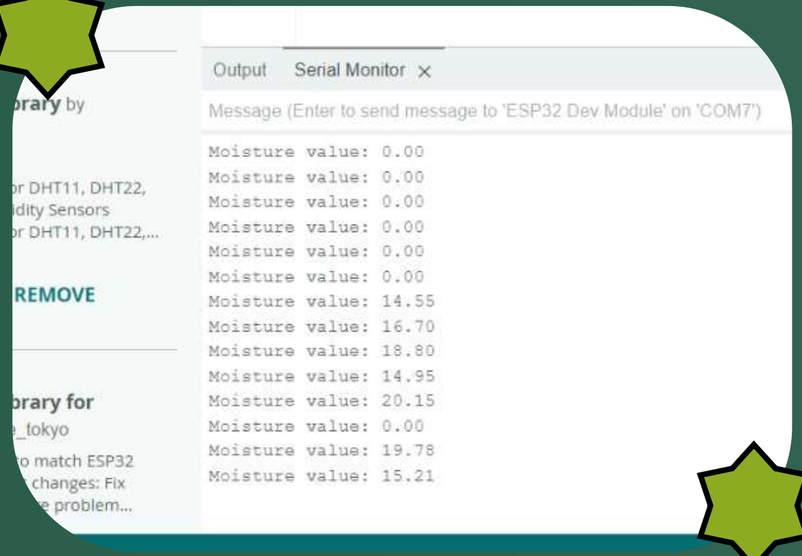
Use of sensor:

to measure light i.e light intensity available in the surroundings

- An LDR is a resistor whose resistance changes as the amount of light falling on it changes.
- The resistance of the LDR decreases with an increase in light intensity.

