Wireless Smart Irrigation System

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***Abstract*- Now a day's Agriculture is the most essential thing to develop countries economy also water supply is becoming scarce in today's world for this reason there is an urgency of adopting smart way of irrigation. Basically India is an Agricultural country, in India most of the people prefer Agriculture for sustaining their life and agriculture depends on the monsoons which are not sufficient source of water. The objective of this paper is to overcome this challenge, the whole system is micro control based and can be operated from remote location through wireless transmission so there is no need to concern about irrigation timing as per crop or soil condition. Sensor is used to take sensor reading of soil like soil moisture, temperature, and decision making is controlled by user (farmer) by using microcontroller. The data received from sensors are sent to server database using wireless transmission. The irrigation will be automated when the moisture and temperature of the field is reduced. The farmer is notified with the information regarding field condition through mobile periodically. This system will be more useful in remote areas and also that area where there is scarcity of water.**

I. INTRODUCTION

In India, agriculture in villages plays an essential role in developing the country. Basically, agriculture depends on the monsoons which have not enough water source. Most of the farmers use large portions of farming land and it becomes very difficult to reach and track each corner of large lands. Sometime there is a possibility of uneven water sprinkles[1][2]. This result in the bad quality crops which further leads to financial losses. In this scenario the Smart Irrigation System using Latest IOT Technology is helpful and leads to ease of farming. The Smart irrigation System has wide scope to automate the complete irrigation system. To overcome this problem, the irrigation system is employed in the field of agriculture. In this system, based on the soil type, the water will be provided to the agricultural field. In agriculture, there are two things, namely, the moisture content of the soil as well as the fertility of the soil[3]. At the present time, there are several types of techniques available for irrigation to reduce the need for rain. This type of technique is driven by on/off schedule using electrical power. This article discusses the implementation of a smart irrigation system using IOT.

II. ARDUINO BASED SMART IRRIGATION SYSTEM USING IOT

The hardware and software requirements of this project include

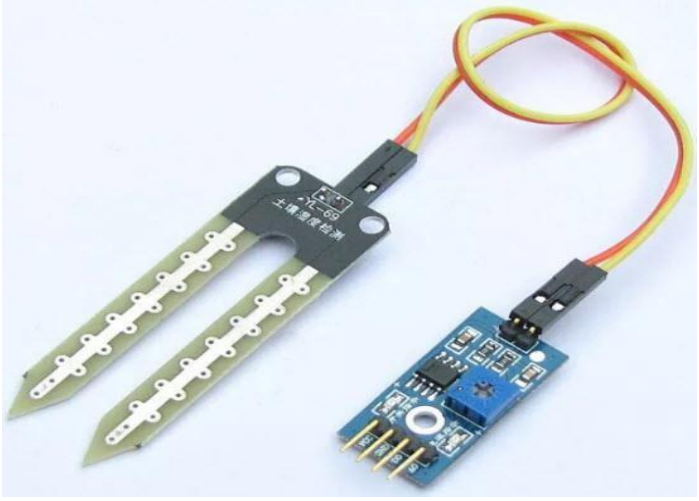
A. Arduino UNO
B. Soil moisture sensor
C. BOLT Wi-Fi module
D. Arduino CC(IDE)
E. Android studio
F. MySQL, etc.

A. Arduino UNO:-

The Arduino UNO is one of the most used microcontrollers in the industry. It is very easy to handle, convenient, and use. The coding of this microcontroller is very simple[4][5]. The program of this microcontroller is considered as unstable due to the flash memory technology. The applications of this microcontroller involve a wide range of applications like security, home appliances, remote sensors, and industrial automation. This microcontroller has the ability to be joined on the internet and perform as a server too. Sensors to the Internet.

B. Soil moisture sensor

Soil moisture sensor is one kind of sensor used to detect the soil moisture content. This sensor has two outputs like the analog output as well as the digital output. The digital o/p is permanent and the analog o/p threshold can be changed. The working principle of soil moisture sensor is open & short circuit concept [6][7]. Here the LED gives an indication when the output is high or low. When the condition of the soil is dried up, the flow of current will not flow through it. So it works like an open circuit. Therefore the o/p will be maximized. When the soil condition is soaked, the flow of current pass from one terminal to the other. So it works like a closed circuit. Therefore the o/p will be zero[8]. Here sensor is coated with platinum, and anti-rust to make higher efficiency as well as long life. The sensing range is also high which will pay for the farmer at a minimum cost.

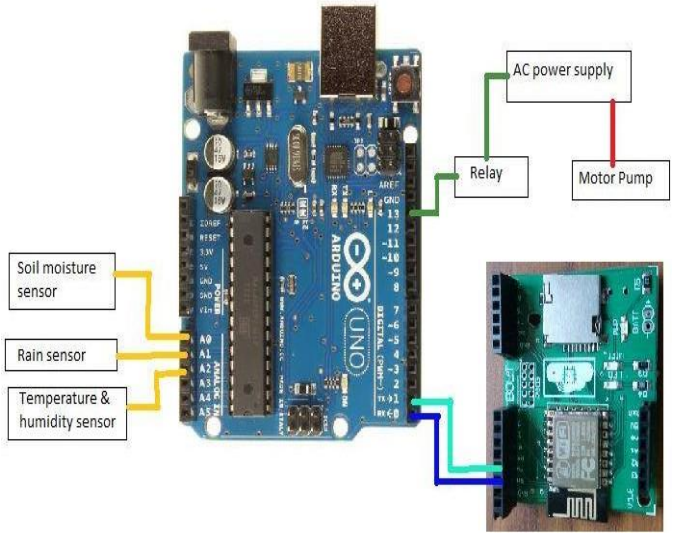


C. BOLT Wi-Fi module

Bolt is an IOT platform that helps enterprise and makers to connect their devices to the internet. Bolt comes with a Wi-Fi /GSM Chip to connect your

III. WORKING WITH SMART IRRIGATION SYSTEM USING IOT

In the agriculture field, sensors are used like soil moisture. The information received from the sensors is sent to the Database folder through the Android device. In the control section, the system is activated using the application, this is finished using the ON/OFF buttons in the application. Also, this system is automatically activated when the soil moisture is low, the pump is switched ON based on the moisture content[9].The application has a feature like taking some time from the user and water the agriculture field when the time comes. In this system, there is a switch used to turn off the water supply if the system fails[10]. Other parameters such as the moisture sensor demonstrate the threshold price and the level of water in the soil.



IV. CONCLUSION AND FUTURE WORK

The Smart Irrigation System proves to be a real time feedback control system which monitors and controls all the activities of drip irrigation system efficiently. The present proposal is a model to modernize the agriculture industries at a mass scale with optimum expenditure. Using this system, one can save manpower, water to improve production and ultimately profit. Further this proposed system can be enhanced by adding up machine learning algorithms, which are capable to study and recognize the necessities of the crop, this would aid the agriculture field to be an automatic system. The inspections and outcomes tell us that this result can be executed for a lessening of water loss and decrease the manpower necessary for a field. This system reduces the water consumption to greater extent. It needs minimal maintenance. The power consumption has been reduced very much. The crop productivity increases and the wastage of crops are very much reduced. The extension work is to make user interface much simpler by just using SMS messages for notifications and to operate the switches.

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