WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

SMART PLANT IRRIGATION SYSTEM USING IoT

Prof. Rajnandini Kumawata[1],Mr.Vivek Yadav[2], Ms.Shriya Harhare[3], Mr.Swayam Singh[4], Mr.Krishna Vishwakarma[5]

Guide: Prof. Rajnandini Kumawat, Dept. of Computer Engineering Engineering, LTCE, Navi Mumbai, Maharashtra, India Email Id: rajnandinikumawat3@gmail.com

[2] Dept. of Computer Engineering, LTCE, Navi Mumbai, Maharashtra, India Email Id: viveky1815@gmail.com

[3] Dept. of Computer Engineering, LTCE, Navi Mumbai, Maharashtra, India Email Id: shriyah020304@gmail.com

[4] Dept. of Computer Engineering, LTCE Navi Mumbai, Maharashtra, India Email Id: singhswayam268@gmail.com

[5] Dept. of Computer Engineering, LTCE, Navi Mumbai, Maharashtra, India Email Id: krishna20420@gmail.com

ABSTRACT

Our responsibility to nurture the environment is paramount in today's rapidly evolving society. However, as time progresses, our attention to this duty wanes, leading to neglect of our plants and surroundings. To confront this issue, we propose the Smart Plant Irrigation System (SPIS), an innovative fusion of IoT designed to reshape conventional plant care methodologies.

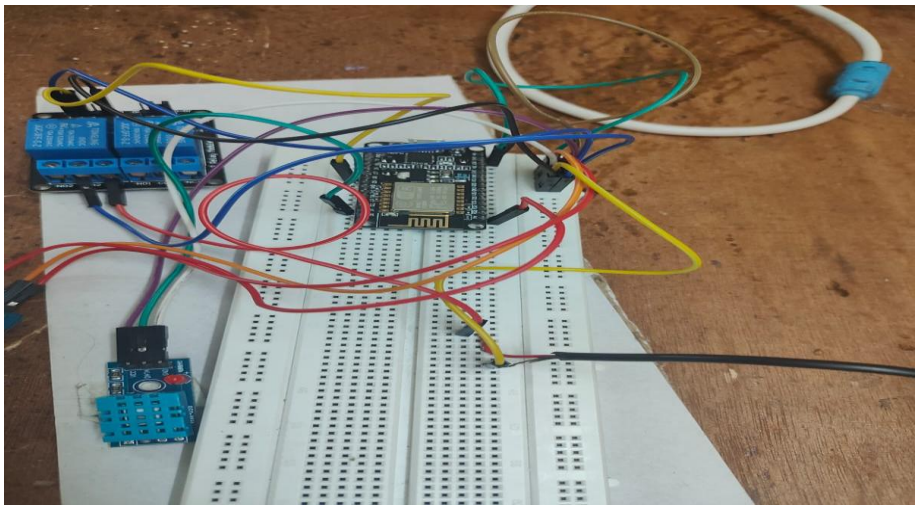
The SPIS emerges as a solution to the growing disconnect between human responsibilities and the environment. By harnessing the capabilities of IoT, our system aims to autonomously fulfil an indoor plant's fundamental needs—such as water and sunlight—without external intervention.

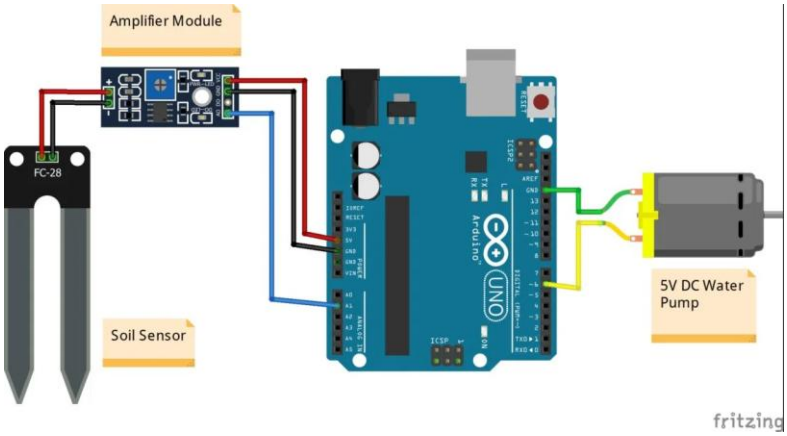
Keywords: ESP2866 Wifi module, Dht11, Relay Module, Moisture Sensor

