

Real Time Automizatio of Agriculture Environment Using Fuzzy Logic and GPRS Communication

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ABSTRACT:

Automizing the agricultural system is very useful for old people and normal persons who lives far away from the agricultural field. If installed and programmed properly, automatic agricultural systems can even save us money and help in water conservation. Here LCD and GSM receive the information about temperature, humidity and conditions of the soil and motor.

The paper “Modernization of Indian agricultural system using micro controller” using 8051 and GSM is focused on atomizing the irrigation system for social welfare of Indian agricultural system and also to provide perfect irrigation in particular area.

Soil moisture sensor sense the condition of the soil whether it is dry or wet and sends the information to microcontroller. Water level sensor senses the water level in the water source and sends the information to the microcontroller.

Microcontroller sends the information to the relay then on/off of the motor is done. Temperature and humidity sensor also sense the condition of the weather and sends the information to microcontroller.

There is a serial communication between microcontroller and GSM. So the information from the microcontroller is sent as SMS through GSM .

LCD displays & GSM receives the information about temperature, humidity and conditions of the soil and motor our project aims to implement the basic application of Modernization the irrigation field by programming the components and building the necessary hardware. This project is used to find the exact field condition and it will give information to farmer by sending sms.

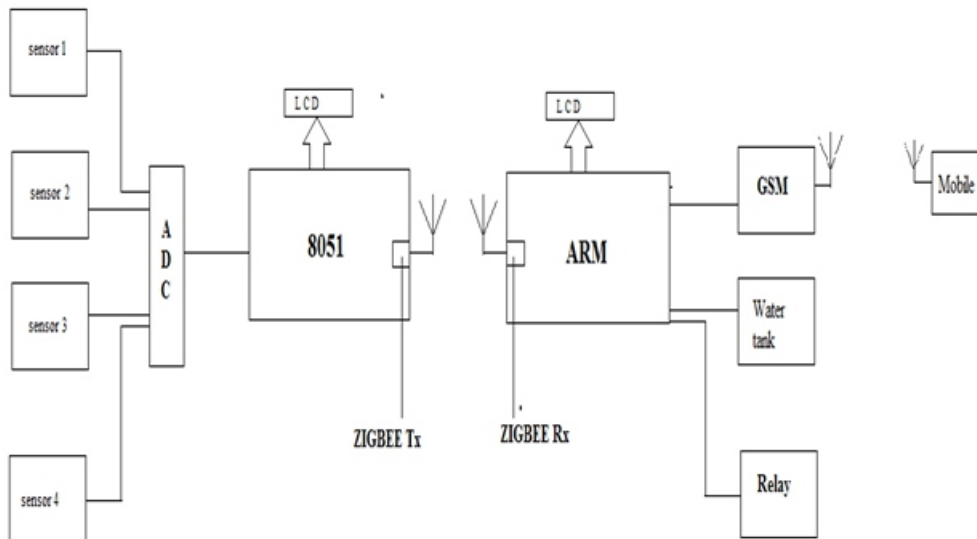
INTRODUCTION:

8051 micro controller is the contemporary general purpose microcontroller in the embedded market used in industrial level applications yield. In the field of soil environmental monitoring, real-time monitoring the temperature and humidity of soil can correctly guide agricultural production and improve crop. Automatic agricultural systems are convenient, especially for those who travel.

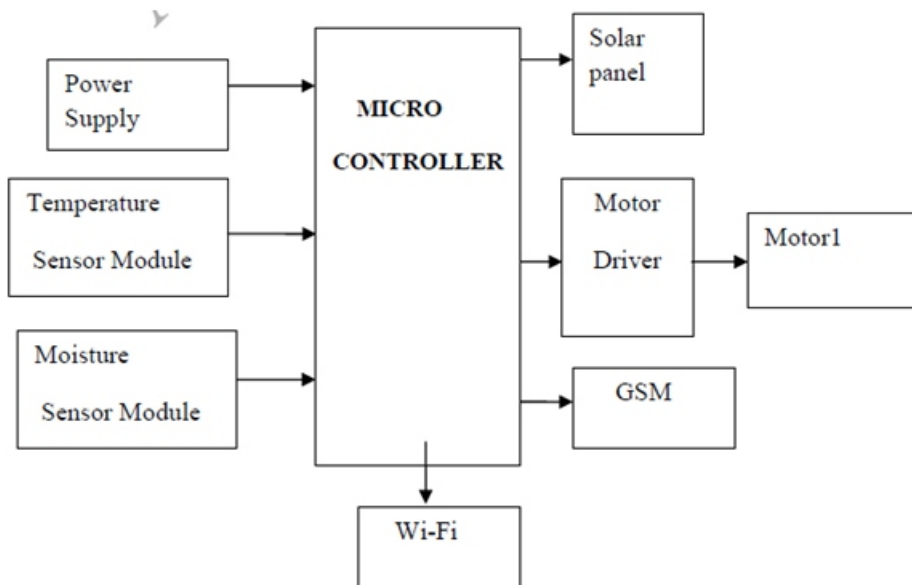
If installed and programmed properly, automatic agricultural systems can even save us money and help in water conservation. Dead lawn grass and plants need to be replaced, and that can be expensive. But the savings from automatic agricultural systems can go beyond that. Wateringwith a hose or with oscillator wastes water. Neither method targets plant roots with any significant degree of precision. Automatic agricultural systems can be programmed to discharge more precise amounts of water in the field, which promotes water conservation.

