

# IOT Based Irrigation System Using Arduino

<sup>1</sup>Rohini H. Chatki, <sup>2</sup>Pratiksha G. Mamulkar, <sup>3</sup>Bhavna S. Mahalle,  
<sup>4</sup>Bhupendra A. Rathod, <sup>5</sup>Ram Kumar Solanki

<sup>1,2,3,4</sup>Scholar, <sup>5</sup>Professor

<sup>1,2,3,4,5</sup> Department of Computer Engineering, Jagadambha College of Engineering & Technology, Yavatmal, Maharashtra, India

<sup>1</sup>gudduchatki0@gmail.com, <sup>2</sup>P.mamulkr05@gmail.com, <sup>3</sup>mahallebhavna@gmail.com

<sup>4</sup>dilkhushrathod111@gmail.com, <sup>5</sup>hr.coet@gmail.com

---

**Abstract:** India is mainly an agricultural country. Agriculture is the most important occupation for the most of the Indian families. It plays vital role in the development of agricultural country. Water is main resource for Agriculture. Irrigation is one method to supply water but in some cases there will be lot of water wastage. So, in this regard to save water and time we have proposed project titled automatic irrigation system using IOT. In this proposed system we are using various sensors like temperature, humidity, soil moisture sensors which senses the various parameters of the soil and based on soil moisture value land gets automatically irrigated by ON/OFF of the motor. These sensed parameters and motor status will be displayed on user android application. An automated irrigation system for efficient water management and intruder detection system has been proposed. Soil Parameters like soil moisture, pH, Humidity are measured and the Pressure sensor and the sensed values are displayed in LCD. The farmer can access the server about the field condition anytime, anywhere thereby reducing the man power and time.

**Keywords:** Internet of things (IOT), Arduino, Temperature sensor, Soil moisturesensor, And Humidity sensor.

---

## I. INTRODUCTION

In today's world, as we see rapid growth in global population, agriculture becomes more important to meet the needs of the human race. However, agriculture requires irrigation and with every year we have more water consumption than rainfall, it becomes critical for growers to find ways to conserve water while still achieving the highest yield. But in the present era, the farmers have been using irrigation technique through the manual control in which they irrigate the land at the regular interval. Agricultural irrigation based on Internet technology is based on crop water requirement rules. By using Internet technology and sensor network technology we can control water wastage and to maximize the scientific technologies in irrigation methods. Hence it can greatly improve the utilization of water and can increase water productivity. The Internet of Things (IoT) is a technology where in a mobile device can be used to monitor the function of a device. Internet of Things (IoT) is a type of network technology, which senses the information from different sensors and makes anything to join the Internet to exchange information.

## II. LITERATURE SURVEY

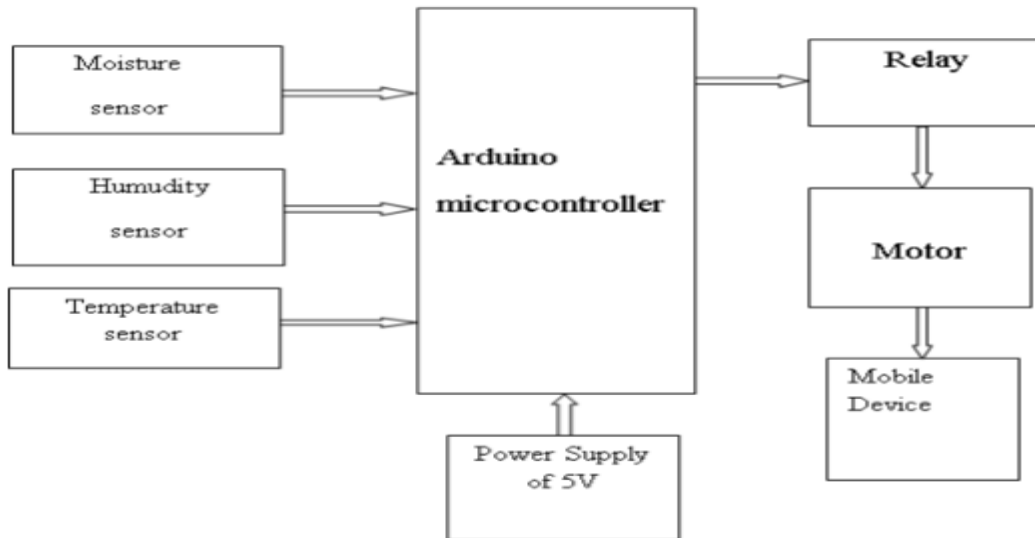
Primary investigation is carried out under the following stages, such as Understanding the existing approaches, Understanding the requirements, developing an abstract for the system. In this project, soil moisture sensor, temperature and humidity sensors placed in root zone of plant and transmit data to android application. Threshold value of soil moisture sensor that was programmed into a microcontroller to control water quantity. Temperature, humidity and soil moisture values are displayed on the android application. This is intended to create an automated irrigation mechanism which turns the pumping motor ON and OFF on detecting the dampness content of the earth. In this paper only soil moisture value is considered but proposed project provided extension to this existed project by adding temperature and humidity values.

