ISSN 2395-1621

Smart Irrigation System

[#1]Viraj Dilip Pote, [#2]Rutuja Jayasing Shelke, [#3]Poonam Ashok Khule

[1]virajpote99@gmail.com
[2]rutujas017@gmail.com
[3]poonamkhule15@gmail.com

[#123]Department of Computer Engineering,

Dhole Patil College of Engineering, Pune.

ABSTRACT

Water is the most important resource for plants. But during summers, most people are too lazy to water the plants every day. To overcome this issue smart irrigation system using arduino and android is used. The existing system uses pc and cloud computing to store the data which is reads by sensors and the drip is controlled. The proposed system is to ON/OFF the drip using bluetooth wherever we go. Using this system reduces data storage devices. The Microcontroller Arduino is used to control this System and Android is connected to controller and it controls the drip. The sensors are to take values from surroundings and store it in a controller. According to this value the drip can be ON/OFF. It is controlled manually and usage of storage device is reduced and no network problem will occur.

Keywords
Soil moisture sensors, IOT, Arduino, Android, Microcontroller, Temperature sensor, Humidity sensor.

ARTICLE INFO

Article History

Received: 11th December 2019

Received in revised form :

11th December 2019

Accepted: 14th December 2019

Published online :

14th December 2019

I. INTRODUCTION

Agriculture is the important construction of critical food crop. Agriculture is represent as manufacture, dispensation, encouragement and division rural products. Agriculture play a important role in the entire life of a given nation. Agriculture is the spine of financial system of a given country. In this wireless sensor networks, it is a self configuring network of small sensor nodes communicating among themselves using broadcasting signal, and deploy in capacity to logic, observe and realize the purpose world. The artificial application of water to the land or soil is irrigation. It is used to assist in the growing of agricultural crops, maintenance of landscapes, and re vegetation of disturbed soils in dry areas and during periods of inadequate rainfall. The water flow through the on the side lines and endually ends at the irrigation emitter (drip) or sprinkler heads when a zone comes. Many sprinklers have pipe thread inlets on the bottom of them which allow a fitting and the pipe to be attached to them. Once there is no water pressure in the lateral line, the sprinkler head will retract back into the ground. Emitters are usually laid on the soil surface or buried in a few inches to reduce evaporation losses. The plants can come to light a lot of water, resulting in an increase in the humidity of the greenhouse air. A high relative humidity (above 80-85%) should be avoided because it can increase the incidence of disease and reduce plant transpiration. Sufficient venting or successive heating and venting can prevent the condensation on the plants and the greenhouse structure. The use of cooling systems during the warm summer months increases the greenhouse air humidity. All through periods with warm and humid outdoor conditions, the humidity control inside the greenhouse can be a challenge.

Greenhouses to be found in dry, dessert environments benefit greatly from evaporative cooling systems because large amounts of water can be evaporated into the incoming air, resulting in significant temperature drops. Since the relative humidity alone does not tell us anything about the absolute water holding capacity of air, a different measurement is sometime used to describe the absolute moisture status of the soil. The vapor pressure deficit is a measure of the difference between the amount of moisture the air contains at a given moment and the amount of moisture it can hold at that temperature when the air would be saturated. The strain discrepancy measurement can tell us how easy it is for plants to transpire: higher values stimulate transpiration (but too high can cause wilting), and

lower values inhibit transpiration and can lead to condensation on leaf and greenhouse surfaces.

II. LITERATURE SURVEY

In this paper, 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.

1.This paper on "Automatic Irrigation System on Sensing Soil Moisture Content" 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.

—Remote Monitoring in Agricultural Greenhouse Using Wireless Sensor and Short Message Service (SMS).In this paper they are sending data via sms but proposed system sends the values to mobile application.

This proposed paper is arduino based remote irrigation system developed for the agricultural plantation, which is placed at the remote location and required water provides for plantation when the humidity of the soil goes below the set-point value. But in this we did not aware about the soil moisture level so to overcome this drawback proposed system included with extra feature
soil moisture value and temperature value which displayed on the farmer mobile application.

－Irrigation Control System Using Android and GSM for Efficient Use of Water and Power, in this system made use of GSM to control the system which may cost more so to overcome that proposed system used arduino yun board which already consist of in build wifi module.

－Microcontroller based Controlled Irrigation System for Plantation, In this paper old generation with lesser memory microcontroller is used to control the system but proposed system made use of arduino yun board which is user friendly and it helps to dump the programs easily.