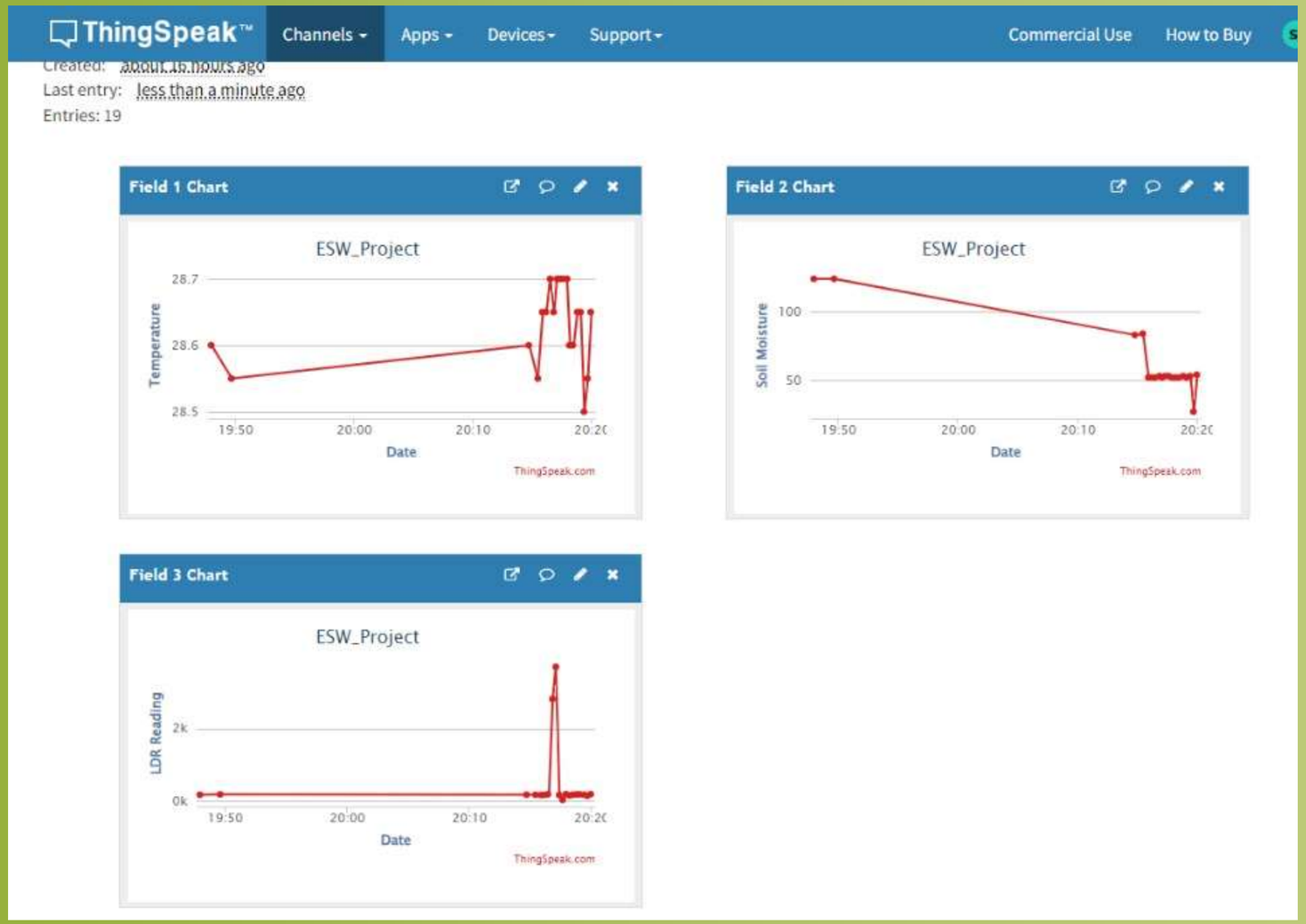


Sensor Image



Thingspeak

Data from three sensors being sent to ThingSpeak

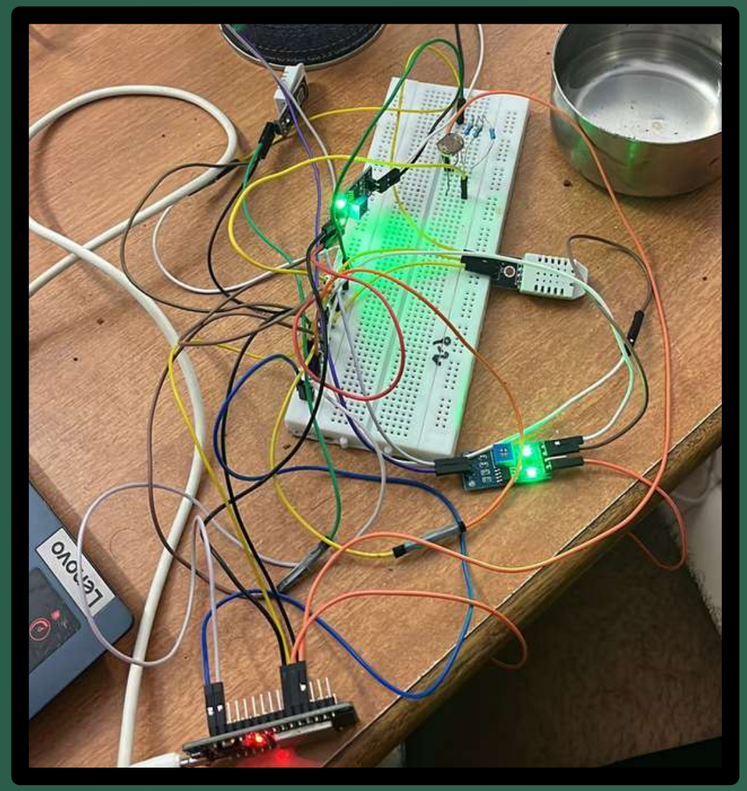


Hardware Implementation so far...