### III. EXISTING SYSTEM

The existing method and one of the oldest ways in agriculture is the manual method of checking the parameters. In this method the farmers themselves verify all the parameters and calculate the readings. Then they start the motor and when the all land will irrigated then they have to off the motor manually.

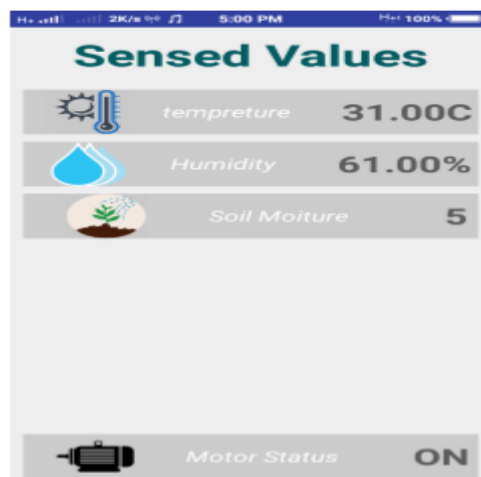
### IV. PROPOSED WORK

Block diagram of arduino based automatic irrigation system which consist of three sensors which are connected to controller and sensed values from these sensors are send to the mobile application



**Figure 1: Block diagram of IOT Based Irrigation System Using arduino**

Farmers start to utilize various monitoring and controlled system in order to increase the yield with help of automation of an agricultural parameters like temperature, humidity and soil moisture are monitored and control the system which can help the farmers to improve the yield. This proposed work includes an embedded system for automatic control of irrigation. This project has wireless sensor network for real-time sensing of an irrigation system. This system provides uniform and required level of water for the agricultural farm and it avoids water wastage. When the moisture level in the soil reaches below threshold value then system automatically switch ON the motor. When the water level reaches normal level the motor automatically switch OFF. The sensed parameters and current status of the motor will be displayed on user's android application.



**Figure 2: Sensed values displayed on user android application**

## V. FUTURE SCOPE

This system can be made as an intelligent system, where in the system predicts user actions, rainfall pattern, time to harvest, animal intruder in the field and communicating the information through advanced technology like IoMT can be implemented so that agricultural system can be made independent of human operation and in turn quality and huge quantity yield can be obtained.

## VI. CONCLUSION

The agriculture networking technology is need of the modern agricultural development, also an important symbol of the future level of agricultural development; it will be the future direction of agricultural development.

Architecture of precision agriculture water irrigation systems, actually applying the internet of things to the highly effective and safe agricultural production has a significant impact on ensuring the efficient use of water resources as well as ensuring the efficiency and stability of the agricultural production.

## REFERENCES

- [1] K. Lakshmisudha, Swathi Hegde, Neha Kale, Shruti Iyer, "Smart Precision Based Agriculture Using Sensors"
- [2] "Providing Smart Agriculture Solutions to Farmers for Better Yielding Using IoT", IEEE International Conference on Technological Innovations in ICT for Agriculture and Rural Development (TIAR 2015).
- [3] Q. Wang, A. Terzis and A. Szalay, "A Novel Soil a. Measuring Wireless Sensor Network", IEEE
- [4] "Providing Smart Agriculture Solutions to Farmers for Better Yielding Using IoT", IEEE International Conference on Technological Innovations in ICT for Agriculture and Rural Development.
- [5] Shiraz Pasha B.R., Dr. B Yogesha, —Microcontroller Based Automated Irrigation Systeml, The International Journal Of Engineering And Science (IJES), Volume3, Issue 7, pp 06-09, June2014.
- [6] R.Suresh, S.Gopinath, K.Govindaraju, T.Devika, N.SuthanthiraVanitha, —GSM based Automated Irrigation Control using Raingun Irrigation Systeml, International Journal of Advanced Research in Computer and Communication Engineering Vol. 3, Issue 2, February 2014.