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REAL TIME AUTOMATION AND MONITORING SYSTEM FOR MODERNIZED AGRICULTURE

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I. ABSTRACT

In this project the development of real time automation and monitoring system for modernized agriculture. The automaticity means that it turns itself on and off depending upon the soil moisture requirement. This automatic behavior of irrigation is achieved using different sensors which sense and tell the user if water is required or not and how much water will be enough for soil so that water wastage is also avoided. Whenever the soil gets dry automatically motor is on and water is supplied to crops. In the same way SMS is send to the corresponding phone number using GSM. Hence this project gives effective result.

II.INTRODUCTION

One of the things that can help IOT with daily activities is the agriculture section. Currently, the flawless integration with wireless sensors and IOT in smart agriculture can raise agriculture to a previously unthinkable [1]. The sales of agricultural products have always been challenging, so real- time monitoring in processing, production, the and circulation [2]. Supporting farmers with decision tools and automation technology is a purpose of application in agriculture. Integrate products, knowledge, and services for better quality, productivity, and profit expected to increase from 30 million in 2015 to 75

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million in 2020 [3].

Smart Garden System is a breakthrough that is currently popular. At home, there are presently gardens in front and back yards. With uncertain climate change, a beautiful garden is needed and can provide coolness to the house. However, daily activities leave many people without enough time to water their plants. Plants that are not treated will wither and do not provide benefits. Smart solutions are needed for better crop maintenance for more efficient water resources, even in adverse weather conditions.

The economy being highly based on agriculture demands innovative and reliable methods of irrigation. The shortcomings of manual methods of irrigation can be rectified using The task automated process. of automatic irrigation is done through assistance of soil moisture sensors. The proposed design also has the feature of GSM which makes this system wireless. The motors automatically stop after soil reaches its maximum upper threshold value which is decided by user.

III. PROPOSED SYSTEM



FIG: BLOCK DIAGRAM OF PROPOSED SYSTEM

IV. SYSTEM HARDWARE

8051 Microcontroller:

8051 is one of the first most popular microcontroller also known as MCS-51. It was introduced by Intel in the year 1981. Initially it came out as N-type metal-oxide-semiconductor (NMOS) based microcontroller, but later versions were based on complementary metaloxide-semiconductor (CMOS) technology. These microcontrollers were named as 80C51, where C in the name tells that it is based on CMOS technology.

Features –

There are some key features of 8051 which works as a foundation for students to learnmicrocontrollers. These features include: -



4 KB on-chip ROM (Program memory).128 bytes on-chip RAM (Data memory).8-bit data bus (bidirectional).16-bit address bus (unidirectional).

Two 16-bit timers.

Instruction cycle of 1 microsecond with 12 MHz crystal.Four 8-bit ports. 128 user defined flags. Four register banks of 8 bit each.16-byte bit-addressable RAM.

It is an 8-bit microcontroller which means data bus is of 8-bits. Therefore, it can process 8-bits at a time. It is used in wide variety of embedded systems like robotics, remote controls, automotive industry, telecom applications, power tools etc

Soil Moisture Sensor:

YL 69 is the soil moisture sensor. They sense the water content in soil. These are most import the information forwarded by them most relative regarding water requirement. The two probes on the sensor act as variable resistors.

Motor:

It converts the electrical energy into rotary mechanical energy. Water motor is based on ON and OFF switches and it performs based on the condition. The water engine is a positive-displacement engine, often closely resembling a steam engine with similar pistons and valves, that is driven by water pressure.

RS-232:

RS-232 is a standard protocol used for serial communication. it is used for connecting computer and its peripheral devices to allow serial data exchange between them. As it obtains the voltage for the path used for the data exchange between the devices.

GSM:

Global System for Mobile Communications (GSM) modems are specialized types of modems that AIJREAS VOLUME 7, ISSUE 6 (2022, JUNE) (ISSN-2455-6300)ONLINE Anveshana's International Journal of Research in Engineering and Applied Sciences



operate over subscription based wireless networks, similar to a mobile phone. This is used to send themessage.

Crystal Oscillator:

It provides a stable clock signal and specific application which are highfrequency reference. 8051 requires 12 clock cycles, such that to give effective cycle rate at 1MHZ (considering 12 MHZ clock).

LCD Display:

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications.

IV.WORKING

This system is a process in which automation water the garden through a humidity sensor in the ground or air.

This system will facilitate with the help of the internet. The humidity sensor is connected to the watering plant and smartphone so we can monitor soil moisture. If the air or soil does not have enough water or humidity, the system will turn on the watering machine. Soil moisture, rainfall, evaporation are essential parameters for designing Smart Garden Systems.

Some of the Smart Garden System's main features are real-time feedback from garden sensors, park monitoring, application-controlled water systems, automatic watering and systems. Mobile devices have robust computing, sensing, and connectivity resources. Tools such as smartphones and tablets can run applications for various purposes [9]. In this particular case, we would like to apply the Smart Garden System on mobile devices.

V.RESULT



Fig: PHYSICAL APPEARANCE OF THE PROPOSED SYSTEM VI. CONCLUSION AND FUTURE WORK

The back bone of human civilization has been irrigation since man has started agriculture. As the years passed by many methods of irrigation to the land has been introduced by the humans. Now a day there is scarcity of water everywhere so the saving of water plays an important role. Hence In this project the development of real time automation and monitoring system for modernized agriculture was successfully done.

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