Documentation

The project implements a smart Agriculture system using a Raspberry Pi. It integrates sensors (DHT11, soil moisture sensor, humidity), Twilio-based SMS alerts, and web-based interface.  
  
**Installation Process**

**1. Set Up Raspberry Pi**

* Install the latest version of Raspberry Pi OS.
* Connect your Raspberry Pi to a monitor, keyboard, and mouse.
* Ensure the device has an active internet connection.

2. **Install Required Libraries and Tools**

* Flask: For creating a web server.
  + pip install flask.
* Flask-SocketIO: For real-time communication.
  + pip install flask-socketio.
* Flask-CORS: To allow cross-origin requests.
  + pip install flask-cors.
* Adafruit\_DHT: For reading temperature and humidity data from the DHT11 sensor.
* RPi.GPIO: To control GPIO pins for LEDs and switches.
* Twilio: For sending SMS alerts to identify whether the soil moisture is wet or dry.
  + pip install twilio.

3. **Prepare Project Files**

* Place the provided Python backend script (app.py) and HTML file (index.html) in the project folder.
* Add the weather\_data.cv to the same directory to use as the background for the data collection.

### ****Execution Process****

#### 1. ****Start the Flask Application****

1. Navigate to the project directory in the terminal:
   * cd /path/to/project/folder
2. Run the Flask app:
   * python3 app.py
3. The server will start running on <http://0.0.0.0:5000>.

#### 2. ****Access the Web Interface****

* Open a browser on your Raspberry Pi or a device connected to the same network.
* Visit http://<raspberry\_pi\_ip\_address>:5000 (Replace <raspberry\_pi\_ip\_address> with your Pi’s IP).

### ****Snapshots****

### 





