IOT based Wireless Imaging and Sensor Node System for Remote Green House Monitoring

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Abstract - **Green house are controlled area environment to grow plants the limitation of existing greenhouse plants is that's it is not operated automatically and has to be operated manually in order to achieve the optimum growth of plants ,the continues monitoring and controlling of environment parameters such as temperature humidity, soil moisture, light intensity are necessary for green house system. The system will screen the undeniable common conditions, for instance moistness, soil immersion, temperature, all the environment parameters data are sent to cloud using WIFI ESP8266, if any condition crosses certain limits related actuator will be turned ON. The microcontroller will as soon turn on the motor, the user can screen and control parameters through mobile and computer.**

Index Terms - **Arduino Uno, Sensors.**

I.INTRODUCTION

A greenhouse is a closed environment that provides optimal conditions for plant growth A complete greenhouse remote monitoring system first detects indoor environment elements through various sensors and the uploads the measurement signals to the control platforms through wired or wireless methods, and the control platforms remotely controls various terminal valves in the room (water valves, heating temp).The greenhouse remote monitoring system mainly measures indoor, temp, humidity, light, soil moisture. The greenhouse remote monitoring system can also be called the greenhouse environment control system.

II. LITERATURE SURVEY

Designed intelligent greenhouse environment monitoring control system which is based on ZigBee and embedded technology. This system consists of three main components: upper machine processors environmental factors acquisition nodes intelligent control terminal block. It is mainly made up of S3C2440 microprocessor with the ARM920T core, power, clock, reset circuit, LCD TOUCH screen, intelligent control terminal module ZigBee coordinator and environmental factors detection terminal nodes. In this system predictions is done to find out the required solution if any problems occurs in any device connected to the system. the home appliances can be controlled via smartphones using Wi-Fi. here Arduino used as a server system and Wi-Fi as communication protocol.

III. PROCEDURE FOLLOWED IN THE PROPOSED SYSTEM

A.MECHANISM:
* Arduino based greenhouse monitoring system.
* Arduino is programmed with Arduino software.
* LCD display used for information and display reading.
* Sensors are used for sensing all the components.

B.SOFTWARE IMPLEMENTATION:
* Arduino uno (IDE) used for programming (software).
* java language used for programming.

C.HARDWARE COMPONENTS:
* Arduino uno.
* Temperature sensor.
* Light sensor.
* Humidity sensor.
* Soil moisture sensor.
* ESP8266

IV. METHODOLOGY

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The system temperature monitor and control system works according to the temp value set by the user. First it gets the value from the user and maintains the temp on the LED screen for user reference. The temp of the greenhouse is reduced by the fan is placed inside the greenhouse. The temp of greenhouse is increased by using heater which is placed at the floor of the greenhouse to ensure that the whole greenhouse is warmed equally.

LDR detects this, and the light bulbs re switched ON. When there is lighter the light bulbs are turned OFF. But at the light control system controls the light falling on the greenhouse .when there is not enough light the night the system will automatically get turned ON and this has harmful effects on the plants therefore a switch is placed to OFF the lights at times when e feel the lights are unnecessary. Similarly humidity and soil moisture system works
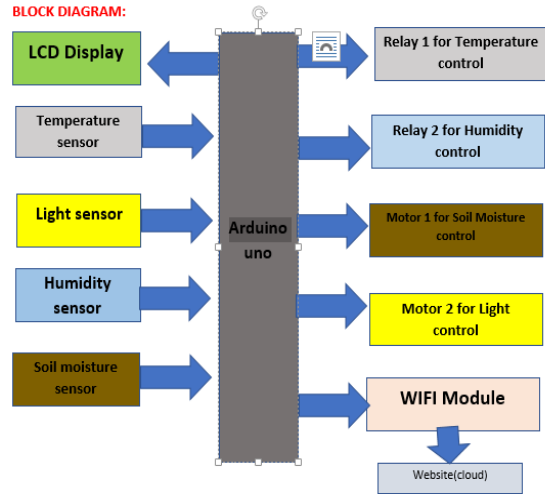
COMPONENT DISCRIPTION
1. IOT and Arduino based greenhouse environment monitoring and controlling project use four sensors to detect the temp, light , humidity and soil moisture in the greenhouse.
2. Temperature sensors is used to detect the temp inside the greenhouse. the Arduino is connected to diff relays. One of the relays is connected to a blower. if the temp is above or below the threshold value ,the Arduino would send signals to turn ON the fan.
3. Light sensor is used to detect the amount of sunlight inside the greenhouse .if the sunlight is above the threshold value, the Arduino would send signals to turn ON the relays which would, in real time, be a shade that would reduce the amount of sunlight.
4. Humidity sensor is used to detect the humidity value and the soil moisture sensor is used to detect the soil moisture .if the humidity value detected by the sensor is above the blower to decrease the humidity and will open the water outlet to increase the moisture in the soil.
5. Soil moisture sensor waster supply for plants is very imp for good growth .so I have used a water pump and the soil moisture for detecting soil moisture.
6. ARDUINO: Arduino is a microcontroller based open source electronic prototyping board which can be programmed with an easy to use Arduino IDE.
7. ESP8266:ESP8266 is a chip used for connecting Arduino to the wifi network.

CIRCUIT DIAGRAM
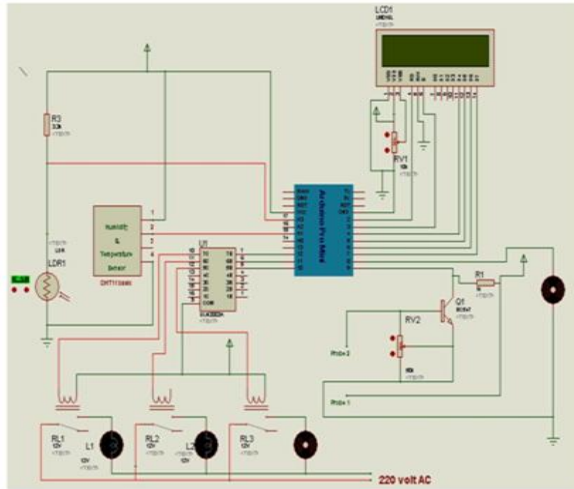
V. RESULT

The greenhouse remote monitoring system will measures indoor, temp, humidity, light, soil moisture. The greenhouse remote monitoring system will also be used for the greenhouse environment control system.

VI. CONCLUSION

The greenhouse monitoring and control system was able to monitor the variation in the temperature humidity light intensity and as well the soil moisture of the greenhouse. the various sensors were able to trigger an actuator based on the various changes in the environment.

Obtained data by using the system will be able to provide the data support for vegetables planting in greenhouse. The system reliable and runs stably. The man machine interface of the software system is friendly. this system provides a good solutions for centralized management of the greenhouse group

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