International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 08 Issue: 04 | Apr 2021 www.irjet.net p-ISSN: 2395-0072

Air Monitoring System using IOT

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Abstract - *Pollution is a major issue these days. It is essential to screen Air Quality and monitor it for future. So, we propose an Air Quality observing system that help us to find and check live air quality through IOT. The level of pollution is increasing rapidly due to factors like industrialization, increasing in population, vehicles use which can affect human beings in day-to-day life. Air Monitoring System using IOT is used to monitor the Air Quality over a web server using Internet. It will display the air quality on the LCD as well as on Thing speak so that air pollution can be monitored. This technique uses MQ135 device for watching Air Quality because it detects most harmful gases and may live their quantity accurately.*

***Key Words*: Air Monitor, MQ135 Sensor, Thingspeak, BME280, DHT11, NODEMCU ESP8266.**

1. INTRODUCTION

In this project we will make an Air Monitoring System using IOT in which we will screen the Air Quality over a web server utilizing web and it will trigger an alert when the air quality goes down past a specific level, implies when there are adequate measure of hurtful gases are available noticeable all around like CO2, smoke, liquor and furthermore temperature. It will utilizes air sensor to detect surroundings gases and transmits this information to microcontroller. The sensor associated with forms this information and sends it over to the web. This enables us to monitors air contamination in various zones and makes a move to combat it. Additionally, there's a temperature sensor for estimating the temperature of a space.

1.1 METHODOLOGY:

The model was designed using an Arduino Uno microcontroller, NodeMCU 8266, MQ135 Gas Sensor and a 16 by 2 liquid crystal display (LCD) Screen,BME280 Barometer Sensor,DHT11 Humidity & Temperature Sensor. The system flowchart is shown in figure 2.1 and block diagram/architecture is shown in figure 4.1.

After components are connected, result will display on LCD display For e.g. Temperature & Humidity. Another result as shown in Thingspeak via Internet, here we check live air updates daily.

2. SYSTEM FLOWCHART:

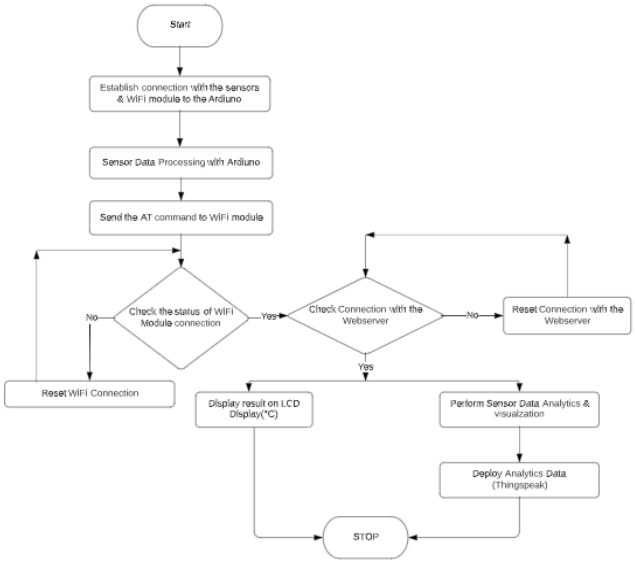

Fig no 2.1

3. COMPONENTS

3.1 NodeMCU module

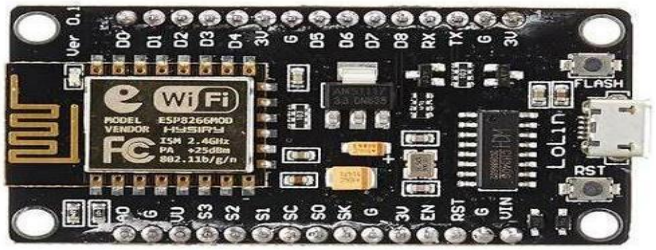

Fig no. 3.1.1

The NodeMCU (Node MicroController Unit) is an open-source software and hardware development surroundings engineered around a cheap System-on-a-Chip (SoC) known as the ESP8266. The ESP8266, designed and made by Espressif Systems, contains the crucial parts of a computer: hardware, RAM, networking (WiFi), and even a contemporary software and SDK. that creates it a wonderful alternative for the internet of Things (IoT) comes of all types.

3.2 Arduino Board

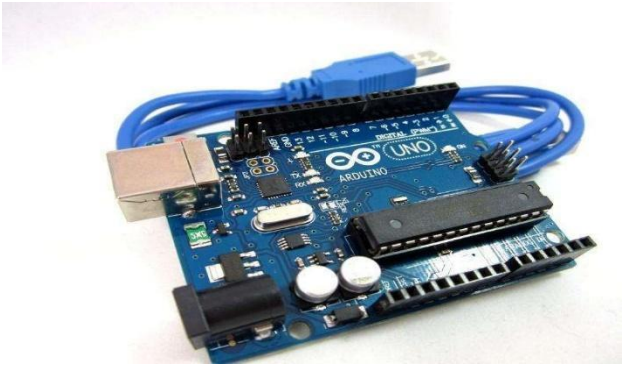

Fig no 3.2.1

The Arduino Uno board is a microcontroller based on the ATmega328. It has 14 digital input/output pins in which 6 can be used as PWM outputs, a 16 MHz ceramic resonator, an ICSP header, a USB connection, 6 analog inputs, a power jack and a reset button.

