



International Journal for Innovative Engineering and Management Research

A Peer Reviewed Open Access International Journal

www.ijiemr.org

COPY RIGHT



ELSEVIER
SSRN

2018IJIEMR. Personal use of this material is permitted. Permission from IJIEMR must be obtained for all other uses, in any current or future media, including reprinting/republishing this material for advertising or promotional purposes, creating new collective works, for resale or redistribution to servers or lists, or reuse of any copyrighted component of this work in other works. No Reprint should be done to this paper, all copy right is authenticated to Paper Authors

IJIEMR Transactions, online available on 30^h Nov 2018. Link

[:http://www.ijiemr.org/downloads.php?vol=Volume-07&issue=ISSUE-12](http://www.ijiemr.org/downloads.php?vol=Volume-07&issue=ISSUE-12)

Title: **DESIGN AND IMPLEMENTATION OF SMART IRRIGATION SYSTEM USING WIRELESS SENSOR NETWORK BASED ON IOT**

Volume 07, Issue 12, Pages: 731–735.

Paper Authors

CH.NARENDRA BABU , S.NAVEEN KUMAR

St.Marry's Group of Institutions, Guntur, Ap, India.



USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per **UGC Guidelines** We Are Providing A Electronic Bar Code

DESIGN AND IMPLEMENTATION OF SMART IRRIGATION SYSTEM USING WIRELESS SENSOR NETWORK BASED ON IOT

CH.NARENDRA BABU¹, S.NAVEEN KUMAR²

¹M.Tech [ES] PG Scholar, Department of ECE, St.Marry's Group of Institutions, Guntur, Ap, India.

² M.Tech [MC&SP] Associate Professor, Department of ECE, St.Marry's Group of Institutions, Guntur, Ap, India.

¹chilumuru.narendra@gmail.com,²naveenkumarsettipalli@stmarysgroup.com

ABSTRACT: This paper presents an automation of farm irrigation system using a wireless sensor network (WSN). The system provides a web interface to the user so that the user can control and monitor the system remotely. In this paper, Raspberry Pi is used as an embedded Linux board which is designed based on the arm 11 microcontroller architecture. Embedded Linux board makes the communication with all distributed sensor nodes placed in the farm through Zig Bee protocol and itself act as a coordinated node in the wireless sensor network. The goal of coordinator node is to collect the parameters like soil moisture and soil temperature wirelessly. Each sensor node consists of soil moisture and soil temperature sensor and. Raspberry Pi stores collected data in the database and analyzes the stored data. The system will work according to the algorithm developed for watering the crop. The board has an Ethernet interface and runs the simple data web server.. User can make the irrigation system ON or OFF remotely. The system will reduce the water consumption and giving uniform water to the crop results in increasing yield

1. INTRODUCTION

In our nation Agriculture is real wellspring of sustenance creation to the developing interest of human populace. In agribusiness, water system is a basic procedure that impacts trim generation. For the most part ranchers visit their agribusiness fields intermittently to check soil dampness level and in view of necessity water is pumped by engines to flood individual fields. Agriculturist need to sit tight for certain period before turning off engine so water is permitted to stream in adequate amount in individual fields. This water system strategy takes parcel of time and exertion especially when a rancher need to flood

various agribusiness fields dispersed in various topographical zones. Generally agriculturists will show in their fields to do water system process. In any case, these days ranchers need to deal with their horticultural movement alongside different occupations. Computerization in water system framework makes rancher work considerably simpler. Sensor based mechanized water system framework gives promising answer for agriculturists where nearness of rancher in field isn't obligatory. A little processor customized for control an electromagnetic valve and furthermore contrast with electromagnetic valve work engine to begin watering. Extremely