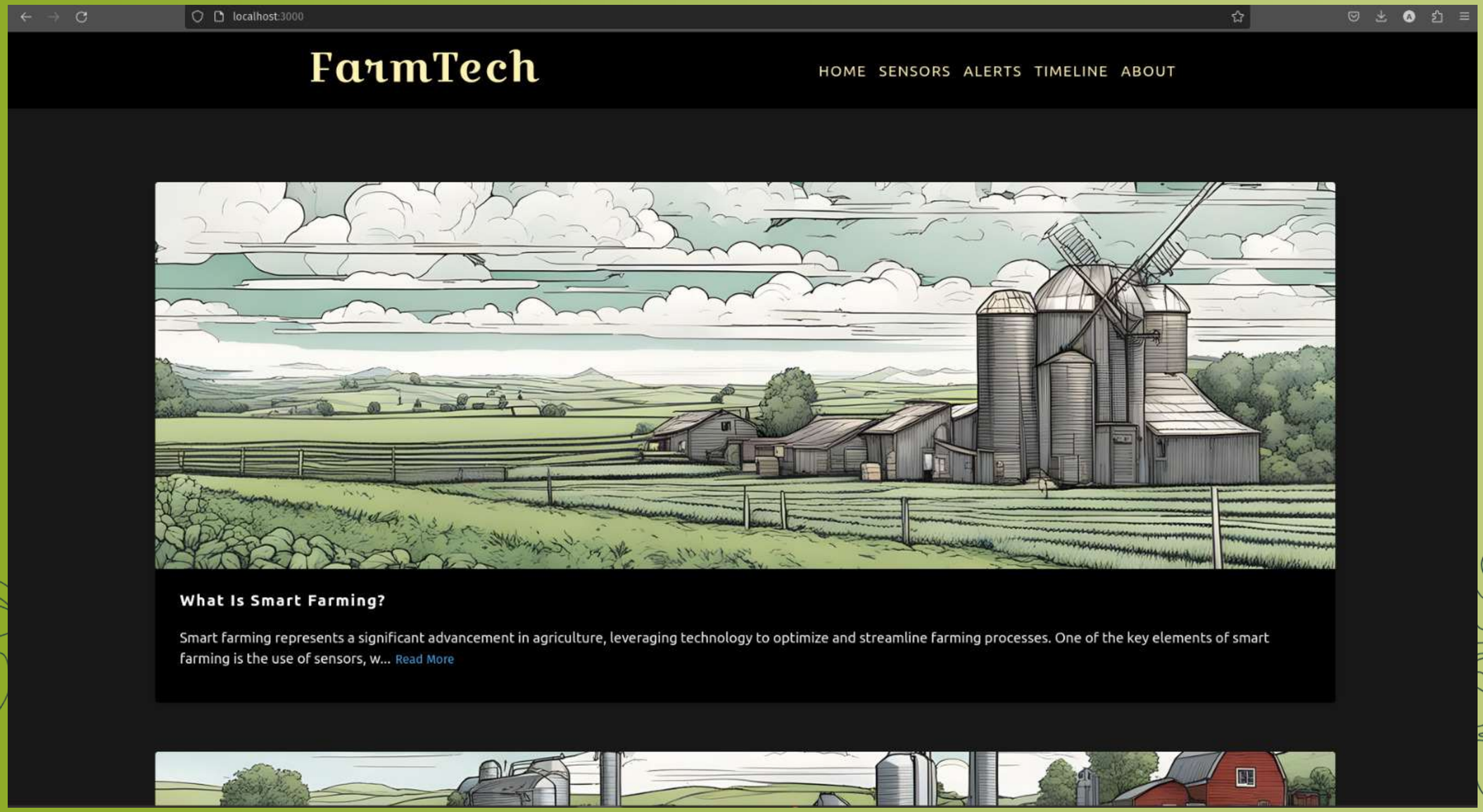
- Working code of 3 sensors written:
- LDR
- DHT 22
- Resistive soil moisture

