



IOT BASED SMART AND PRECISE IRRIGATION SYSTEM

Ponugubati Jashwanth
Sri Balaji V
Yalala Ambica
N Umakanth



Statement



To make a Autonomous System to provide watering to the field, a working model that considers all given parameters below

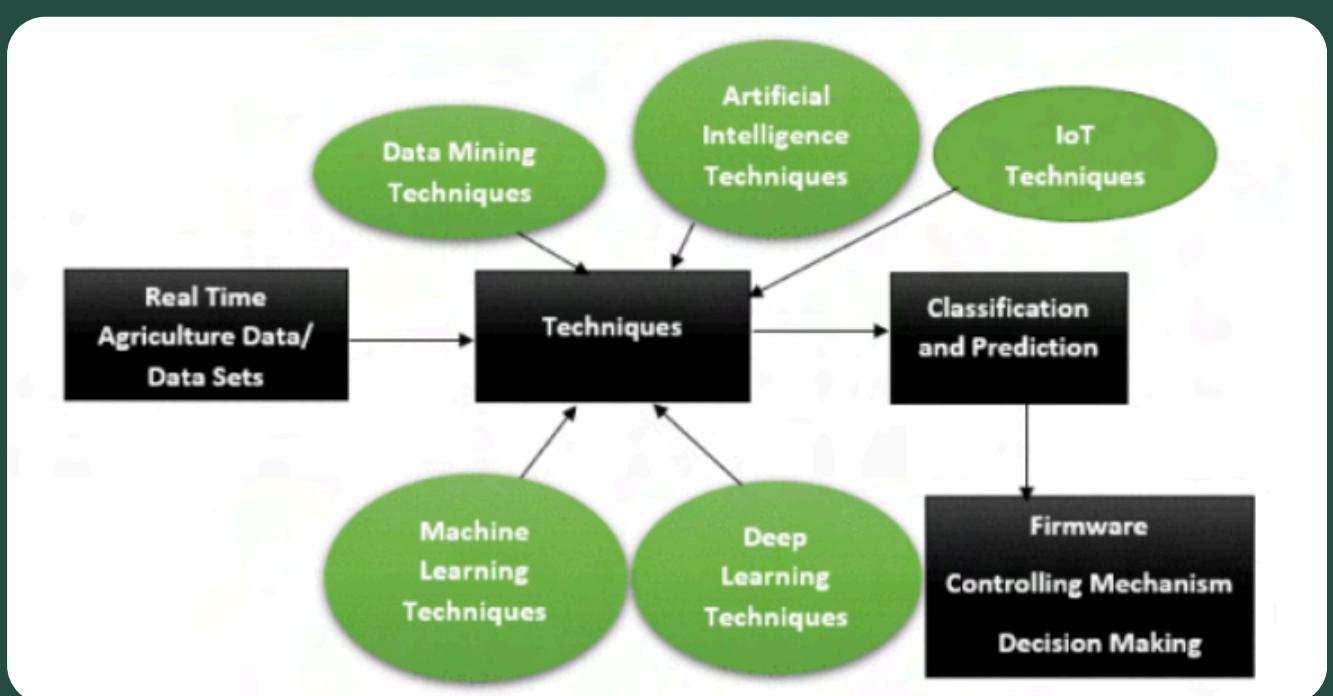
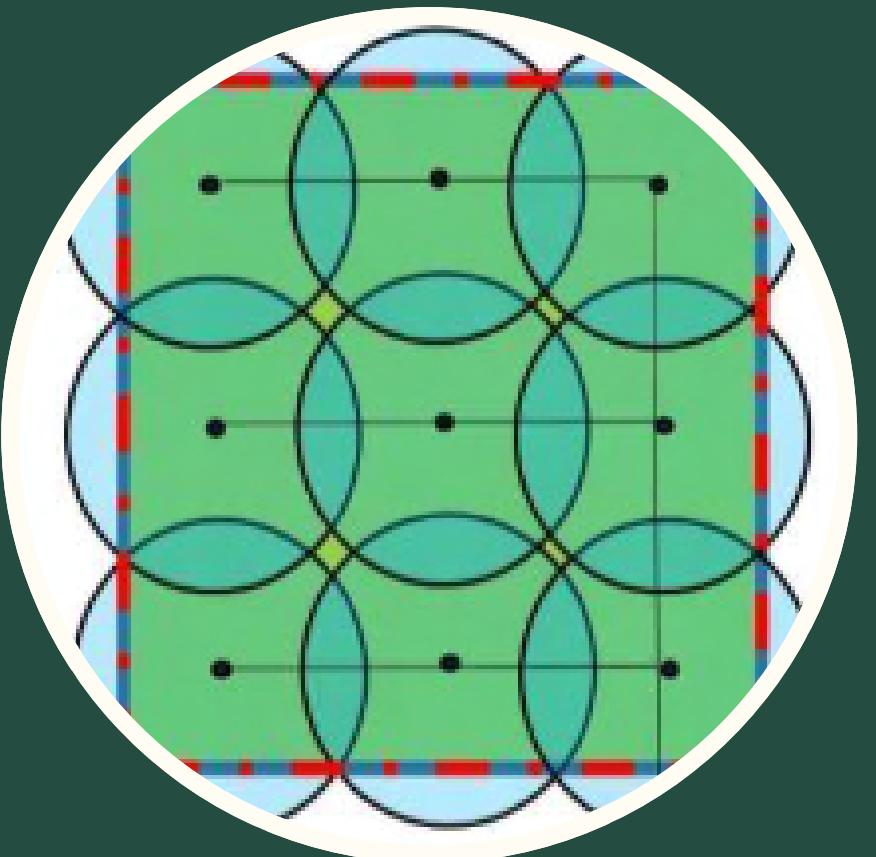


