IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 16, May 2023

Smart Farming System Using IoT for Efficient Crop Growth

Mr. Sharana Baasavaraj, Mr.Santhosh Mugali, M. Raghavendra, B. Nagabharath, Vamshi Krishna Reddy. C, Harshitha. R. B
Department of Electronics & Communication
Rao Bahadur Y Mahabaleswarappa Engineering College, Bellary, Karnataka, India
Visvesvaraya Technological University, Belgavi, Ballari, India

Abstract: *The main aim of the smart farming system using IOT for efficient crop growth project is to develop technique in agriculture automation to flourish and deliver its full potential. This system designed by using Arduino microcontroller to overcome limitations of agriculture farming about supplying of water.*

Keywords: blynk app, Node MCU, LDR

I. INTRODUCTION

In this system components used are arduino microcontroller, motor pump, soil moisture, DHT11, LDR sensor. The motor pump works according to the soil condition that is soil wet or dry; if soil is wet motor stops otherwise motor run to give water to plants. Different sensors are connected to the controller to verify the temperature and light.

For sensing temperature, humidity, light and soil condition we are using DHT11, LDR and soil moisture sensors. If soil is dry automatically motor will pump the water and can set the threshold range to temperature and humidity if the temperatureis beyond the range the motor will pump the water and we are using LDR for plants light intensity purpose. When the system is in critical condition buzzer will on. Here we can check the data anywhere in the world via IOT platform.

The main aim of the smart farming system using 10T for efficient crop growth project is to develop technique in agriculture automation to flourish and deliver its full potential. This system designed by using Arduino microcontroller to overcome limitations of agriculture farming about supplying ofwater. In this system components used are Arduino microcontroller, motor pump, soil moisture, DHT11, LDR sensor. The motor pump works according to the soil condition that is soil wet or dry, if soil is wet motor stops otherwise motor run to give water to plants. Different sensors are connected to the controller to verify thetemperature and light. For sensing temperature, humidity, lightand soil condition we are using DHT11, LDR and soilmoisture sensors. If soil is dry automatically motor will pumpthe water and can set the threshold range to temperature andhumidity if the temperature is beyond the range the motor willpump the water and weare using LDR for plants light intensitypurpose. When the system is in critical condition buzzer will on. Here we can check the data anywhere in the world via IOTplatform.

II. METHODOLOGY

Agriculture is the primary occupation in India and isthe backbone of Indian economic system. Agriculture provides employment opportunities to rural people on a large scale in underdeveloped and developing countries inaddition to providing food. It is the process of producing food, fiber and many other desired products by the cultivation and raising of domestic animals. Agriculture isthe primary source of livelihood for about more than 58%of India's population.

Climate changes will have significant impact on agriculture by increasing water demand and limiting cropproductivity in areas where irrigation is most needed. Irrigation system, rain fed agriculture, groundwater irrigation is some of the methods introduced to produce healthier crops which may not use water efficiently. In order to use water efficiently a smart system is designed. In the system farmer need not make the water flow into fields manually, but the system automatically does that efficiently.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 16, May 2023

III. BLOCK DIAGRAM

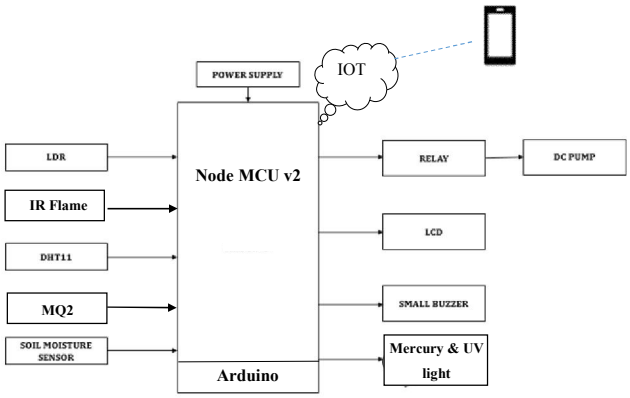

Fig. 1: BLOCK DIAGRAM

The proposed system as shown consists of Arduino microcontroller, motor pump, soil moisture, DHT11, LDR sensor are used. The motor pump works according to the soil condition that is soil wet or dry; if soil is wet motor stops otherwise motor run to give water to plants. Different sensors are connected to the controller to verify the temperature and light. For sensing temperature, humidity, light and soil condition we are using DHT11, LDR and soil moisture sensors. If soil is dry automatically motor will pump the water and we can set the threshold range to temperature and humidity if the temperature beyond the range the motor will pump the water and we are using LDR for plants light intensity purpose. Here every time the sensors values uploading at the IOT platform.

