SMART IRRIGATION SYSTEM USING IoT

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Abstract

In the proposed Irrigation system IoT is implemented, in this system all the information that are received from the sensors and the various parameters are given to the Arduino UNO microcontroller as an analog input. A preset value of soil moisture sensor is fixed in microcontroller and also for fencing. When it goes beyond the particular threshold value water is automatically irrigated to the crops and once the required amount of water is fulfilled it stops. The Microcontroller transmits that information on the internet through a network of IoT in the form of wifi module ESP8266 that is attached to it. This enhances automated irrigation as the water pump can be switched on or off through information given to the controller. Soil Parameters like Soil Moisture, Temperature, Humidity are measured using two respective sensors and sensed values are displayed in LCD. Soil Moisture, Temperature, Humidity and Motor status are intimated to the farmer through the respective application. The values are stored in the cloud and represented in a graphical format. The graphs are updated for every two seconds or when the sensors starts calculating. The farmer can access the server about the field condition anytime, anywhere.

This approach is for the advancement of irrigation process by automatic method without manpower by measuring various parameters related to the field and thus improves irrigation and reduces man power.

I. INTRODUCTION

India is the country of village and agriculture plays an important role for development of country. In our country, agriculture depends on the monsoons which has insufficient source of water. So the irrigation is used in agriculture field. In irrigation system, depending upon the soil type, water is provided to plant. In agriculture, two things are very important. First to get information about the fertility of soil and second to measure moisture content in soil. Now a days for irrigation different techniques are available which are used to reduce the dependency of rain. And mostly this technique is driven by electrical power and on/off scheduling .In this technique. water level indicator placed in water reservoir and soil moisture sensor are placed root zone of plant and in the module and gateway unit handles the sensor information and transmit data to the controller which in turns the control the flow of water through the valves.

II. MOTIVATION

For continuously increasing demand and decrease in supply of food necessities. it's important to rapid improvement in production of food technology. Agriculture is only the source to provide this. This is the important factor in human societies to growing and dynamic demand in food production. Agriculture plays the important role in the economy and development, like India. Due to lack of water and scarcity of land water result the decreasing volume of water on earth, the farmer use irrigation. Irrigation may be defined as the science of artificial application of water to the land or soil that means depending on the soil type. plants are to be provided with water.

III. AREA OF UTILITY

• The primary focus of this project is to the farmers and reduce their work.

• This module can be implemented in perennial plant irrigation land and gardening land.

IV. EXISTING SYSTEM

In the olden days the Farmers, Municipalities and commercial owners of green areas typically used to set a watering schedule that involves specific run-times and days, and the controller executes the same schedule regardless of the season or weather conditions. From time to time a technician may manually adjust the watering schedule, but such adjustments are usually only made a few times during the year, and are based upon the technician's perceptions rather than actual watering needs.

V. PROPOSED SYSTEM

Farmers start to utilize various monitoring and controlled system in order to increase the yield with help of automation of an agricultural parameters like temperature, humidity and soil moisture are monitored and control the system which can help the farmers to improve the yield. This proposed work includes an embedded system for automatic control of irrigation. This project has wireless sensor network for real-time sensing of an irrigation system. This system provides uniform and required level of water for the agricultural farm and it avoids water wastage. When the moisture level in the soil reaches below threshold value then system automatically switch ON the motor. When the water level reaches normal level the motor automatically switch OFF. The sensed parameters and current status of the motor will be displayed on user's android application.

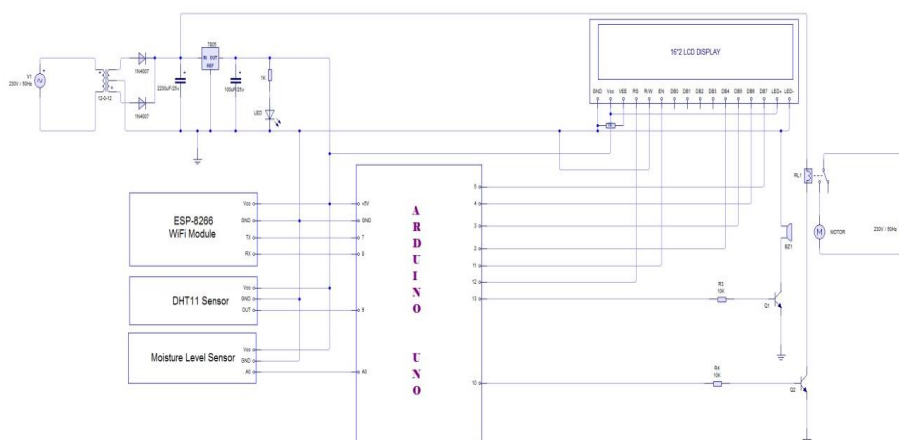## VII. WORK FLOW FOR PROPOSED SYSTEM

Fig:7.1 Flow chart for working of the Proposed System.

IX. CONCLUSIONS AND FUTURE SCOPE

The smart irrigation system implemented is cost effective for optimizing water resources for agricultural production. The proposed system can be used to switch on/off the submersible motor depending on the soil moisture levels thereby making the process simpler to use. Through this project it can be concluded that there can be considerable development in irrigation with those of IOT and automation. Thus this system is a solution to the problems faced in the existing process of irrigation. We can also add some extra features like soil fertility, soil quality etc to make more efficient. All these improvements will add in the future

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ACKNOWLEDGEMENT