- Soil Moisture,
- Rainfall data,
- Temperature,
- Humidity,
- Crop area,
- Motor Capacity



- Saving the data in server,
- Messaging to owners,
- Automatic irrigation,
- Display all parameters,
- Collects weather online data

Solutions



Existing

there are solutions that are based on the soil moisture, temperature and humidity: takes the cases of the moisture, temperature and humidity and also some systems will check whether currently if it is raining or not based on which output is calculated.

Limits

Will not consider the rainfall that is going to happen, will not save the data in the server.

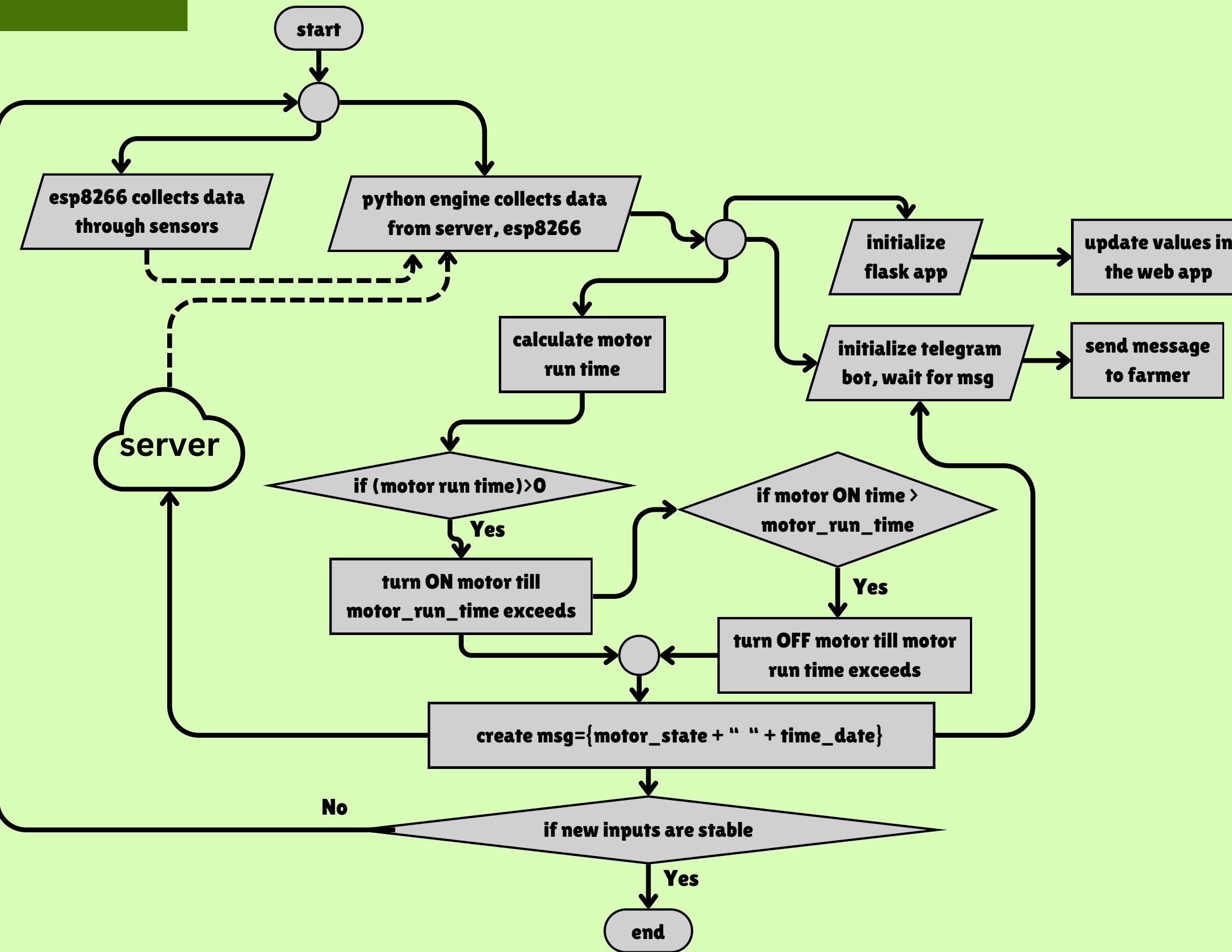
04

Proposed Solution

A python based engine that calculates the given sensor, and other inputs such as: Soil moisture, Temperature, Humidity, crop area, motor capacity, and Rainfall data (inputs from the open-source APIs). And calculate precisely how much water should be given to the crop of given area and how much time motor should'

