

Smart Irrigation Systems using Sensors and GSM

R.A.Karthikeyan, S.Abinayaa, D.Piyush, H.Sangeetha K.Saran Sriram

Abstract— In India agriculture plays a major role in development of food products, but the Indian farmers face a lot of difficulty in doing agriculture, it can be resolved using this technique. The existing system includes monitoring temperature and humidity in agricultural field through sensors using CC3200 single chip. In this paper, irrigation automation with electronic sensors and its control with smartphones and through sms were aimed. In this context, temperature and soil humidity measurements of the area irrigated were obtained by Digital humidity and temperature sensor, soil moisture sensor and rain sensor. The Arduino UNO (Microconted according to obtained measurement values. Along with Arduino controller) was utilized for accessing values of these parameters and controlling the proposed irrigation system using Smartphones. The irrigation system would automatically be working UNO a GSM Module is used to connect the system with smartphones so that the irrigation system can be remotely connected.

Keywords— CC3200 single chip, electronic sensors, Digital humidity and temperature sensor, Arduino UNO, GSM Module.

I. INTRODUCTION

Farming has been a magnificence essential occupation in numerous nations however it has a principle job in Indian economies. Regardless of there is important to improve advancement in this division. Be that as it may, it for the most part relies upon the precipitation and its presentation. Less amount of precipitation and Extensive precipitation can be creating different issues to the farmer. Hence cultivating procedure is for the most part relies upon the amount of precipitation. Thinking about this issues, water system frameworks were acquainted with deal with the water proficiently. In current advancement brilliant water system framework mange dimension of the water and make affirmation that the water is come to at the base of the plant. In India rancher flood the land time to time utilizing water system framework through manual control.[9] This procedure here and there depletes water.

Programmed water system planning reliably have appeared to be significant in water use effectiveness as for manual water system dependent on direct soil water estimations. Its requires more opportunity for Irrigation of plants in sensible measure of time; it needs a lot of HR. Every one of the means were executed by people generally.

A. Soil Moisture Sensor

Hygrometer Various sorts of sensors can be utilized for the estimation of soil mugginess. In that venture, this sensors are utilized for soil dampness. Hygrometer is one sort of humidity sensor which has capacity of estimating the water vapor in the air.[1] Its utilized for both computerized and simple. Yield of the sensor gives as a contribution of an Arduino Uno. Soil Humidity Sensor Hygrometer Maintaining the Integrity of the Specifications[5]

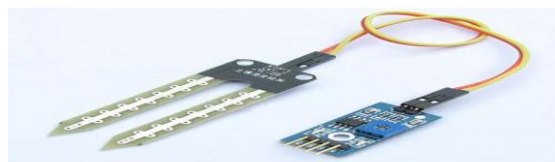


Fig 1.1: Soil Moisture Sensor

B. Digital Humidity and Temperature Sensor

DHT electronic block of computerized temperature and stickiness sensor includes an advanced temperature and moistness sensor complex with an aligned advanced flag yield. Its single-transport activity, very little size and low utilization empower it to be utilized in HVAC, car, climate stations, dehumidifier and different applications.



Fig 1.2: Digital Humidity and Temperature Sensor

C. Water Level Sensor

A water level sensor or downpour switch is an exchanging gadget initiated by precipitation. There are two primary applications for downpour sensors. The first is a water protection gadget associated with a programmed water system framework that makes the framework shut down in case of precipitation. The second is a gadget used to shield the inside of a vehicle from downpour and to help the programmed method of windscreen wipers.[1]

Revised Manuscript Received on 30 May 2019.

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One algorithm was developed for measure threshold values of temperature sensor and soil moisture sensor that was programmed into a microcontroller to control water quantity.[8] In IJETT proposed a paper in which the humidity and soil moisture sensors are placed in the root zone of the plant. Based on the sensed values the microcontroller is used to control the supply of water to the field. This system doesn't intimate the farmer about the field status.[3] In ethesis.nitrkl.ac.in proposed a paper in which soil parameters such as humidity, moisture and temperature are measured for getting high yield from soil[5].This system The current field status is not intimated to the farmer. In Wikipedia website a brief description about Arduino UNO board was studied and the working of the board was understood and it was implemented according to it.[7]

V. CONCLUSION

The project 'Smart Irrigation Systems using Sensor and GSM' is used for the optimal use of water in agriculture field and to monitor the soil and crops condition without intervention of farmers using sensors. This system also helps the farmer for faster irrigation and less usage of resources like water and man power etc. Since sensors are fixed to the system it makes farming much easier, much faster and much efficient. This system is quite affordable and feasible. This system of irrigation is also helpful in the region where there is scarcity of water and improves their sustainability. And can also be adjusted according to the need of varieties of crop to be irrigated. Therefore, this framework guarantees the accompanying:

- Efficient administration of water
- Healthy development of plant
- Very less recurrence of human exertion
- Remote access and observing

FUTURE ENHANCEMENTS

We can interface LCD screen so as to show the ebb and flow status of the dirt dampness content dimensions, level of water used to water the plant, term of time for which the water siphon is ON, and so forth. We can likewise demonstrate the graphical portrayal of the dampness content dimensions in the dirt. To improve the productivity and viability of the framework, the accompanying proposals can be put into thought. Choice of controlling the water siphon can be given to the rancher. The rancher may stop the development of harvests or the yields may get harmed because of unfavorable climate conditions. In such cases rancher may need to stop the framework remotely.The thought of utilizing IOT for water system can be stretched out further to different exercises in cultivating, for example, steers the executives, fire identification and atmosphere control. This would limit human mediation in cultivating exercises.

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