At present automated irrigation system was developed to optimize water use for agricultural crops. The system has a distributed wireless network of soil-moisture and temperature and humidity sensors placed in the root zone of the plants[1]. In order to control an irrigation system, many researchers have developed the communication methodology of the wireless sensor network for collected environment data and sending control command to turn on/off irrigation system [1. Most of the systems are run by batteries or solar panels. The communication between the sensor node and controller takes place by RF antenna [2], or Zigbee[3] or Xbee or Bluetooth[5], technology. Some systems use GSM technology to notify the farmer about the present condition of the field

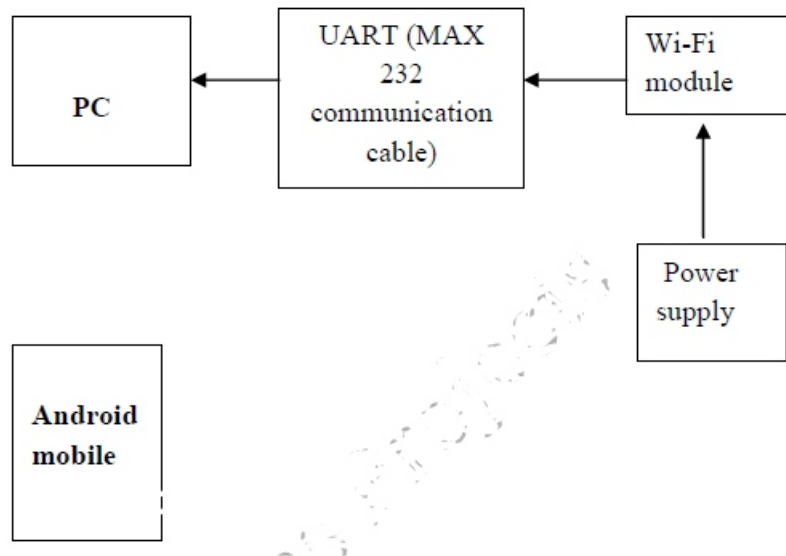
RECEIVING SECTION



TRANSMITTING SECTION



RECEIVING SECTION



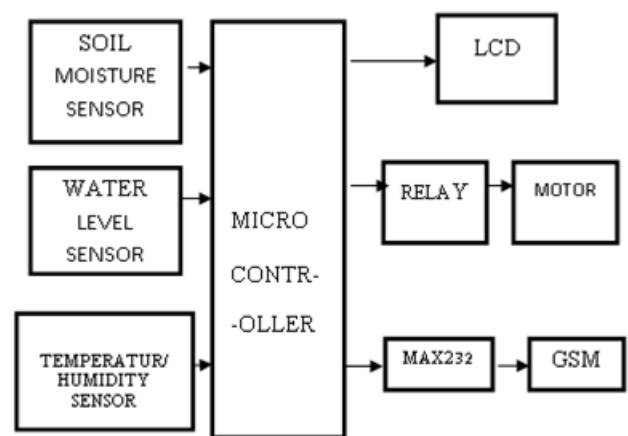
WORKING PRINCIPLE :

In case of monitoring the soil moisture, we know that each crop requires different moisture level. We are using a soil moisture sensor which is based of the principle of parallel capacitor. As we know that the voltage across the is inversely proportional to the dielectric medium.

This principle is used to determine the soil moisture by measuring the dielectric constant of soil. This is then informed the centralized unit. The centralized unit will send the message to the device of that particular subscriber.

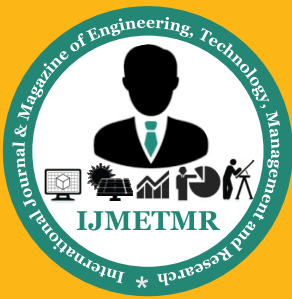
The device waits for a certain amount of default time for which it is programmed. When the user does not respond to the centralized unit in default period the device continues monitoring the field parameters and keep on sending automatically to the centralized unit.

Using the database stored in EEPROM of ARM, the corresponding moisture can be known by comparing the stored values and received information from the sensor which ensures faithful irrigation for particular crop.



SOFTWARE REQUIREMENT:

Keil an ARM Company makes C compilers, macro assemblers, real-time kernels, debuggers, simulators, integrated environments, evaluation boards, and emulators for ARM7/ARM9/Cortex-M3, XC16x/C16x/ST10, 251, and 8051 MCU families. Keil development tools for the 8051 Microcontroller Architecture support every level of software developer from the professional applications engineer to the student just learning about embedded software development. When starting a new project, simply select the microcontroller you use from the Device Database and the µVision IDE sets all compiler, assembler, linker, and memory options for you. Keil is a cross compiler. So first we have to understand the concept of compilers and cross compilers. After then we shall learn how to work with keil.



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