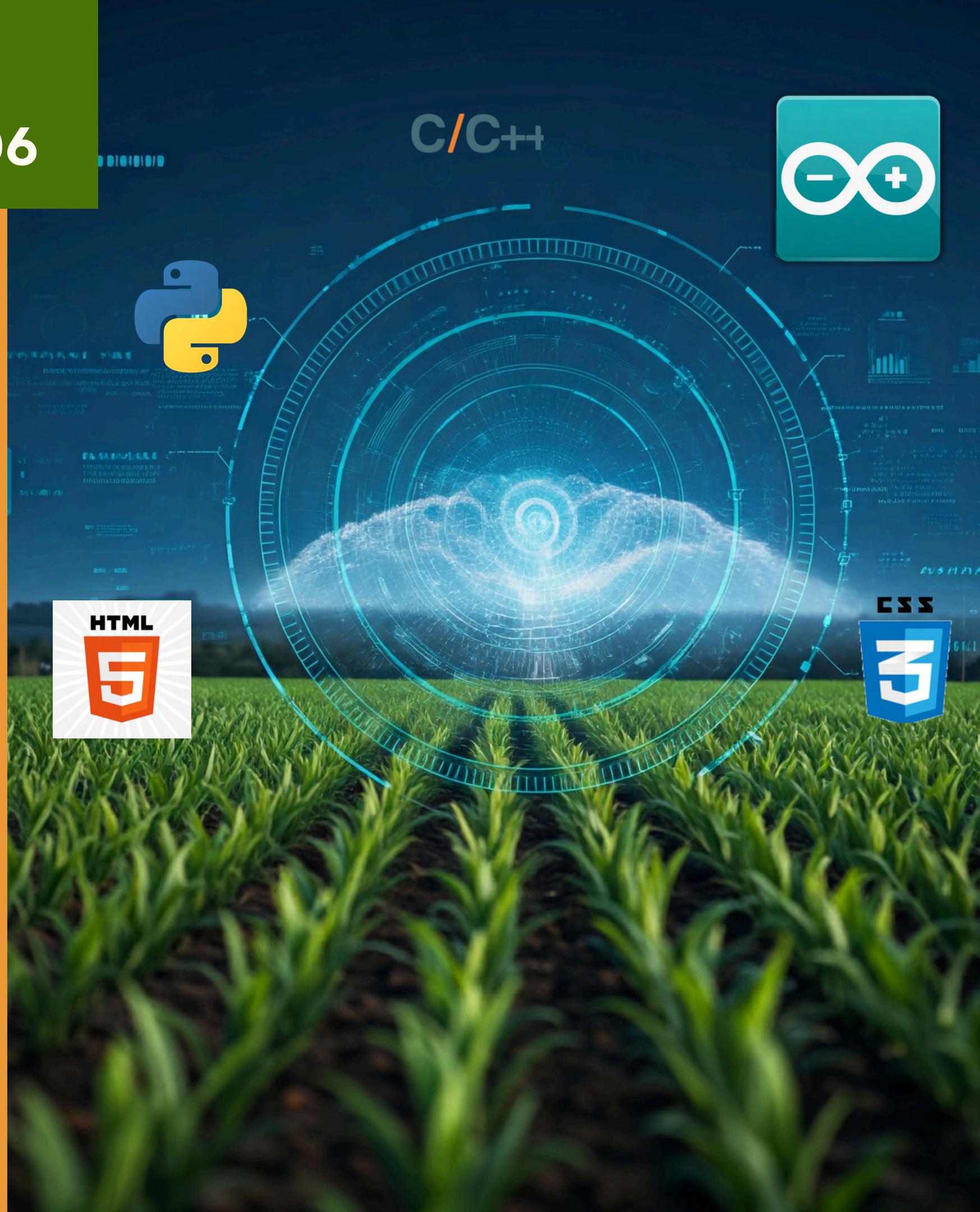


05



Flow Chart:

This flowchart shows a system where an ESP8266 gathers sensor data and connects with a Flask app and Telegram bot to control a motor based on its running time. The motor works according to the input conditions, and farmers receive updates about its status and the current time.



