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Smart Plant Monitoring System with NodeMCU8266 using IOT

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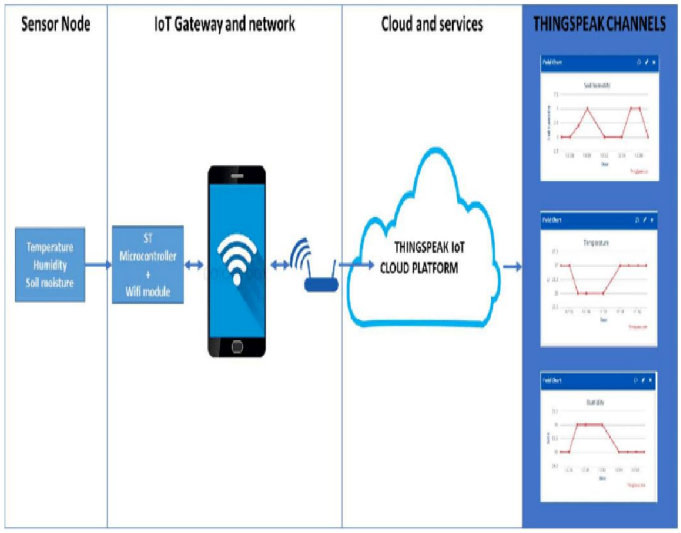
Abstract: *Plants play a vital role in maintaining the ecological cycle, and thus, to maintain the plant's proper growth and health, adequate monitoring is required. Hence, the aim of the chapter is to create a smart plant monitoring system using automation and internet of things (IOT) technology. This topic highlights various features such as smart decision making based on soil moisture real-time data. For this purpose, sensors like soil moisture sensor, DHT11 sensor, level sensor, etc. are used. The soil moisture sensor measures the level of moisture (i.e., water content of different plants). The signal will be sent to Arduino board when the moisture level drops below the marginal value, which triggers the pumping of water into the plant by the pump. When the moisture level reaches absolute value, the pump is halted. The other condition for this process is level sensor. Level sensor senses the water level in the tank and sends the information of water level value to Arduino board and Arduino board to cloud. The whole data about the plant monitoring will be sent to the cloud server.*

Keywords: Internet of Things, Arduino, soil sensor, DHT11 sensor, cloud.

I. INTRODUCTION

We live in a world where everything can be controlled and operated automatically. Plant monitoring is an important part of agriculture in our country as they used to grow plants under controlled climatic conditions for optimum produce. Automating a plant monitoring and controlling of the climatic parameters which directly or indirectly govern the plant growth and hence they produce yields.



Automation is a process for controlling industrial machinery and processes, thereby replacing human operations. In this paper, plant watering and monitoring system technology will provide feedback to the user through smart phones or laptops.The automated system will reduce the need of man power hence reducing the error. For large scale areas, it is quite impossible fora farmer to monitor the efficiency of the system by implementing this technology, the farmer can easily monitor the system using their smart devices. In this system, we can water and monitor the plant using IoT (Internet

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of Things) and android application. In this system we use different modules such as Arduino as controller, temperature sensor, moisture sensor, humidity sensor. By having knowledge of these entire scenarios, one can take action accordingly. We set the water motor in the system. According to sensors value by different types of sensors automatically water Motor will get ON.

II. LITERATURE SURVEY

In India about 35% of land was under reliably irrigated. And the 2/3rd part of land is depending on \monsoon for the water. Irrigation reduces dependency on monsoon, improves food security and improves productivity of agriculture and it offers more opportunities for jobs in rural areas. Farmers are facing problems related to watering system that how much water has to supply and at what time? Sometimes overwatering causes the damage to crops and as well as waste of water. Hence for avoid such damage we need to maintain approximate water level in soil. In this paper, humidity sensor, moisture sensor, temperature sensors placed in root zone of plant and gateway unit (ESP8266) handles the sensor information and transmit data to a android application. This application is developed for measure approximate values of temperature sensor, humidity sensor and moisture sensor that was programmed into a microcontroller to control water quantity.

III. PROBLEM STATEMENT

Farmers cannot precisely detect environmental condition around the plant. Farmers only know the wetness of soil, the humidity and temperature around the plant by feel it themselves. Nowadays, there is wireless technologies that being implement in many fields. The user need device that can send the condition of plant wirelessly. The user will get notification about the environmental condition around the plant.

