DESIGN AND FABRICATION OF AUTOMATIC PLANT IRRIGATION SYSTEM USING SOLAR ENERGY

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ABSTRACT

Agriculture plays a vital role in the development of an agricultural country like India. Issues concerning agriculture have been always hindering the development of the country. The only solution to this problem is smart agriculture by modernizing the current traditional methods of agriculture. Hence the proposed method aims at making agriculture smart using automation and IoT technologies. Arduino based automatic irrigation IOT system is proposed to modernization and improves the productivity of the crop. the main aim of this work to crop development at low quantity for that purpose most of the farmers wastes a lot of time in the fields. The proposed systems based on these values, irrigation is required. Propose the IOT based smart agriculture model main aim to avoid water wastage in the irrigation process. This system provides an intelligent monitoring platform framework and system structure for facility agriculture ecosystem based on NOT using solar. One of the important applications of IoT is Smart Agriculture. Smart Agriculture reduces wastage of water, fertilizers and increases the crop yield. Here a system is proposed to monitor crop-field using sensors for soil moisture. By monitoring these parameters the irrigation system can be automated if soil moisture is low.

Keywords; Arduino Uno,IOTbased, solar system.

I. INTRODUCTION

As the world is trending into new technologies and implementations it is a necessary goal to trend up in agriculture also. Many types of research are done in the field of agriculture. Most projects signify the use of wireless sensor network collect data from different sensors deployed at various nodes and send it through the wireless protocol. The collected data provide information about the various environmental factors. Monitoring the environmental factors is not the complete solution to increase the yield of crops. There is a number of other factors that decrease productivity to a greater extent. Hence automation must be implemented in agriculture to overcome these problems.

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II. LITERATURE SURVEY

TanmayBaranwal, Nitika, Yet To Proposed A System.

The agriculture sector is the backbone of the Indian economy deserves security. Security not in terms of resources only but also agricultural products needs security and protection at the very initial stage, like protection from attacks of rodents or insects, in fields or grain stores. Such challenges should also be taken into consideration. Security systems which are being used nowadays are not smart enough to provide real-time notification after sensing the problem. The integration of traditional methodology with the latest technologies as the Internet of Things and Wireless Sensor Networks can lead to agricultural modernization.

.Nakutis, V.Deksnys, Expert Systems Applications

The publication presents system architecture for remote agriculture process automation, involving sensors and actuators connected to IoT gateway running OPC UA server. Sensors and actuators are very general and do not need any intelligence related to the process under control. Acquired data processing and control algorithms that produce control stimulus are executed in the gateway. This approach features the advantage of convenient possibilities to change control rules from Cloud services (installing or configuring process controller) without updating the firmware of remote sensors/actuators. Throughput of data collection channel (long range radio) and IoT gateway performance are limiting factors for real-time control or observation of agriculture processes. Therefore, the achievable channel "sensors.

Shweta B. SarafDhanashri H. Gawali "IoT Based Smart Irrigation Monitoring And Controlling System"

interconnection of the number of devices through internet describes the Internet of things (IoT). Every object is connected with each other through a unique identifier so that data can be transferred without a human to human interaction. It allows establishing solutions for better management of natural resources. The smart objects embedded with sensors enables interaction with the physical and logical worlds according to the concept of IoT. In this paper proposed system is based on IoT that uses real-time input data. Smart farm irrigation system uses android phone for remote monitoring and controlling of drips through the wireless sensor network.

III . PROPOSED SYSTEM

In proposed system ZigBee network has implemented for transferring the measured parameters. This system installed with sensors which measure the parameters of the agriculture field and transfer the easured details using a ZigBee network. So it only applicable for short range application.

NodeMCU is a wifi SOC (system on a chip) produced by Espressif Systems. It is based ESP8266 -12E WiFi module. It is an highly integrated chip designed to provide full internet connectivity in a small package.

It can be programmed directly through USB port using LUA programming or Arduino IDE. By simple programming we can establish a WiFi connection and define input/output pins according to your needs exactly like arduino, turning into a web server and a lot more.