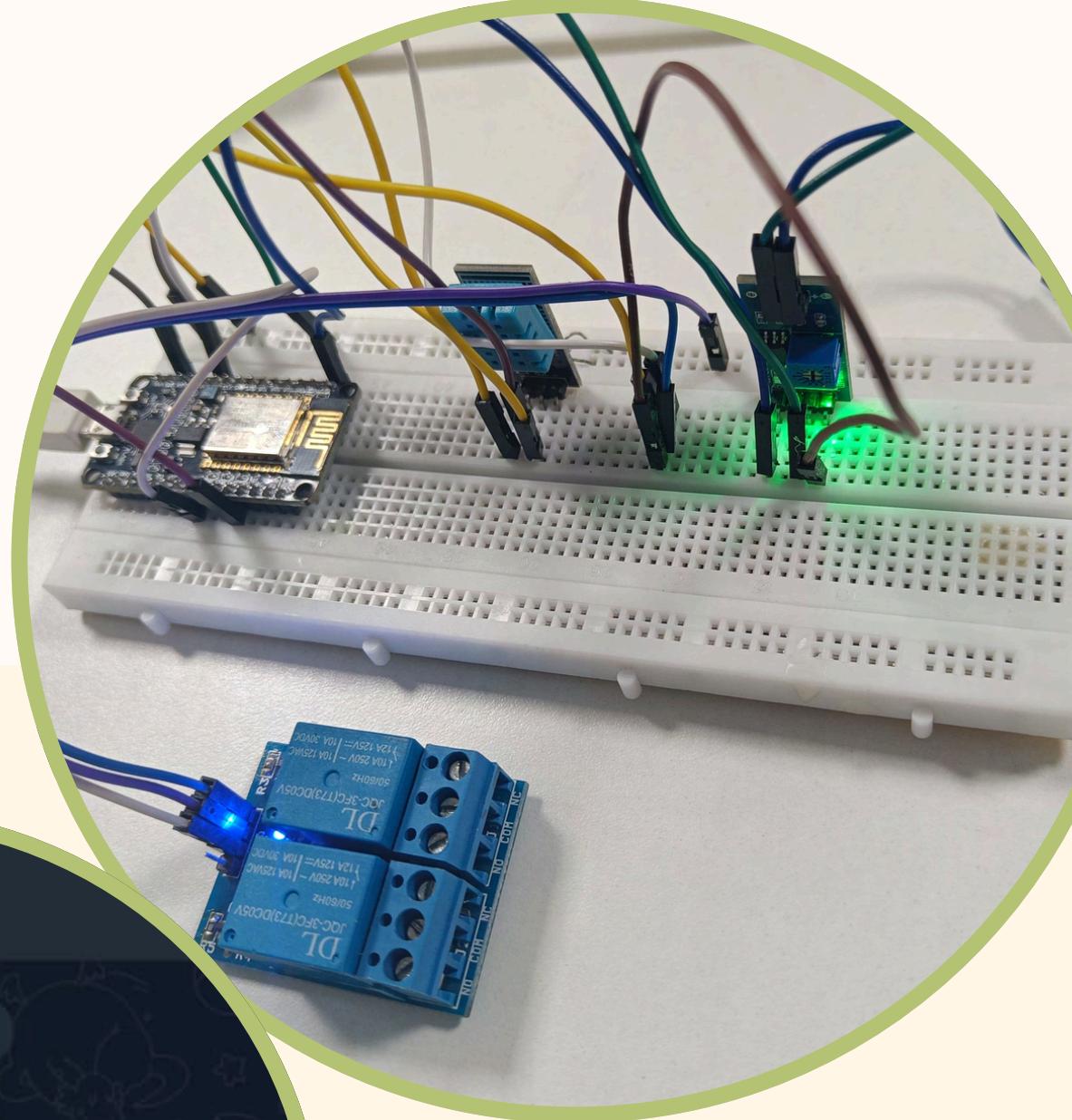
Technologies:

- c/c++ is used for the microcontroller
- Python is used in order for the calculation and to run the routing application,
- html and css is used in order to run web application, interface purposes,
- tools like Arduino IDE, vscode were being used

Implementation of design

System is deeply rooted in the communities where we operate. idea actively engage with local stakeholders, support agricultural education initiatives, and contribute to community development projects to foster positive social impact.

This system also provides the realtime data and sends the alerts.





Future Scope

Currently the information available is limited since based on the different type of soil, their wilting capacity and other more advancements like using probabilities to make the output calculations to be more precise...

References:



- [1] A. Morchid et al., ‘Smart agriculture for sustainability: The implementation of smart irrigation using real-time embedded system technology’, Proceedings of the 4th International Conference on Innovative Research in Applied Science, Engineering and Technology (IRASET), vol. 979-8-3503-0950-8, pp.1-5, 2024, doi: 10.1109/IRASET60544.2024.10548972.
- [2] Klett, J., and Buelow, D. (2013). Watering a home landscape during drought. In Colorado State University Extension. Retrieved from <https://extension.colostate.edu/topic-areas/yard-garden/watering-a-home-landscape-during-drought-7-240-2/>.
- [3] T. Rathore, D. K. Gupta, and N. Kumar, ‘Smart Irrigation System Using IoT’, in Proceedings of the 2023 Third International Conference on Secure Cyber Computing and Communication (ICSCCC), Jalandhar, India, 2023, pp. 1-6, doi: 10.1109/ICSCCC58608.2023.10176528.
- [4] A. B. J. Angelin and A. Kumar, ‘Smart Irrigation System Techniques Using Artificial Intelligence and IoT’, in Proceedings of the 2021 Third International Conference on Intelligent Communication Technologies



Thank You!