IV. WORKING/DESCRIPTION

4.1 Components Used

1. Sensors (Soil moisture, DHT11)
2. ESP8266 Wi-Fi Module
3. Water Pump
4. Thingspeak

4.2 Block Diagram

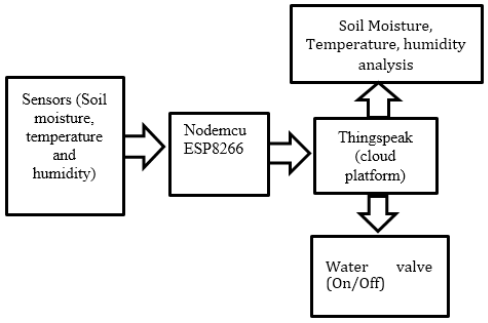

Fig.1. Smart plant monitoring system with NodeMCU8266 using IOT

When power supply is ON, the input module of three sensors (DHT11, moisture) start to activate. When sensors get ON it will read the data from soil and from surrounding. Values are sent through APIs to Thingspeak. According to the values that are detected by sensors motor will turn ON/OFF. If Moisture and Humidity is below threshold value, then the motor is turn ON. If moisture and humidity level is high, then it will stop the motor and water supply will also stop. All data will be shown on web Interface (Thingspeak platform).

V. PROPOSED SYSTEM

The automated system includes different sensors which senses humidity, temperature and soil moisture, and then uploads the sensedinformation to the databases on Cloud. Soil Moisture Sensor can be used to detect the moisture of soil or judge if there is water around the sensor. Users can access the analysis remotely.

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VI. MODEL EVALUATION AND RESULT

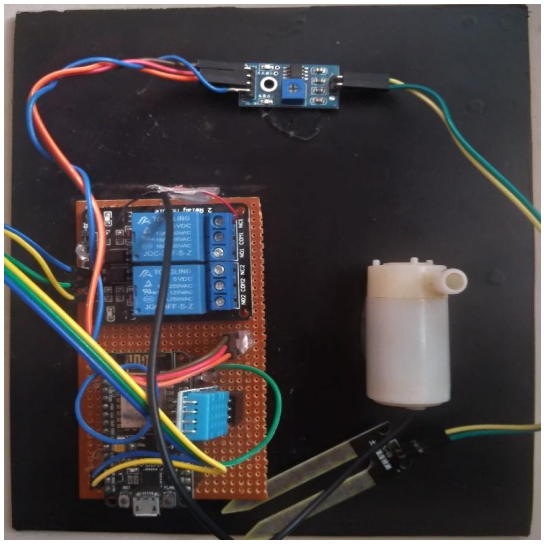

Fig. 2. Final setup of project

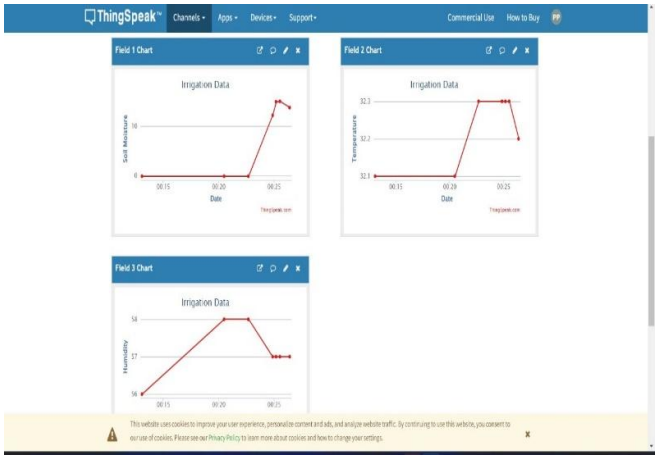

Fig.3. Display data of plant monitoring (soil moisture, temperature, humidity)

VII. APPLICATIONS

1. This project will shows the new source for watering the plants in the farms which is reducing the man power.
2. This system will ensure that plants will be monitored without direct influence of man.
3. The wastage of water and the consumption of power by motor can be reduced so that they are conserved for the future use

VIII. ACKNOWLEDGMENT

I gratefully acknowledge the support, the success and final outcome of this project required a lot of guidance and assistance and we heartily thank our guide Prof. J. S. Hallur for his immense support and encouragement in spite of her busy schedule.

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REFERENCES

[1]. http://www.ewaterautosys.com/water-automation-system.html
[2]. http://www.wplawinc.com/agricultural-irrigation-blog/the-most-common-problems-with-farm-irrigation-systems
[3]. https://www.pwc.com/us/en/increasing-it- effectiveness/assets/future-of-the-internet-of-things.pdf
[4]. IOT based Smart Irrigation System Srishti Rawal, Department of Computer Science, VIT University rawal-2017-ijca-913001.pdf
[5]. Thingspeak : https:// thingspeak.com, Online available: www.Wikipedia.org/Arduino
[6]. https//www.survivingwithandroid.com/iot-project-tutorial-smart-plansystem
[7]. https://www.researchgate.net/publication/342175470_IoT_Based_Plant_Monitoring_System