- Testing of these senors done

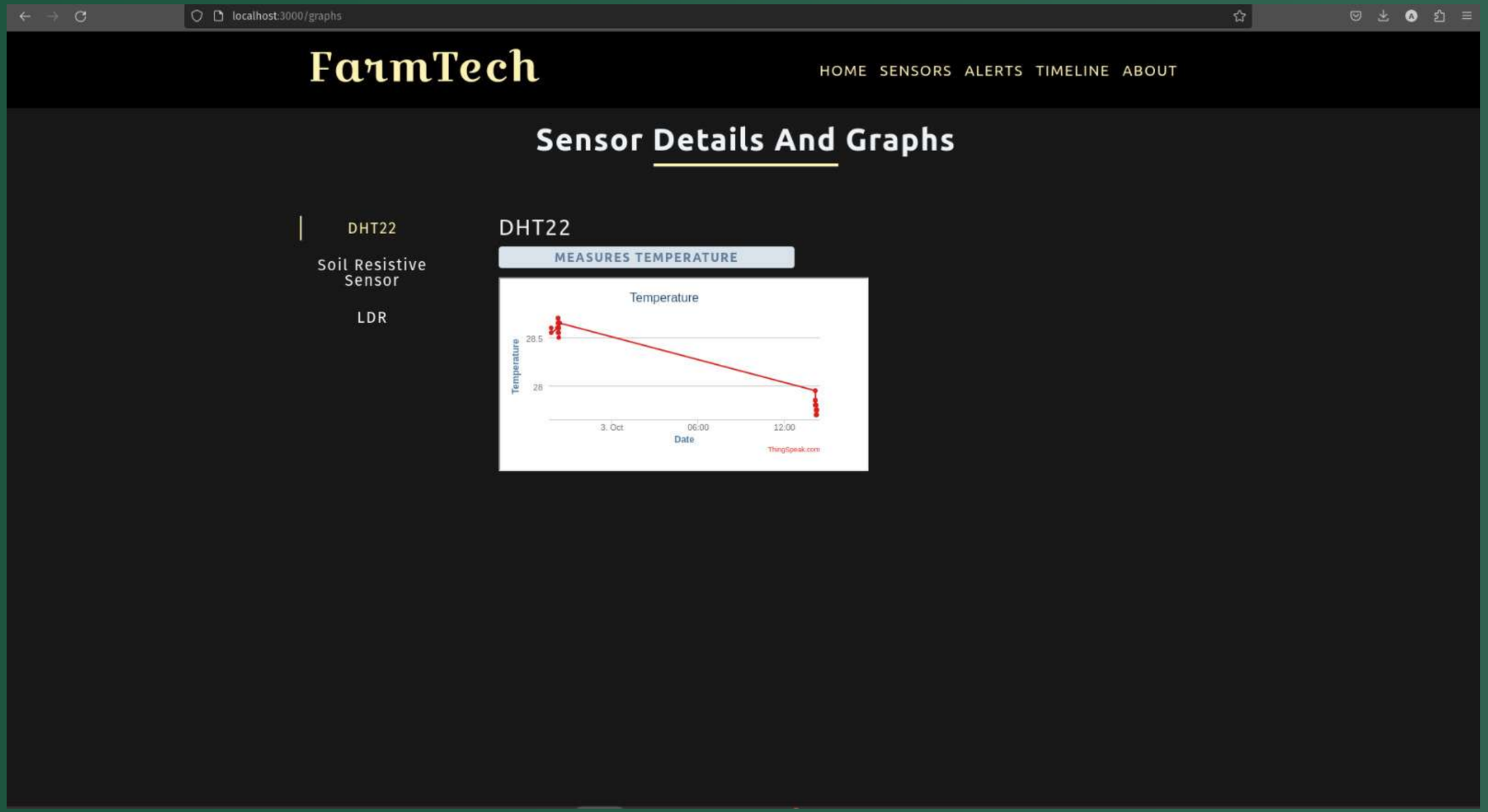
- Data from each of sensors sent to ThingSpeak