INDIAN agriculturists require shabby and straightforward UI for controlling sensor based mechanized water system framework. Presently multi day's web is generally utilized. Utilizing web rancher think about the agribusiness field water system status. This causes agriculturists to know the status of homestead field watering bearing through a message whether the rancher is far from field know the status of water engine is ON or OFF and heading of watering. Today water has turned out to be a standout amongst the most valuable asset on the Earth and a standout amongst the most imperative factors in horticulture is water accessibility. Water accessibility is additionally a basic variable for essentially every other financial movement, including industry, the vitality area, and open utilize. As of late, water accessibility has turned into an issue. To plan water system legitimately, a cultivator must know the ecological interest for surface water. Information of correct measure of water required by various yield in a given arrangement of climatologically state of a locale is incredible help in arranging of water system plot, water system planning, compelling outline and administration of water system framework. This is accomplished by utilization of water system controllers. Numerous kinds of water system controllers have been created for naturally controlling utilization of water to scenes. Known water system controllers extend from basic software engineers depend on settled timetables. As for the less difficult kinds of water system controllers, agriculturists, Municipalities and business proprietors of green territories regularly set a watering plan

that includes particular run-times and days, and the controller executes a similar timetable paying little respect to the season or climate conditions. Every once in a while a specialist may physically change the watering plan, however such alterations are normally just made a couple of times amid the year, and depend on the professional recognitions as opposed to genuine watering needs. One change is frequently made in the pre-summer when a bit of the plants wind up dark colored because of an absence of water. Another change is regularly made in the pre-winter when the mortgage holder expect that the vegetation does not require as much watering. These progressions to the watering plan are normally inadequate to accomplish proficient watering. The motivation behind this work is to create self-governing water system frameworks that utilization consistently atmosphere standard to adjust day by day water system profundities to plant needs. Criteria, for example, temperature, add up to radiation and aggregate breeze can be estimated straightforwardly by PLCs which at that point adjust the water system timetable to the watched conditions, prompting a sensible sparing in the measure of water system water. Along these lines, this work expects to build up a financially savvy water system controller that is versatile to day by day atmosphere conditions, without the requirement for costly sensors and exorbitant climate stations. It should likewise be dependable and effortlessly deployable keeping in mind the end goal to work under cruel open air conditions without the requirement for supervision or standard observing.

2. EXISTING METHOD:

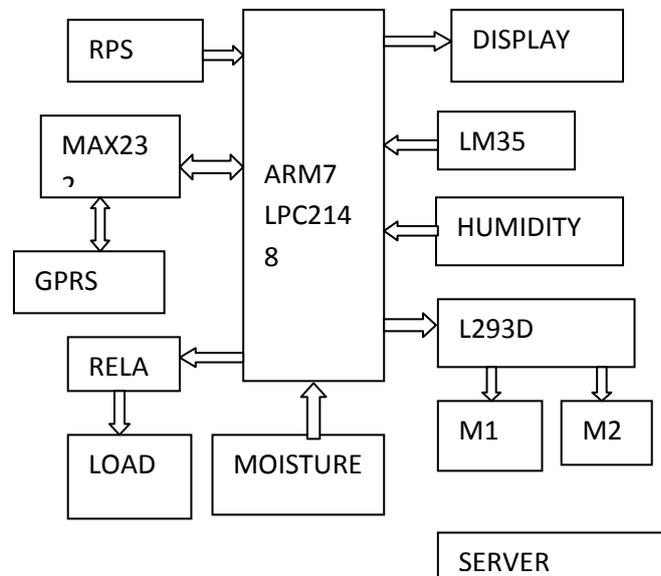
In the present age, a large portion of the nations don't have adequate talented labor in rural division and it influences the development of creating nations. So it's important to robotize the segment to beat this issue. In India there are 70% individuals subject to agribusiness. Apply autonomy is the part of innovation that arrangements with the outline, development, task, and utilization of robots, and also PC frameworks for their control, tangible criticism, and data handling. The outline of a meanderer will frequently join agrarian endeavors, however it may not look much like a person or capacity in a human like way. These sorts of smart frameworks having strong and practical model with various coordinated functionalities is the interest of future in each field of innovation, for the improvement of the general public. Created horticulture needs to discover better approaches to enhance productivity. One methodology is to use accessible data advances as more clever machines to decrease and target vitality contributions to more successful routes than in the past. The sensors gather the parameters and send to a microcontroller, the microcontroller gathers the parameters and organizes in particular arrangement and checks for the qualities if present inside as far as possible and all the while advances the data to the android portable through either Bluetooth module.

