DEVELOPMENT OF AIR POLLUTION MONITORING SYSTEM AND RESPIRATORY DISORDERS ALERTER USING IOT

Sandeep K R [1], Manoj S [2], Yogesh U H [3], Ramesh [4], Chandan G N [5]

[1,2,3,4,5] *School of ECE, REVA University, Bengaluru, India*

ABSTRACT

The primary target of Air Monitoring System utilizing IOT(Internet of things) is that the pollution in air is a primary issue nowadays. It is being important to screen air quality and monitor it for a superior future and sound living for all. Here we propose an air quality observing framework that enables us to screen and check live air quality in a region through IOT, and gives an alarm to the end users regarding Asthma, COPD, Respiratory Acidosis, Nausea, Pneumoconiosis and Trachea burn, with the goal that they can avoid the zone of disease. Framework utilizes air sensors to detect nearness of hurtful gases/mixes noticeable all around and always transmit this information. The sensors interface with arduino which forms this information and transmits it over the application. This enables experts to screen air contamination in various territories and act against it. Likewise, specialists can keep a watch broadcasting live contamination close schools, healing centers and other touchy zones, and if framework recognizes air quality issues, it cautions experts with the goal that they can take measures to control the issue.

KEYWORDS: Arduino, Gas sensors, IOT, Blynk.

1. INTRODUCTION

Air contamination happens when the air gets included with amounts that could hurt the solace or strength of people and creatures due to unscientific industrialization. These substances are called air toxins and can be either particles, fluids or vaporous substances in nature. Here we are observing the air quality over web server utilizing web and it will trigger an alert when the air quality goes down past certain edge and alarms the patients who are experiencing the respiratory issue , i.e., when there is an adequate measure of unsafe gases introduce noticeable changes all around like CO, Smoke, Methane gas , dust , it demonstrates the air quality by showing the caution on website page, with the goal that the general population in require, can avoid the amount of contamination. In this IOT venture, one can screen the contamination level from anyplace, utilizing their smartphone. We can introduce this framework anyplace and ready patients when contamination level goes past certain level, either by a ready notification or mail to the client to take well being measures in real time. The deliberate information is sent from the module to any area inside its range and the information can be brought utilizing an application in portable. A tool has been proposed here which will monitor the quality of air in our

environment and alerts us about the related respiratory disorders whenever the air quality goes beyond the threshold.

1.1 Purpose of this paper

Since air pollution is a critical issue that needs to be addressed nowadays, it is important to screen the air quality and monitor it for a superior future and sound living for all. Contamination injures other living life forms, for example, creatures and nourishment edits, and may harm the common or implicit condition. To build a robust system that can measure the air pollution and help to reduce it and to decrease human interference in monitoring the air pollution and provide a healthy environment.

2. EXISTING SYSTEM

A portion of the examination works completed, is as of now to monitor the air quality in the specific region influencing the earth to shrewd. Diverse strategies and techniques are utilized. Namely,

IOT based air pollution monitoring system[1] This work primarily focus on the observing of air quality over a web server utilizing web and will trigger an alert when the air quality goes down past a specific level, wherein they have utilized CO2,smoke, liquor ,benzene and NH3 gas sensors and show the nature of air in PPM on the LCD, and also on site page.

Air and Sound Pollution Monitoring System utilizing IoT [2] The principle center of this work is around to plan an IoT based Air and Sound contamination observing framework which can be gotten to with the assistance of Wi-Fi module and to examine the contamination level of a specific place or site. To get the information from the air, different sensors are utilized and the outcomes are shown on LCD.

