Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation: Ministry of Jal Shakti

PS Code: SIH1293

Problem Statement Title: Automatic regulation of valves for release of water based upon soil moisture availability in the root zone of the crop, using artificial intelligence, in a piped and micro irrigation network of irrigation system.

Team Name: Rainbow Warriors

Team Leader Name: Agalya S

Institute Code (AISHE): C-16527-2019

Institute Name: Rmd Engineering College

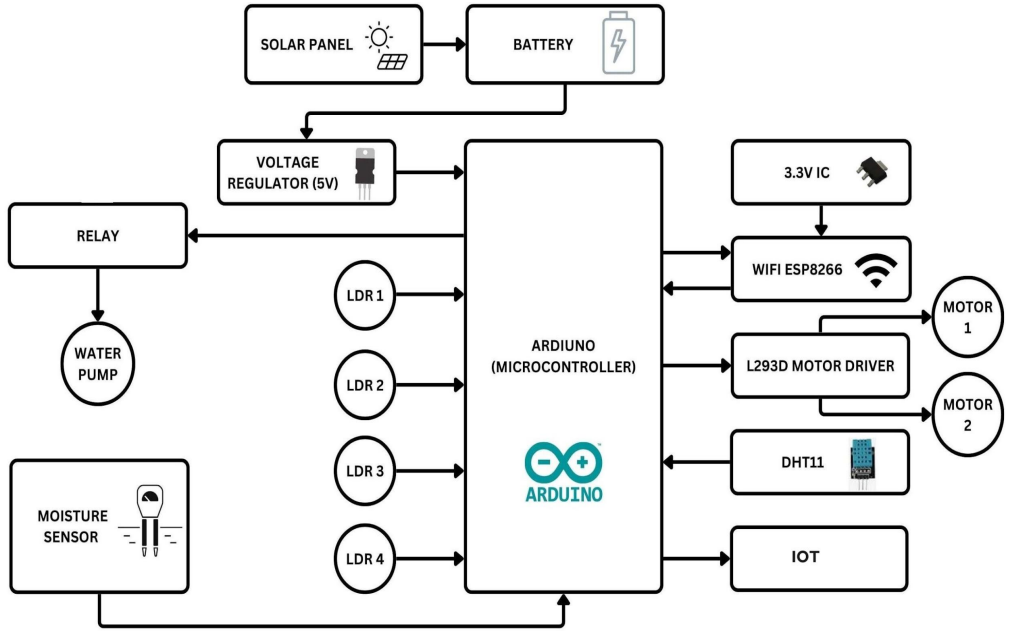
Theme Name: Agriculture, FoodTech & Rural Development

Idea/Approach Details

OUR PROBLEM : to optimize the usage of water supply in agriculture . as well as ensuring precise and equal supply of water to all the crops.

OUR SOLUTION :

- Our project aims to integrate an automatic irrigation system with dual-axis solar panels to provide a sustainable and efficient solution for field irrigation.
- By combining automated irrigation techniques with renewable energy sources, the project aims to maximize crop yield, minimize water wastage, and promote eco-friendly farming practices.
- Real-time data collected from sensors such as soil moisture, temperature, and humidity is used to determine the ideal irrigation schedule.
- The dual-axis solar panels track the sun's movement to generate electricity, ensuring a continuous power supply 30-45% more than fixed panels.
- All system information, including irrigation schedules and energy generation, is accessible through a user-friendly mobile application for convenient monitoring and control.



Technology stack :

HARDWARE :

- **SENSORS :** Capacitive soil moisture sensor, DHT11 and LDR.
- Dual-axis solar panels
- **MICROCONTROLLER :** Esp8266

SOFTWARE :

- **PROGRAMMING LANGUAGE :** C
- **USER INTERFACE(UI) DESIGN :** Blynk

Idea/Approach Details

Use Cases :

Our idea is used by :

- Farmers
- Food manufacturing companies
- Gardening and Nurseries farms
- Government initiatives
- Individual Gardeners(citizens)
- Environmental Conservation Projects

Special Features :

- Real time data is shown to the user.
- Works automatically as well as manually.
- The system is powered by Dual axis solar panel and hence it is cost efficient.
- The usage of Dual axis solar panels produces 30% more electricity compared to fixed panels.
- Automatic water supplies at precise amount and right interval of time.

Our Dependencies :

- Power Supply(solar panels)
- Solar Tracker Calibration
- Sensor Accuracy and Reliability(data from sensors must be accurate for decision making on water supply and other actions)
- Communication Reliability(microcontroller and cloud platform)

Show Stoppers :

- High installment and investment costs.
- User Training and Familiarity
- Integration with Existing Systems
- Complex Installation and Setup

Team Member Details

Team Leader Name: AGALYA S

Branch : Btech Stream : CSBS Year : II

Team Member 1 Name: KEERTHANA DEVI S

Branch : Btech Stream : CSBS Year : II

Team Member 2 Name: KEERTHAN MUNI RAJA T

Branch : Btech Stream : CSBS Year : II

Team Member 3 Name: KUMARAN A

Branch : Btech Stream : CSBS Year : II

Team Member 4 Name: PORSELVI B

Branch : Btech Stream : CSBS Year : II

Team Member 5 Name: USHA MAHI PON

Branch : Btech Stream : CSBS Year : II

Team Mentor 1 Name: A.Adaikkammai

Category (Academic/Industry): Academic Expertise (AI/ML/Blockchain etc): ML Domain Experience (in years): 3

Team Mentor 2 Name: R.Meenatchi

Category (Academic/Industry): Industry Expertise (AI/ML/Blockchain etc): iOS Domain Experience (in years): 6