Introduction

Welcome to the future of plant care – the Smart Plant Irrigation System. This innovative IoT project harnesses the power of temperature, moisture, and light sensors to revolutionise how we nurture plants. The system creates an optimal environment for plant growth and well-being by monitoring and analysing these vital parameters in real-time. Join us as we explore the fusion of technology and nature, and discover the possibilities of smarter, more efficient plant care.

General System Circuit





Requirement Analysis

In this Project, we are using different types of sensors as well as equipment which will make our plant water automatically

1. Esp2866
2. Relay module
3. Dht11
4. Moisture sensor
5. 10V DC water pump
6. Battery
7. Breadboard
8. Jumper wires

Future Scope

We intend to update this circuit in the future by adding many sensors that can cut off the driving pump's or motor's power supply automatically. Because of this, the future circuit is not as affordable as the current one, but we still make every effort.

- Keep it basic
- Make it simple to use
- Make it easy to install
- Make it available to everyone

Market Potential

some factors contributing to its market potential:

1. Efficient Water Usage
2. Automation and Convenience
3. Crop Yield Optimization
4. Environmental Sustainability

Advantages of the Proposed System

1. Water Conservation
2. Optimized Plant Growth
3. Efficient Resource Utilization
4. Remote Monitoring and Control
5. Data-Driven Decision Making

Functional Analysis

This is an IoT-based project, we have to use different types of sensor
Which can help us water Plants without Human Intervention

Operation:

Moisture detection using a soil moisture sensor
Step 1: The sensor will recognise moisture
Step 2: If the Moisture is adequate then the sensor will make it stop
To water the plants
Dht11 to detect temperature
Step 1: The sensor will check the temperature and when it's enough
It will automatically stop the water from entering the plants

Durability

1. Utilise waterproof sensors, such as waterproof ultrasonic sensors or moisture sensors with sealed casings, to prevent damage from water ingress.
2. Use corrosion-resistant materials for critical components, such as stainless steel or coated metals, to mitigate the effects of rust and corrosion.
3. Incorporate overvoltage protection measures, such as transient voltage suppressors or surge protectors, to safeguard the system against voltage spikes caused by lightning or power surges.

Conclusion

In conclusion, while smart plant irrigation systems hold immense promise for revolutionizing agriculture and promoting sustainable practices, they also come with inherent limitations and challenges. Through the development and implementation of these systems, it becomes evident that while they offer numerous benefits, there are critical considerations to navigate for successful adoption and operation.
The benefits of smart plant care systems include enhanced plant health, increased crop yields, resource efficiency, and the empowerment of users with data-driven insights. These systems have the potential to optimize resource management, reduce environmental impact, and contribute to food security in a rapidly changing world.

Acknowledgement

In our project, we are extremely thankful to our project guide Prof. Rajnandini Kumawat for his valuable support and time. We would like to take this opportunity to acknowledge the innumerable guidance and support extended to us by our co-guide in the preparation of the synopsis. We also want to thank our honourable principal for his support. Our foremost thanks go to my well-wishers and colleagues. We are grateful to all staff members, nonteaching staff and all our friends us a helping hand.

REFERENCES :

1. Kumar, C. & Saritha, Kuppala & Reddy, M. & Pai H, Aditya. (2023). IoT-based Smart Agriculture for the Detection of Plant Decay. 1376-1379. 10.1109/ICCMC56507.2023.10084312.
2. Naphtali, Jalani & Misra, Sanjay & Wejin, John Simon & Agrawal, Akshat & Jonathan, Oluranti. (2022). An Intelligent Hydroponic Farm Monitoring System Using IoT. 10.1007/978-981-19-4687-5_31.
3. Chakraborty, Niloy & Mukherjee, Adrika & Bhadra, Mayuri. (2022). Smart Gardening: A Solution to Your Gardening Issues. EAI Endorsed Transactions on Internet of Things. 8. e3. 10.4108/eetiot.v8i30.384.