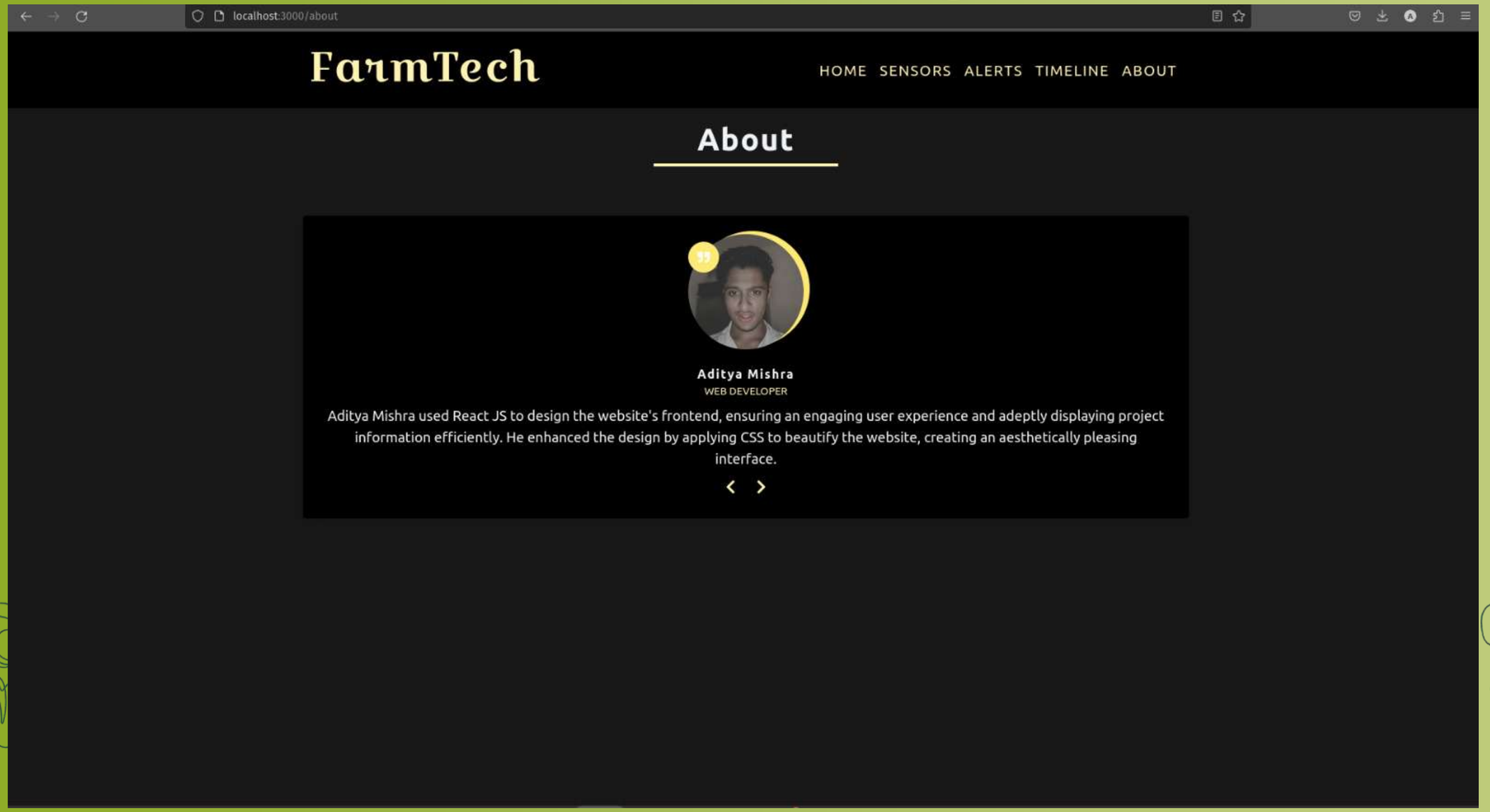
UI Overview


localhost:3000
FarmTech
HOME SENSORS ALERTS TIMELINE ABOUT
What Is Smart Farming?
Smart farming represents a significant advancement in agriculture, leveraging technology to optimize and streamline farming processes. One of the key elements of smart farming is the use of sensors, w... Read More