IV. RESULTS & DISCUSIIONS

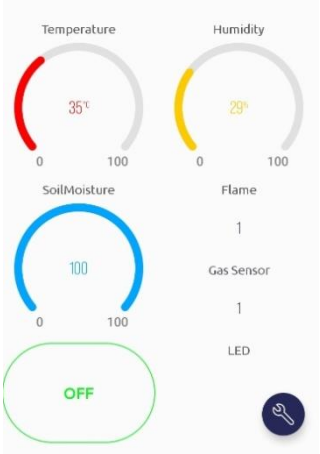

Fig. 2: Actual view Notification in blynk

Blynk is an open-source platform designed for IoT which can control hardware remotely, can display sensor data, can store data, visualize it. The components of this platform are a server which can be ran privately or use the commonone, an app and libraries. Every time some information isgiven from the blynk app, the information travels to the blynk Cloud, from there it automatically finds its way to the hardware. The connection between the cloud and the app can be through Wi-Fi, Bluetooth, GSM, Ethernet etc. The state of hardware pins can be manipulated by the commands given in the blynk app through various kinds of widgets present. Authentication token is generated after every project is createdand it is a unique identifier which connects the hardware and the smartphone.

The data from Humidity and temperature sensor, raindrop sensor is sent to the digital pins of the Node MCU. The data from Soil moisture sensor is sent to the analog pin of the Node MCU. DC motor is connected to the Node MCU via deek robot which is connected to two digital pins of Node MCU. Serial monitor displays the data given by sensors if serialfunctions are written in the code and if serial communication between the Node MCU and the device exists. Name of the Wi-Fi network and password are written along with the Authentication token in the code to connect the hardware

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 16, May 2023

to blynk app. When the code is dumped into the hardware, from then the status of the crops and soil along with the DC motor status is seen on smartphone when connected to Wi-Fi.

Fig. 2: PROPOSED MODULE

The notifications received and the values of humidity, temperature and soil moisture in blynk for the Smart Farming system are asshown in the below figures. The model for the Smart Farming system is as shown in the Figure below.

Fig. 3: Notification in blynk in on state

V. CONCLUSION

We have designed automated Smart Agriculture system which reduces the time and resources that's required while performing it manually. this method uses the technology of Internet of Things. The system also uses to measure moisture of soil and level of water in fields. this method works well within the ideal conditions and further improvement will bemade when the conditions don't seem to be ideal like properillumination or lightning. Thus, the smart agriculture using IoT will revolutionize the world of farming and it will increase the productivity as well as improve the quality and can save lives of farmer. There is an urgent need for a system that makes the agricultural process easier and burden free from the farmer's side. With the recent advancement of technology, it has become necessary to increase the annual crop production output of our country India, an entirely agro centric economy. The ability to conserve the natural resources as well as giving a splendid boost to the production of the crops is one of the main aims of incorporating such technology into the agricultural domain of the country. To save farmer's effort, water and time has been the most important consideration

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 16, May 2023

REFERENCES

[1] Himavamshi, Yamini R and Vishnu Chaithanya Reddy K SRM Institute Of Science And Technology, Chennai, Tamil Nadu

[2] Abhishek D. et al., "Estimates for World Population and Global Food Availability for Global Health", Book chapter, The Role of Functional Food Security in Global Health, 2019, Pages 3-24. Elder M., Hayashi S., "A Regional Perspective on Biofuels in Asia", in Biofuels and Sustainability, Science for Sustainable Societies, Springer, 2018.

[3] Beza Negash Getu, Hussain A. Attia, "Automatic Control of Agricultural Pumps Based on Soil Moisture Sensing", IEEE conference publication,2015.

[4] Joaquín Gutiérrez, Juan Francisco Villa-Medina, Alejandra Nieto- Garibay and Miguel Angel Porta-Gadara, "Automated Irrigation System Using a Wireless Sensor Network and GPRS Module", IEEE Transaction on Instrumentation and Measurement, Vol.63, No.1, January2014.

[5] Patil K. A, N. R. Kale, "A Model for Smart Agriculture Using IoT", International Conference on Global Trends in Signal Processing, Information Computing and Communication, IEEE 2016.