3.3 MQ135 Gas Sensor:

Fig no. 3.3.1

MQ135 Gas Sensor is an air quality sensor for detecting a wide range of gases, including NH_3, NO_x, alcohol, benzene, smoke and CO_2. Ideal for use in office or factory MQ135 Gas Sensor is an air quality sensor for detecting a wide range of gases, including NH_3, NO_x, alcohol, benzene, smoke and CO_2. Ideal for use in office or factory. MQ135 gas sensor has high sensitivity to Ammonia, Sulfide and Benzene steam, also sensitive to smoke and other harmful gases.

3.4 BME280 Barometer Sensor:

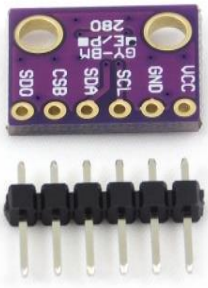

Fig no. 3.4.1

The BME280 sensor module reads barometric pressure, temperature, and humidity. Because pressure changes with altitude, you can also estimate altitude.

3.5 DHT11 Humidity & Temperature Sensor:

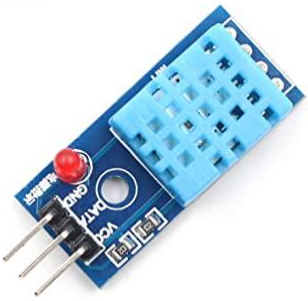

Fig no 3.5.1

The DHT11 is a basic, ultra low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermostat to measure the surrounding air, and spits out a digital signal on the data pin (no analog input pins needed).

4. SYSTEM ARCHITECTURE

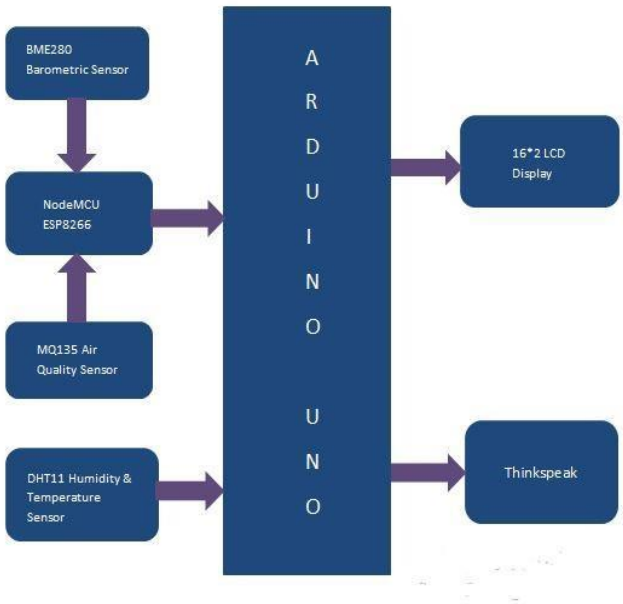

Fig no. 4.1

5. CONCLUSIONS

The framework to screen the conduct of condition utilizing Arduino IDE and Node MCU, IOT Technology is projected to reinforce the nature of air. Utilization of IOT innovation upgrades the approach toward perceptive totally different components of condition, as an example, air quality checking problems. Utilizing the MQ135 gas sensor gives the feeling of various kind of harmful gas and Node MCU will undertake the controls of full procedure. This system helps to create

awareness and precautions of the quality of air that one breathes daily. This device monitors the real - time measurements of air quality.

ACKNOWLEDGEMENT

We are very grateful to our project guide Prof. Dhanashri Bhopatrao who always supported and guided us. We express our immense pleasure and thankfulness to all faculty members of the Department of Computer Engineering of G. V. Acharya Institute of Engineering and Technology.

REFERENCES

[1] "Research on an Iot Based Air Pollution Monitoring System" Vijayakumar Sajjan, Pramod Sharma International Journal of Innovative Technology and Exploring Engineering (IJITEE)ISSN: 2278-3075, Volume-8, Issue- 9S2, July 2019.

[2] "IOT Based Air Pollution Monitoring System" Harsh N. Shah , Zishan Khan , Abbas Ali Merchant , Moin Moghal , Aamir Shaikh , Priti Rane Student, Diploma in Computer Engineering, BGIT, Mumbai Central, India International Journal of Scientific & Engineering Research Volume 9, Issue 2, February-2018.

[3] "IOT based Air Pollution Monitoring System" Devahema , P.V. Sai Surya Vamsi , Archit Garg , Abhinav Anand , Desu Rajasekhar Gupta Student, SRM Institute of Science & Technology, Chennai, Tamil Nadu, India. Journal of Network Communications and Emerging Technologies (JNCET) Volume 8, Issue 4, April (2018).

[4] "An IoT Based Low Cost Air Pollution Monitoring System" Gagan Parmar, Sagar Lakhani, Manju K.Chattopadhyay,School of Electronics,Devi Ahilya University,Indore, India Proceeding International conference on Recent Innovations is Signal Processing and Embedded Systems (RISE-2017) 27-29 October,2017.

[5] "IoT based Indoor Air Quality Monitoring System" Ravi Kishore Kodali and Sasweth C. Rajanarayanan ,Department of Electronics and Communication Engineering, National Institute of Technology, Warangal, Andhra Pradesh 506004, India International Conference on Wireless Communications Signal Processing and Networking (WiSPNET) - March 2019.