



RANGING POLLUTION SMARTLY USING ARDUINO UNO

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Abstract: Now-a-days, pollution is the biggest drawback facing our planet. The pollution may be in any aspects like, air pollution, noise pollution, thermal pollution. Pollution damages our physical health, ozone layer and hence affecting living being and environment. Thus, we must always notice an answer to that, for a healthy future. Hence efforts are required to manage air pollution. In plan of our project is to use sensors which sense the locomotion of pollution. When the variation of pollution crosses the limit, the individuals encircled by the realm gets notified by an alert message of a rise in pollution. So individuals manage the pollution by taking some privileges like limiting vehicles that are inflicting additional pollution in a particular area for some days till the pollution gets controlled. Therefore, we will save several cities from being polluted. Here we provided an IoT-enabled solution for pollution detection.

Index Terms: pollution, IoT, Arduino

I. INTRODUCTION

The main objective of an Air Monitoring system is that the Air pollution is a growing issue these days. It is necessary to monitor air quality and keep it under control for a better future and healthy living for all. Due to flexibility and low-cost Internet of Things is getting popular day by day. With the urbanization and with the increase in the vehicles on road the atmospheric conditions have considerably affected. Harmful effects of pollution include mild allergic reactions such as irritation of the throat, eyes and nose as well as some serious problems like bronchitis, heart diseases, pneumonia, lung and aggravated asthma. Monitoring gives measurements of air pollutant and sound pollution concentrations, which can then be analysed, interpreted and presented. This information can be applicable in many ways. Analysis of monitoring data allows us to assess how bad air pollution is from day to day. The commercial meters available in the market are fluke CO-220 carbon monoxide meter for CO, Amparo CO2 meter for CO2, Forbix Semicon LPG gas leakage sensor alarm for LPG leakage detection.

II. LITERATURE SURVEY





Air pollution is a serious public health problem society is facing. The World Air Quality Index project will not be able to check each and every area and randomly checks some areas. Even calculate pollution in all areas, they can give the index values for every area after some time. Reasons for pollution include burning of fuel, Agricultural activities, Exhaust from factories, Mining operations, Indoor pollution. Different Air pollution, Particulate Matter, Ozone, Nitrogen oxide, sulphur oxide. To reduce pollution reduce or eliminate fire and wood stove use, Avoid burning leaves, trash, etc. In the existing system, pollution is already a heavy public health issue that society has been facing. **Gilboa(2014):** Looked at the association between environmental contaminants ambient air pollution at traffic exposures in America during the period of his health issues. TRAP was defined as distance to free way or long road of traffic density with 200mts of employees residence and company.





The existing system after checking need to wait some days of time to give the results. Time taking is the main drawback, More human power, High cost, more information about a specific city are required. All measurements are based on hourly readings: For instance, an AQI reported at 8AM means that the measurement was done from 7AM to 8AM. Gaps noticed are in the existing system the results are shown late and the notification to every individual is not possible. The range changes for every season so the device faces difficulty in adapting to the environment.

III. PROPOSED SYSTEM

Pollution is one in every of the key issues that have an effect on diversity, ecosystems, and human health worldwide by contaminating soil and water. This issue can't be resolved through standard tools and ancient methods. System is designed, implemented and tested to monitor the pinpoints of air pollution of any area. It consists of a micro-controller, gas sensors mobile unit a temporary memory buffer and a web server with internet connectivity which collects data from different locations along with coordinate's information at certain time of day. The readings for particular location are averaged in a closed time and space. The Global Positioning System(GPS) module is attached to a system to provide accurate representation of pollution sources in an area. We propose an air quality as well as sound pollution monitoring system that allows us to monitor and check live air quality as well as sound pollution in an area through IOT. Systems uses air sensors to sense presence of harmful gases/compounds in the air and constantly transmit the data. System keeps measuring sound level and reports it. Monitoring gives measurements of air pollutant and sound pollution concentrations.

