

MICROCONTROLLER BASED AUTOMATIC REAL TIME WATER IRRIGATION MANAGEMENT SYSTEM

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ABSTRACT:

The entire system is controlled using microcontroller which is programmed as giving the signal to the sprinkler or motor. To prevent the water wastage, first we have to estimate the soil parameters like pH, soil moisture and temperature of the soil. Sensors are connected to the internal ports of microcontroller. Whenever there is a change in moisture level of the soil the sensor senses the change and gives the reading to the microcontroller as interrupt. Thus the controller gives the signal to the sprinkler or motor to sprinkle the water.

Keywords: Real time irrigation, Automatic irrigation, Sensor, Microcontroller.

I.INTRODUCTION

In the quick paced world people require everything to be robotized. Our way of life requests everything to be remote controlled. Aside from couple of things man has made his life computerized. Amid summers, the vast majority are excessively apathetic, making it impossible to water the pruned plants on their housetop cultivates each day. In the realm of propel hardware life of people ought to be more straightforward henceforth to make life less complex and advantageous, so I have made "Programmed Plant Watering Framework". A model of controlling watering offices to help a great many individuals. These mechanized plant watering frameworks have been appeared to utilize 47% more water by and large than sprinkler frameworks that are not robotized (i.e. hose and sprinkler), which can be ascribed to a great extent to the inclination to set water system controllers and not rearrange for shifting climate conditions. Water system control innovation that enhances water application proficiency is currently accessible. Specifically, soil dampness sensors can diminish the quantity of pointless water system occasions. This model uses sensor technology with microcontroller to make a keen exchanging gadget. The model demonstrates the essential exchanging instrument of water engine/pump utilizing sensors from any piece of field by detecting the dampness exhibit in the dirt by soil dampness sensor. At last LCD used to show the dirt dampness level. The goals of the venture are imperative to guarantee the exploration will satisfy the arrangement of the issue look into. Every one of the destinations are demonstrated as follows:

- a) To outline and build up a programmed plant watering framework controlled by utilizing PIC microcontroller.
- b) To actualize the programmed watering framework in light of soil dampness sensor and temperature sensor.
- c) To plan and build up the model of the farming based framework.

II.LITERATURE REVIEW

In this paper, temperature sensors, soil moisture sensor are placed in the field. An algorithm has been created to scale the critical reading of temperature sensor and soil moisture sensor that should be loaded into a microcontroller. And then the system need to be connected to the remote server through network to maintain the database and for switching the motor.

Here the humidity of the land is supervised using the sensor. It is used to note the moisture content of soil in real time. It works by calculating the speed of the sound and saturation in soil. Based on the kind of soil and moisture level, the speed of sound varies gradually.

The system will send the data to the farmer and whenever the farmer needs to turn on the motor he needs to send a message to the system to the device run. And the farmer can switch off the device through the message from his mobile.

Advanced RISC machine is used and for the communication purpose GSM is used. GSM operates through the short message service and it acts as interconnection between the system and the farmer. Then the collected raw data are sent to the computer with the help of cellular network. There are many AT commands to control the cellular network.

There is also an irrigation technique with the help of WSN nodes. This is used to boost the performance of the system. In this the data collecting elements are placed inside the required area. So that it can sense the data at regular interval. This collected information are then shared to the online resources organized by the dealer for further process. Then the particular control signal is generated and given to the WSN nodes for the process of system. Internet is must for this type of irrigation systems.

There are many systems for automatic irrigation. Among those irrigation using rain gun is one. This plan is used when there are enormous amount of water is used. So, this saves a large quantity of water. They are controlled by a software developed in android stack. This can be controlled by an external application with the help of mobile. The android application can be developed using the android SDK application using the Java programming language. In this mobile phones plays a important role. This application uses the GPRS features of mobile phone. This system covers low range of irrigation. But it is not economically affordable.

In field irrigation using global system monitoring, we can perform efficiently. With these we can power on and off efficiently. These valves are controlled using microcontroller. If the plants gets water at regular interval, the yield will the plants gets increased by 20 to 30 percentage.

Agriculture irrigation control with the help of remote system and WSN nodes. In this windows application is used to control the system. But using WSN is less effective because of its low power storage. But the other devices connected to it uses more power. So the WSN becomes reduced.

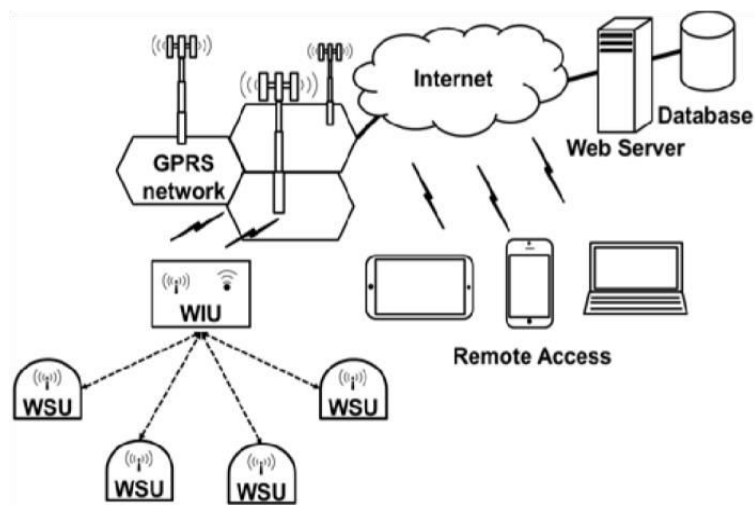


Fig.1.WSN Controlled Irrigation System

But using these WSN will affect the performance of the system. WSN have only low amount of power and are very small. So if we connect additional devices to the WSN, then the power discharge will be quicker and we want to charge it every time frequently.

At the same time all the farmers would not have the knowledge to use android developed applications. They feel it harder to use. And connecting to the internet may lead to the theft of data. So the privacy is also important to be maintained.



Fig.2.Some of the areas in which automated irrigation practiced.

III. CONCLUSION

Nowadays farmers are facing a major problem due to the shortage of irrigation water. And there is no rain so we want to use the ground water efficiently. By using this method we can preserve the water and at the same time we can increase the yield and growth of the plants.

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