

IOT BASED WIRELESS SENSORS FOR ENVIRONMENTAL MONITOR AND ALERTS

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Abstract: *The IOT based Weather Monitoring and Reporting System venture is utilized to get Live detailing of climate conditions. It will monitor temperature, moistness, dampness smoke, and light and downpour level. Assume Scientists/nature investigators need to screen changes in a specific situation like a downpour backwoods. Also, these individuals are from better places anywhere. In the proposed article we monitoring the weather monitor and alerting using different sensors for easy access of the data. Here we proposed LM35, Smoke, humidity, light, soil moisture sensors are measure the temperature, humidity, soil moisture sensor, light status and smoke for smart weather and all the data will post into server using internet of things.*

Keywords: *Weather Monitor, IOT, Arduino, Soil Moisture, Wireless Sensors*

I. INTRODUCTION

Climatic change and natural checking have gotten a lot of consideration as of late. Man needs to remain refreshed about the most recent climate states of wherever like a school grounds or some other specific structure. Since the world is changing so quick so there ought to be the climate stations. Here in this paper we present a climate station that is extremely useful for any spots. This climate station depends on IOT (web of things). It is outfitted with natural sensors utilized for estimations at a specific spot and reports them progressively on cloud. To achieve

this we utilized Arduino Uno and distinctive natural sensors like DHT11, soil dampness sensor and downpour drop sensor .The sensors continually sense the climate boundaries and continue transmitting it to the online web server over a wireless association. The climate boundaries are transferred on the cloud and afterward give the live detailing of climate data. This paper likewise centers on the IOT application in the new age of ecological data and gives another worldview to natural checking in future. The framework has been improvement especially in the perspective on building keen city by giving the climate update of a specific spot like a specific office or room.

II. LITERATURE OVERVIEW

In this day and age numerous contamination checking frameworks are structured by various ecological boundaries. Existing framework model is introduced IOT based Weather checking and detailing framework. IOT has become a great area of interests for institutes, big tech companies and obviously users or customers also. Many IOT based concepts have gained so much attention like everything data transfer wireless and smart. Local data storage which converts the raw data to significant information which can further used in many areas. While working on this project we came across some works that have been accomplished in making smart applications using either Raspberry Pi boards or Arduino board which are economical. Most of the applications were built using these boards for example smart city and other automation projects. In [1]”So we can say that this weather monitoring system will be helpful in some smart city projects also. In [2] the authors chose a single sensor ie. Composite DHT11 sensor for reading both temperature and humidity... According to [3] the monitoring systems can provide self-protection to our environment such as protecting public health from the pollution or at least reducing the effects of pollution on the public. It will notify us whenever the temperature is lower than it should be or is higher than normal. It will also automatically notify whether it is raining so one can carry an umbrella or a raincoat. In [4] weather monitoring system was designed using a particle photon which is an Arduino Compatible IoT board. It will also give us morning, evening and night wish messages as it has a Light Sensor attached. The authors in [5] have mentioned a great thing that “implemented the smart weather monitoring in real time simpler and smarter.”

III. EXISTING SYSTEM

In existing system we used sensor measure the weather parameters and which are used to show the data stationary only. Due to that there is no data transfer for longer distances this is the huge limitation of efficient weather station. No updates regarding weather to overcome the all the limitations we proposed the new innovation model of weather station which monitor as well sense data wirelessly using IOT.

IV. PROPOSED SYSTEM

In this proposed model of IOT smart wireless sensor base weather reporting system we used temperature sensor, light dependent sensor, soil moisture sensor, humidity sensor, smoke sensor, LCD,IOT,buzzer all modules are integrated ARDUINO micro controller for smart weather reporting system. This system has the more advantages of the proposed system that are

transfers the data wirelessly through IoT to save time and fast data transfer. All the input output sensors are integrated to the Arduino micro controller with Arduino IDE software. This proposed environmental system is more efficient than others.

V. METHODOLOGY

The proposed plant system contains input sensor LDR which is used to measure the light intensity of the weather, LM35 measures the temperature of the surrounding temperatures, Smoke sensor used to measure the pollution level in the surrounding, Humidity which is used to monitor the humidity data, all the data will be given to the Arduino microcontroller. That Arduino microcontroller data will be displayed on LCD and IOT module. Buzzer which is used to alert the smoke level in the weather. If the smoke level is exceeded than threshold value of the smoke then automatically alerts the buzzer for indication. All these sensor and output modules are executed with the help of the ARDUINO IDE software.

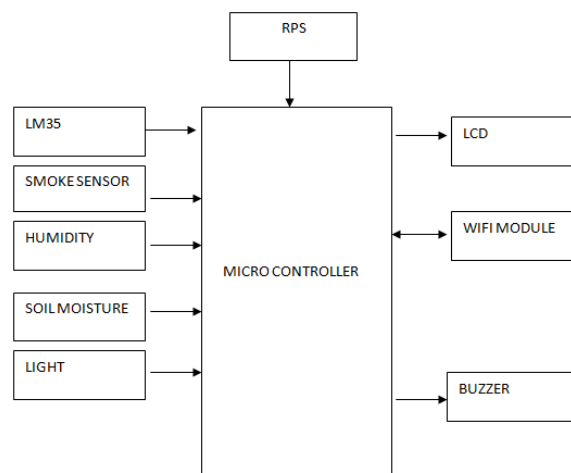


Fig. 1. Block Diagram

VI. FUNCTIONAL DESCRIPTION.

A. Charging Circuit

Regulated power supply is used to produce the required operating voltage for this proposed system. Normally this system converts 230V AC voltage to the required 5V DC voltage for system operation.

