Farm Irrigation & Advanced Green House Automation System

SPHURTI SHRISHAIL AURSANG[1], SHRUTI PANDURANG MANE[2], KARUNA NITIN KHANDEKAR[3], KUMUDINI GURUNATH DABHOLE[4], MEHJABEEN TAJUDDIN SAYYAD[5], PROF. R. M. MULLA[6]
[1, 2, 3, 4, 5, 6] *Department of Electronics & Telecommunication Engineering, Sanjay Ghodawat Polytechnic, Atigre*

Abstract— The project describes the smart irrigation system based on IOT. India is country of village and agriculture. its play's important role for development of country. we need much manpower, but the production is not sufficient compare to man efforts to increase the productivity and to minimize the human efforts to develop so many technologies using automation. This paper aims to leverage an IoT based agriculture system in a greenhouse and hence achieve the goal of reduced human intervention by automatically detecting and controlling various climatic factors such as soil moisture, air humidity to automatically monitor the irrigation of the greenhouse. With the help of this automation, we can reduce the waste of water in agriculture field. It is simple to handle. In our mobile screen we can monitor different factors about farm at anywhere around the world.

I. INTRODUCTION

As we know India is the capital of farming about 60 to 70% of Indians are serving on farming form many years conventional methods are used for agriculture so manpower decreases and increase the production. That's why we are designed this project farm irrigation and greenhouse automation system. We use the different types of sensors to monitor in our mobile screen collect the data and transfer our mobile from where analyses the situation our form. We also observe the water level of tank. The method is making agriculture smart using automation and IoT technologies. Internet of Things (IoT) enables various applications of crop growth monitoring and selection, automatic irrigation decision support, etc. We used ESP8266 IoT Automatic irrigation system to improve the productivity of the farm.

II. LITERATURE REVIEW

This paper is authored by R Romero, JL Muriel talks about different automation practices like IOT, Wireless Communications There are some areas which are causing the problems to agriculture field like crop diseases, lack of storage management, pesticide control, weed management, lack of irrigation and water management and all this problems can be solved by above mentioned different techniques. Authored by Ardi Muhammad Rasyid Automation of farming practices has proved to increase the gain from the soil and also has strengthened the soil fertility. This paper surveys the work of many researchers to get a brief overview about the current implementation of automation in agriculture. The paper also discusses a proposed system which can be implemented in botanical farm for flower and leaf identification and watering using IOT.

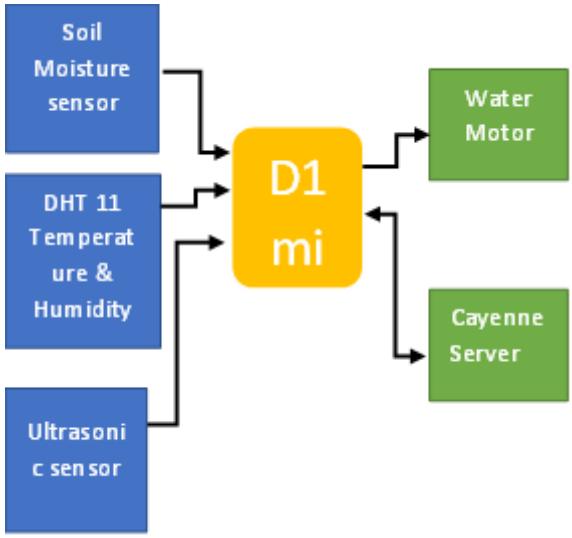
III. COMPONENTS

- D1 mini - This is D1 Mini V2 NodeMcu 4M Bytes Lua WIFI Internet of Things Development Board Based ESP8266, it is a mini WIFI board based on ESP-8266EX. 11 digital input/output pins, all pins have interrupt/PWM/I2C/one-wire supported (except D0) 1 analog input (3.3V max input) and a Micro USB connection.
- DHT11 Humidity temperature sensor- The DHT11 is a basic, ultra-low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air
- Soil Moisture Sensor- This is Soil Moisture Meter, Soil Humidity Sensor, Water Sensor, Soil Hygrometer for Ardunio. With this module, you can tell when your plants need watering by how

moist the soil is in your pot, garden, or yard.

- DC 3-6V Micro Submersible Mini Water Pump- The DC 3-6 V Mini Micro Submersible Water Pump is a low cost, small size Submersible Pump Motor. It operates from a 2.5 ~ 6V power supply.
- HC-SR04-Ultrasonic Range Finder- This HC-SR04-Ultrasonic Range Finder is a very popular sensor that is found in many applications where it requires measuring distance and detecting objects.

IV. BLOCK DIAGRAM



V. WORKING PRINCIPLE

D1 mini esp8266 is the microcontroller used. The data from Soil moisture sensor, DHT 11, Ultrasonic Sensor is fed to the D1 mini.

Ultrasonic Sensor is used to check the Water level available in Tank.

D1 mini is connected to internet using Wi-fi. It is programmed to send and receive data from Cayenne Server / Database.

All the parameters from sensors are observed on dashboard of Cayenne server. When required the Motor button can be turned on from the dashboard in order to start the Water Pump remotely.

Also, Scheduling of tasks and Multiple triggers are possible using Cayenne database to automate the water process.

Thus, Remote Monitoring and control of Irrigation system is possible using our system.

CONCLUSION

This paper a emphasize on the monitoring and controlling the greenhouse automation. the greenhouse is the method that provides the ability to monitor and control is greenhouse environment through the mobile phone at anywhere in the world. efficient and effective greenhouse monitoring and controlling system can be increase the productivity and save water and reduce the human intervention in the agricultural field.

ADVANTAGES

- Saves Time
- Low-cost adoption
- Water usage optimization
- Improves Growth
- Increased productivity
- Automation