

Smart Plant Monitoring System

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I. INTRODUCTION

Using low-power wireless detectors connected to the Internet, the proposed work represents the plant's environmental and ambient parameter monitoring. Every device connected to the Internet can image the data stored on the base station from anywhere in the world. IoT allows you to connect to a nearly infinite number of devices via the internet. As a result, it has a high chance of communicating and interacting with them. The redounded result allows for the logging of measurements from all over the world, as well as imaging and analyzing the collected data from any device connected to the Internet. It solves the problem of system integration and interoperability by providing a well-defined armature that makes data transmission from detectors of various dimensions easier and increases administrative efficiency. The main goal of this system is to provide environmental parameters like the Humidity, Temperature, and Soil Moisture and send this information via the cloud. All these parameters can be monitored on the Blynk IoT Application. If the soil moisture decreases, water can be poured into the plant using a motor connected to the relay. The user needs to switch on the motor using a button on the Blynk IoT interface.

II. FEASIBILITY STUDIES

People who live in cities have become more aware of their surroundings in recent years. This awareness is driving the need to create a secure living environment. Most people plant small plants at home to make their surroundings more positive and fresher. They not only feel good, but they also believe they are helping the environment by doing so. However, in these days of hectic lives, it can be difficult to look after the plant on occasion, and most people lack proper knowledge on how to care for plants, making it a difficult task to keep the plants alive. By monitoring moisture, temperature, and light, a Plant Monitoring

System can assist in the proper care of plants. This system monitors the plant's health from a distance.

III. METHODOLOGY

The moisture sensor will sense the amount of moisture present in the soil using Soil Moisture Sensor Module. The humidity of the surrounding is sensed by the Humidity sensor DHT11 sensor. The temperature of the surroundings is sensed by the Humidity sensor DHT11. Using a relay and water pump to pump water as needed. A mobile application was created using Blynk IoT. Finally, a PCB development board was made.

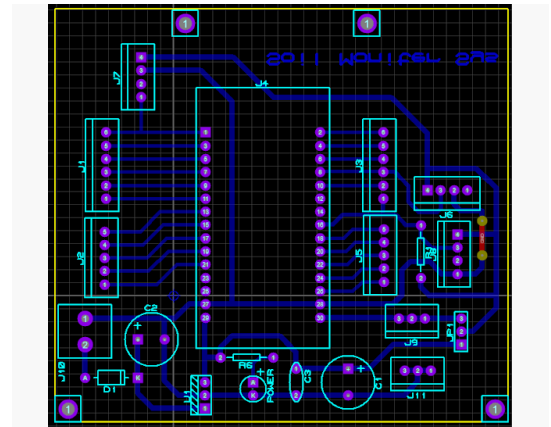


Fig 1. PCB design

The image above depicts the design of the PCB that was finalized for our project.

This project uses Node MCU ESP8266 as a development board and a set of sensors and actuators which includes DHT11, Soil Moisture Sensor Module, Relay, and a Submersible Motor. The parameters of Temperature, Humidity, and Soil Moisture are sent to the cloud where they can be viewed on the Blynk IOT Application on the mobile. Using a button on the app, the motor to pump water can be operated manually.

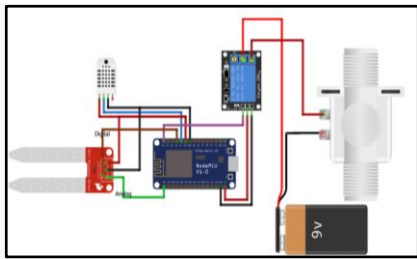


Fig 2. Circuit Diagram

The figure above depicts the circuit diagram

The logic of the code is as follows:

The Temperature and Humidity are being read through pin D5 and are virtually being written to the Blynk IOT application on pins V5, and V6. The soil moisture is being read from pin A0 and is virtually being written to pin V2. The relay is being written to pin D1 of the Node MCU Board. If the soil moisture is greater than 800, the relay is set to High. If the soil moisture is less than 400, the relay is set to Low. If the soil moisture is between 400 to 800, the user can operate it through a button on the Blynk IoT application. When the button is ON- i.e., the state is 1, the relay is set High and when the button is OFF- i.e., the state is 0, the relay is set Low.

IV. OBSERVATIONS

It was observed that soil moisture is normally in the range of 780 - 900 in the mornings, and 800- 1000 in the afternoons. Humidity is normally in the range of 45-67 and temperature varies from 24 to 32 degrees Celsius. These readings were taken on 17th June 2022.

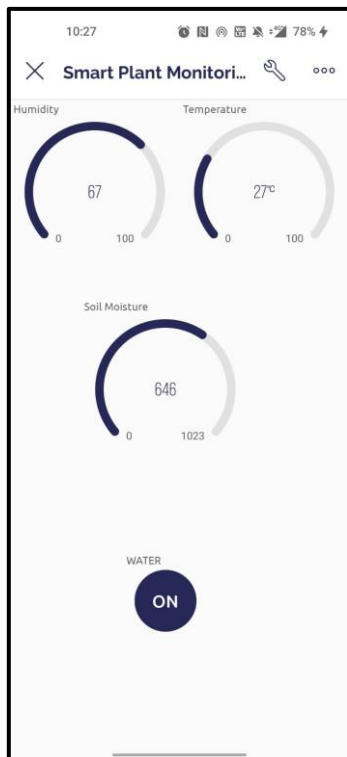


Fig 3. Blynk IOT

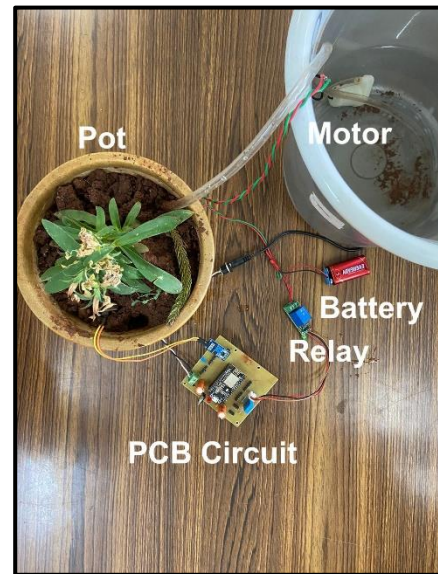


Fig 4. Set Up

V. CONCLUSION

In conclusion, our system can be used for observing the vital parameters of the soil and plant and can be used for monitoring purposes.

VI. REFERENCES

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