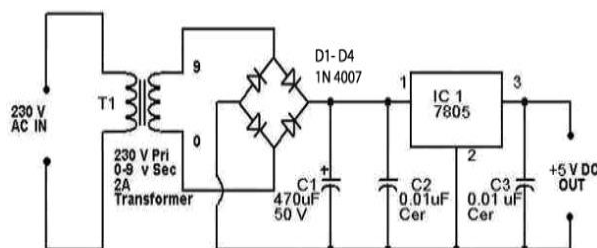


Fig. 2. power supply.

Regulated power supply consisting of step down transformer, bridge rectifier, capacitor filter and voltage regulator which provides constant 5 voltage to Arduino micro controller.

B. Microcontroller

Microcontroller will place the important role of operation. This Arduino collect the data from all sensors and control and monitor the module using Arduino program. ATMEGA328 is the IC name used for ARDUNO. Having 32KB ROM and 2KB RAM



Fig. 3. Arduino

C. LCD Display

Liquid Crystal Display used to display the parameters for status of the proposed system. This can display 32 characters having 2 columns.



Fig. 4. 16*2 LCD Module

D. Temperature Sensor:

Temperature sensor LM35 used for measuring of the temperature. This sensor used for Coal mine temperature monitor. Normally used for heat measurement of the weather and auto represents into IOT and LCD.

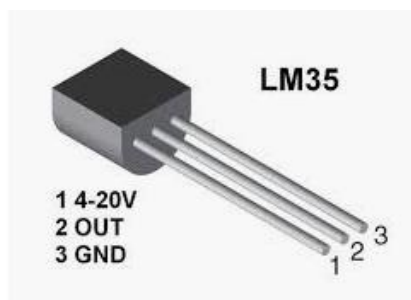


Fig.5. LM 35 Sensor

E. Soil Moisture Sensor (YL-69)

Soil Moisture sensor used to measure the moisture content in the earth. This is indication for the water level or moisture content measurement. Depends on the moisture content its state gives to Arduino micro controller microcontroller shows data in LCD and IOT.

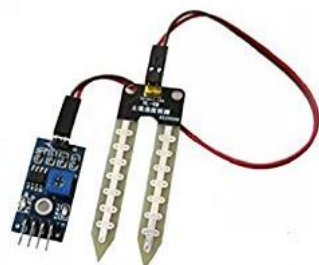


Fig. 5. Soil Moisture sensor

F. Humidity sensor

Humidity sensor is used to sense the surrounding humidity of the coal mine and data will be displays in LCD and iot module. This humidity also is one the important parameter to detect the alerts the weather reporting depends on the weather we will take some decision.



Fig.6. Vibration Sensor

G. IOT MODULE

Internet of things used for controlling any device or monitoring the device status through internet. This proposed system we use this IOT module for taking the all parameters data and post into the cloud called server. ESP8266 modules as IOT module it can operate through wifi frequency concept.



Fig. 6.IOT modem.

H. Buzzer

Buzzer is the output module for alerting of any parameter changes. If any sensor increases the threshold value or if increases then micro controller alert us by using this system.



Fig. 7.Buzzer

I. Smoke Sensor

Mq-6 is used for pollution recognition in coal mines. Its having the auto thresholding value when the pollution limits exceeds then automatically alerts the buzzer and monitoring in IOT for online monitoring for government dashboard.



Fig.8. Pollution Sensor

J. Software

Software is the important parameter to make the device automation. Here we used ARDUINO IDE software for programming write up and execution of entire system

K. LDR Sensor

LDR sensor is used to detect the light intensity of the present weather system. Light parameter measurement also one of the important parameter for light detection. Depends on the day and night intensity of the voltage change due to resistance. The data gives to Arduino micro controller and data will post into IOT module.



Fig.9 LDR module

VII. RESULT AND DISCUSSION

We designed and implemented Agriculture smart weather mentor station. Below hardware circuit shows that getting all weather parameters and which are all displays in LCD and IOT module. We integrate all sensors to micro controller and obtained results successfully.

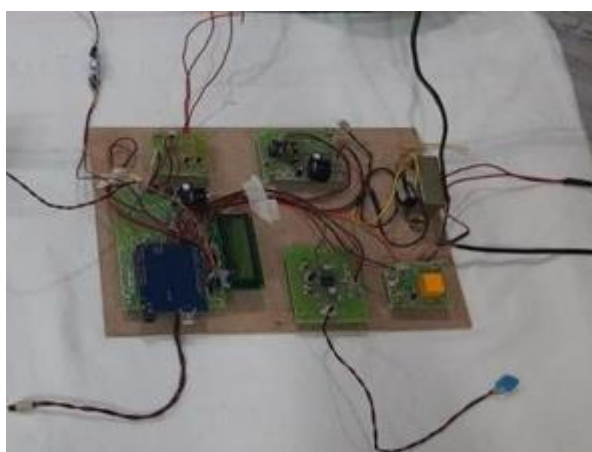


Fig. 10. Output Result1



Fig. 11. Output Result2

VIII. CONCLUSION AND FUTURE WORK

We designed and get automatic implemented IoT weather monitoring system which is integrated with ldr, temperature, humidity, smoke, moisture, IOT, LCD and buzzer. This all input sensors grab the parameters and post data into Arduino microcontroller which is post into IOT module for data transfer wirelessly and monitor d data continuously monitor in LCD, if any alerts will be indicate by using buzzer as well as IOT module.

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