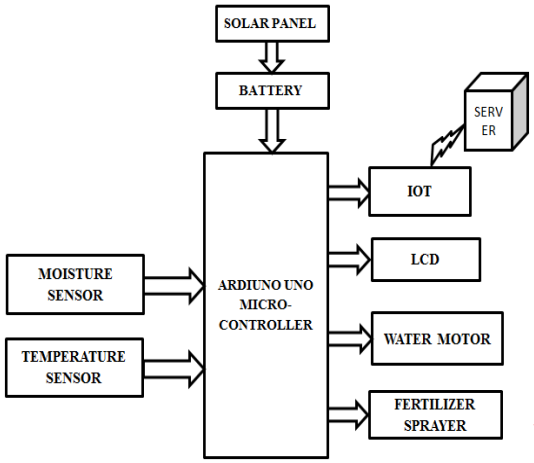

Fig 1 circuit diagram

In this circuit moisture sensor is connected to the 5 pin of Arduino. Temperature sensor is connected to Ao pin of Arduino. Water motor and fertilizer sprayer connected to the 6 and 7 pin of Arduino. Lcd is (Rs,En,D4,D5,D6,D7) connected to (13,12,11,10,9,8) pin of Arduino.

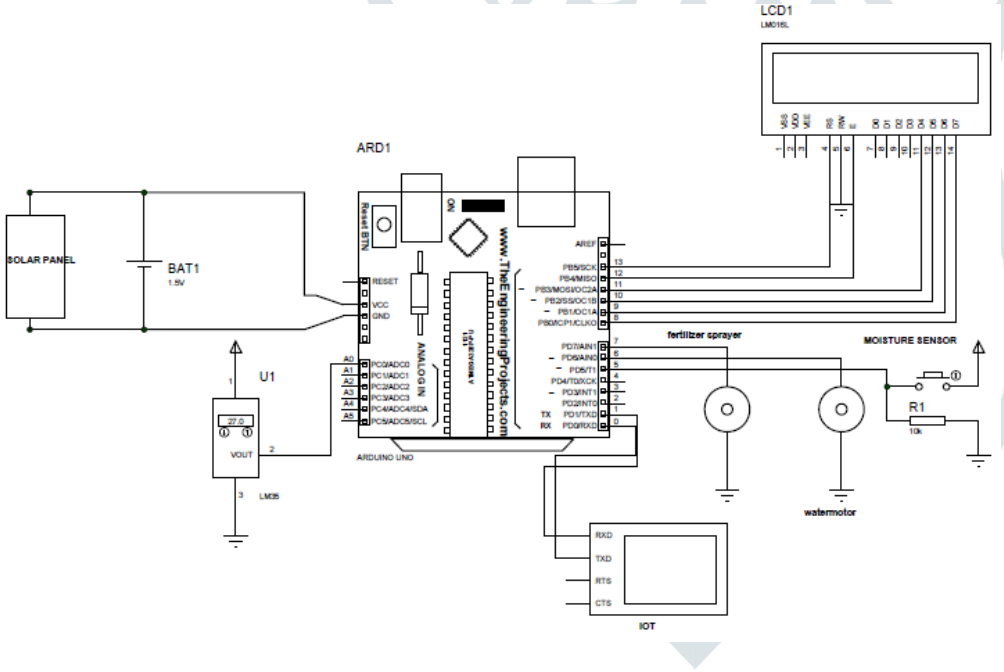

Fig 2: Architecture

Table 1 : Detailed table

Pin No	Function	Name
1	Ground (0V)	Ground
2	Supply voltage; 5V (4.7V – 5.3V)	Vcc
3	Contrast adjustment; through a variable resistor	V_{EE}
4	Selects command register when low; and data register when high	Register Select
5	Low to write to the register; High to read from the register	Read/write
6	Sends data to data pins when a high to low pulse is given	Enable
7	8-bit data pins	DB0
8		DB1
9		DB2
10		DB3
11		DB4
12		DB5
13		DB6
14		DB7
15	Backlight V_{CC} (5V)	Led+
16	Backlight Ground (0V)	Led-

After setup has been called, the function loop is executed repeatedly in the main program. It controls the board until the board is powered off or is reset. Most Arduino boards contain a light-emitting diode (LED) and a load resistor connected between pin 13 and ground, which is a convenient feature for many tests and program functions

1V. RESULT

The hardware is interfaced with a moisture sensor in the board. The hardware components include the microcontroller, LCD, water motor, sprayer, node MCU. Sensor details are uploaded to the IOT website with the help node MCU. All observations and experimental tests prove that this project is a complete solution to the field activities irrigation problems. Implementation of such a system in the field can definitely help to improve the yield of the crops and aids to manage the water resources effectively reducing the wastage. CONCLUSION

Hereby we conclude that this system monitors and controls the motor in agriculture land. The moisture level is monitored in the IOT website. The system can upload the measured quality data on a website based on IoT. Based on measured sensor values the water motor will on. All the measured sensor details are displayed on LCD. The purpose of this research work is to propose a smart farming method based on Internet of Things (IoT) to deal with adverse situations. The smart farming can be adopted which offer high precision crop control, collection of useful data and automated farming technique

V. REFERENCE

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