3. PROPOSED SYSTEM:

In an expansive territory of homestead field there is utilize a vast number of pipes for watering plants in various ways from the attachment of engine. Which is changed by the rancher to inundate a specific course of the field.

Be that as it may, utilization of electromagnetic esteem the pipe framework are constantly associated and electromagnetic valve consequently alter the course of the water required region of the field and the valve is controlled by the Arduino. While the valve is open then the water engine ON consequently. Furthermore, make an impression on the enrolled versatile number and enlisted g-mail account. By which agriculturist know the status of the ranch field while rancher far away from field.

4. BLOCK DIAGRAM:



5. DESCRIPTION:

In this framework we have planned which comprises of an Arduino microcontroller interfaced with soil dampness sensor, a LCD, Bluetooth. To execute the assignment of soil dampness observing, soil dampness sensoris utilized. The crude information from sensoris gathered by a processor. The information is prepared and after that showed on anLCD show. This venture can record information that is troublesome for people to assemble.

They are utilized broadly by mainstream researchers to think about the dirt proficiency by estimating soil dampness utilizing soil dampness sensor. The hardware requirements used in the system are

6. RESULT AND DICUSSION

After fruitful equipment usage of the circuit graph in PCB following yield will be acquired. At the point when the estimation of soil dampness is zero there will be no association between the terminals and a vast impedance will happens between the two cathodes. This makes transfer is ON express the microcontroller send output '1' to the engine circuit. Hence it will bring about turning ON the engine.

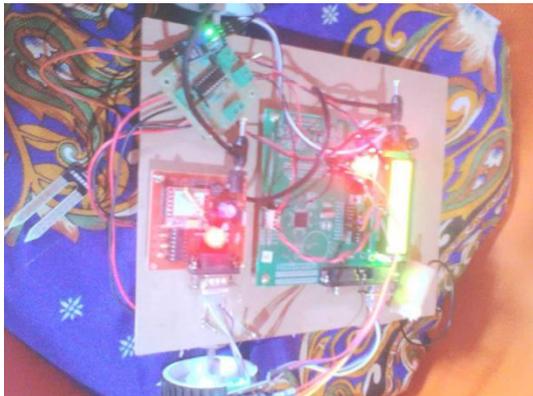


Fig: Hardware Implementation



FIG: OUTPUT VALUES

8. CONCLUSION AND ENHANCEMENT

In this paper we present a model for programmed controlling a water system framework. Here models incorporates sensor hub and control hub. The sensor hub is conveyed in water system field for detecting soil dampness esteem and the detected information is sent to controller node. On accepting sensor esteem the controller hub checks it with required soil dampness esteem. At the point when soil dampness in water system field isn't up to the required level then the engine is changed on to flood related horticulture field and ready message is send to enlisted cell phone. The exploratory outcomes demonstrate that the model is able for programmed controlling the trial results demonstrate that the model is able for programmed controlling of water system engine in light of the criticism of soil dampness sensor. This framework is utilized in a remote zone and there are different advantages for the ranchers. By utilizing the programmed water system framework it streamlines the utilization of water by decreasing wastage and diminish the human intercession for ranchers. It spares vitality likewise as it programmed controlling the framework. So there are the framework is OFF when the field is wet and naturally begin when the field id dry. It is executed in all kind of water system framework (channel, sprinkler, dribble). What's more, we present likewise less number of sensor hubs to use in an expansive region of field so the expense of the framework additionally diminish. Furthermore, control utilization of the remote system gadgets are additionally less and the framework play out quite a while



The working of undertaking is fundamentally reliant on the yield of sensors. At whatever point there is need of overabundance water in the coveted field then it should receive the DTMF innovation. By utilizing this we will have the capacity to water the coveted field and in wanted sum. By utilizing sun powered boards we can give control supply to the sensor circuit and afterward

we can screen the water level amid control cut moreover. Empowering the Bluetooth Technology for better programmed working.

REFERENCES

1. "Soil Monitoring Made Easy." 2011. <http://www.soilsensor.com/soilsensors.aspx>. Accessed: March 22, 2015
2. "Using the Stevens Hydra Probe with NI Wireless Sensor Networks