－A wireless application of drip irrigation automation supported by soil moisture sensors, in this paper irrigation is carried out using soil moisture values but extend to this proposed system displays temperature and humidity values.

By referring all above papers it is found that no such systems are existed with all integrated features but proposed system includes these all features such as displaying temperature, humidity and soil moisture values and also automatic switching on and off of motor by considering soil moisture values.

III. PROBLEM STATEMENTS

The economy of many countries depends on agriculture. To achieve the best quality from this research, it is important to focus on some vital characteristics such as the appropriate amount of electricity as well as water supply and a suitable schedule for irrigation of crops. Farmers are facing problems in meeting these standards, especially those living in poverty. This project looks into developing an automated irrigation system that could be controlled through mobile application. This system will work to minimize the number of workers in a crop field, control and save water and electricity, Increase agricultural production using small quantities of water, minimize manual intervention in watering operations with increasing watering speed and preserving plants from fungi. All these features make these research sustainable option to be considered to improve the agriculture and irrigation efficiency.

IV. PROPOSED SYSTEM

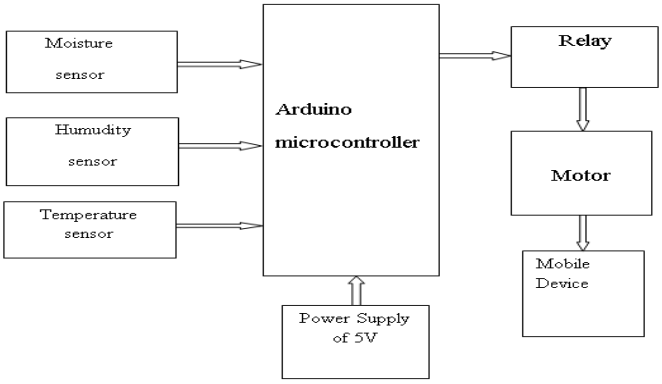

Fig 1. System architecture

In the system which is used in this project as a server to store data value which is sensed by sensors and analyse that data to crop suggestion. Arduino uno is microcontroller in this project is use to control sensor and connect to android interface and also start and stop motor as per moisture value. Water irrigation motor is use to show irrigation system in this project model. Temperature sensor and Moisture sensor is use to sense data from soil and environment and send that value to the Arduino uno.

V. CONCLUSION

This paper presents Automatic Irrigation System with the Android-based application using Wireless Monitoring Technology which benefits in several ways, such as saving water, time, manpower and ultimately increase profit. It is a portable and convenient system which consists of a wireless web-based system, mobile remote application, wireless data transmit and receive system. The system would provide feedback control system which will monitor and control all the activities of drip irrigation system efficiently. The results were within the expected range and accurate. There was some delay in receiving data from the transmitter, but it can be overcome by using a high-quality transceiver. Using this

system, users easily monitor their plant soil moistures, temperature level and water pump status from any location.

In future we can add some strong recommendation framework in this system so that user will have to take fewer efforts.

REFERENCE

[1] SSRG, S. (2017). Engineering Science and Technology Journals, SSRG International Journal. [online] Internationaljournalssrg.org. Available at: http://www.internationaljournalssrg.org.

[2] Scribd. (2017). Automatic Irrigation System on Sensing Soil Moisture Content at: https://www.scribd.com/document /362464538/Automatic-Irrigation-System-onSensing-Soil-Moisture-Content .

[3] Anon, (2017). International Journal of Science and Research (IJSR). Available:http://ijcsit.com/docs/Volume %206/vol6issue06/ijcsit20150606104 .pdf Moller, J. (2010). A Versatile Technology in automation of agriculture machinery. Computer vision.

[4] Tameem Ahmad, Shamim Ahmad ,Mohammed Jamshed , "A knowledge based Indian Agriculture: With Cloud ERP Arrangement" 2015 IEEE S.Sumeetha, D.Sharmila, "Embedded based Remote Control

[5] Application using Mobile Phone in Irrigation", International Journal of Power Control Signal and Computation(IJPCSC), Vol3. No1. JanMar 2012 ISSN: 0976-268X Santoshkumar, Udaykumar R.Y, "Development of WSN System for Precision Agriculture",EEE Sponsored 2nd International Conference on Innovations in Information Embedded and Communication Systems ICIIECS'15 ,2016 IEEE.