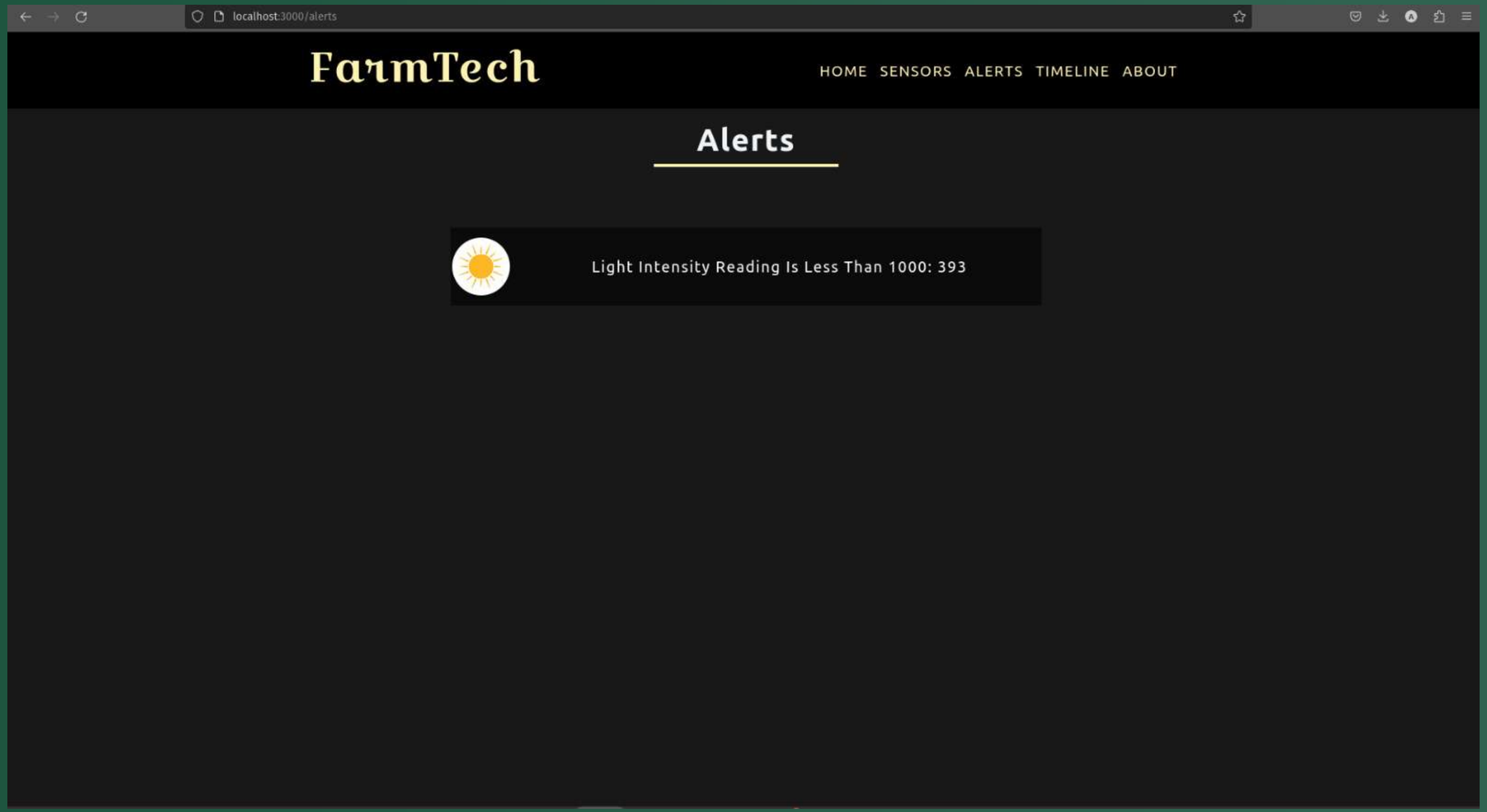
Sensors page



About page


localhost:3000/about
FarmTech
HOME SENSORS ALERTS TIMELINE ABOUT
About
Aditya Mishra
WEB DEVELOPER
Aditya Mishra used React JS to design the website's frontend, ensuring an engaging user experience and adeptly displaying project information efficiently. He enhanced the design by applying CSS to beautify the website, creating an aesthetically pleasing interface.

Alerts page


localhost:3000/alerts
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HOME SENSORS ALERTS TIMELINE ABOUT
Alerts
Light Intensity Reading Is Less Than 1000: 393

To be Implemented

Hardware

- If possible, a little bit of ‘irrigation’ actuation with help of solenoidal valve based on soil moisture level .
- *VOC sensor*- use and interface
- *pH sensor* currently not working
- Checking with an actual plant/actual plants- *setup of sensors* with hardware
- Data collection over a long period of time; analysis

Software

- Timeline of data from sensors
- A bit of Data Analysis if possible

Group Members and Contributions

Aditya Mishra

UI Designer; responsible for creating the user interface such as the website design

Chirag Dhamija

in charge of the following sensors:

- DHT22
- LDR

Namrata Baliga

in charge of the following sensors:

- DHT22
- Resisitive soil moisture sensor

Sanchit Jalan

in charge of the following sensors:

- Resisitive soil moisture sensor
- LDR