3. PROPOSED SYSTEM

In our task we will screen the Air Quality over a web server utilizing web and will trigger the alert when the air quality goes down past a specific level and alarms the patients who are experiencing respiratory clutters, i.e., when there is adequate measure of hurtful gases show noticeable values all around, to be specific CO, smoke, dust, Methane gas. It shows the air quality in PPM units at regular intervals of time and displays an alert in the LCD and as well as on webpage using 'blynk' server

3.1 Requirements

Hardware Requirement

MQ135 Gas sensor, MQ8 Gas sensor, MQ9 Gas sensor, MQ2 Gas sensor, 16X2 LCD, Arduino UNO**,** Wi-Fi module ESP8266

Software Requirement

Arduino IDE**,** Embedded C language

3.2 Working mechanism

System consists of the sensors used for acquiring required data from the atmosphere. Sensors used for measuring air pollutants are MQ7, MQ6, MQ135 and MQ9 are used to determine the levels of carbon monoxide, smoke, cooking LPG gas, alcohol and carbon dioxide. Air pollution sensors measure the quality of air. Data from these sensors are basically analog signals. These analog signals are converted to its equivalent digital form. These are used to transmit data to a remote location the data from system is sent to the Wi-Fi module (ESP8266). It is connected to the microcontroller using MAX 232.The Wi-Fi module makes an interaction with microcontroller using its two ports i.e. transmitter and receiver which is provided on it. The data measured is sent from the module to any geographical location in its range from the data can be fetched using android app in mobile. For that we have to give module the details of WiFi to connect to internet, and then IP address of the website has to be provided.The working as been shown below in the Fig1.
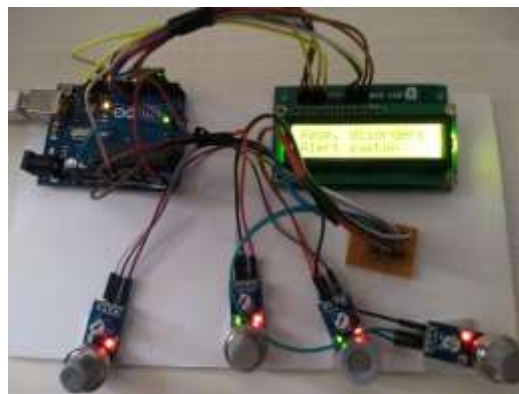

Fig1. Working module

4. RESULTS AND DISCUSSIONS

4.1 Testing and output

1. Connect your mobile with the wifi. Download the Blynk app, create a new blynk account in the application.This account is separate from the other accounts used for blynk forums, one has to be aware of it. An account is essential to save projects and accessing them from any location in the world.

2. After you have logged in, create a new project, choose the hardware component you want to use. Here it is Arduino UNO which is used.

3. Authorization token is a unique identifier that connects the component to the smartphone. Auth token will be sent to your mail use this token in the project file. Download the blynk library and add it to Arduino IDE. Compile it and upload the project file to Arduino board.

4. Tap anywhere to get into the widget box, all the available widgets will be shown here.

5. Run your project when settings are done, then press play. This will swap the display from the editing to play mode , there hardware interaction occurs.

6. The result will be seen in the blynk app and a notification and a email will be sent to our phone displaying pollutants level in air is more so as to take the safety measures.

Fig2. Blynk application when air contamination is normal

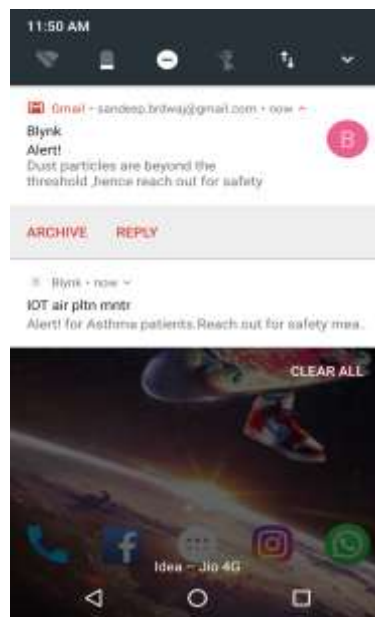Fig3. Alert display in Blynk application when air contamination is above the threshold

Fig4. Email and notification alerts

5. CONCLUSION

The proposed system which is designed shows the simulation output of sensing the carbon monoxide gas, butane gas, smoke, LPG gas. An alert is given when ever quality level goes beyond threshold and then displayed through LCD and email & notification is sent to the smart phone.

The sensor output is pushed to cloud and can be viewed through internet on a blynk server. This is a robust system which is very useful in to check the air quality in environment. This system is user friendly. The results of the project are accurate and hence can be implemented for the safety of the patients who are prone to respiratory disorders.

6. ACKNOWLEDGEMENT

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