COMPONENTS

Name	Image of Component	Description	Use
Arduino Uno		The arduino uno is the microcontroller board. It uses the input and output 14 digital pins and 6 analog data pins. We write the code in Arduino IDE and we dump the code into Arduino uno.	We can use Arduino software or hardware. The light will turn on while arduino is taking the input and produce the output based on actions.
ESP 8266(Wi-Fi Module)		The ESP 8266 is a Wi-Fi microchip	This ESP 8266 is used for connecting the single chip modules with Wi-Fi network. By this ESP 8266 and transfer the data from one network to another network
MQ 135 Gas Sensor		The MQ 135 is the gas sensor.	Used to sense the gases like co ₂ , So ₂ ,Oxygen, Alcohol etc.
Bread Board		The Breadboard have the pins to connections in this bread board we have four levels the top most level is positive and the last one negative in this first and last level have the horizontal power supply and the remaining two middle levels have the same vertical power supply	Used to connections through the breadboard vertical power and horizontal power supply

<p>Buzzer</p>		<p>The buzzer is used to do signaling and it give noise and it is an electrical device</p>	<p>Gas sensor senses the gas pass the information to the buzzer through the arduino the buzzer make a noise to indicate us.</p>
<p>1k ohm resistor</p>		<p>The variation in reading between a 1Kohm/volt and a 20Kohm/volt can bevery significant (depending on the circuit under test. .</p>	<p>Voltages were measured using a 1Kohm/volt meter and 20Kohms/volt meter</p>
<p>10kpotentiometer</p>		<p>The ohm is the SI unit of electrical resistance; a kilo ohm is 1000 ohms. So a 100K potentiometer has ten times the resistance of a 10K potentiometer.</p>	<p>A potentiometer is a three-terminal resistor with a sliding or rotating contact that forms an Size scaled 10k and 100k pots that combine traditional mountings and knob shafts with newer and smaller electrical assemblies.</p>
<p>220 ohm resistor</p>		<p>A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element.</p>	<p>Resistors are used to limit current flow, to adjust signal levels, bias active elements, and terminate transmission lines among</p>


			other uses.220R / 220 ohm Resistor Colur Code
16X2 LCD		An LCD is an electronic display module which uses liquid crystal to produce a visible image.The 16x2 LCDdisplay is a very basic module	commonly used in DIYs and circuits. The 16x2 translates a display of 16 characters per line in 2 such lines.In this LCD each character is displayed in a 5x7 pixel matrix.

Table 1 Components

IV. PROPOSED SYSTEM AND ARCHITECTURE

The sensor can detect the ranging of the pollution. The sensor can detect the ranging of the pollution in that area and as the range exceed the limit, it notifies the surrounded people about the increasing pollution. When the values will be less than 1000 ppm, then LCD and web page will display the “fresh-air”. Whenever the value will increase 1000ppm then the buzzer will start beeping and LCD and web page will display “Poor Air”.

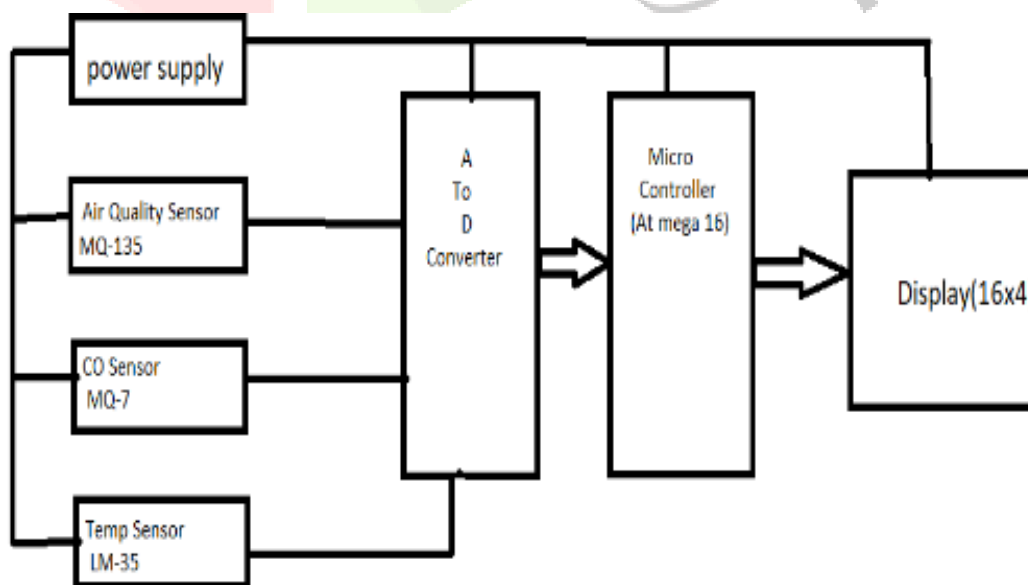


Fig1: Architecture of pollution Control.

V. IMPLEMENTATION

Step1:connect the ESP8266 to the Arduino.

Step2:connect vcc to the arduino 3v of arduino.

Step3:ESP8266 works in 3v and it will not communicate with arduino

Step4:this can be done connecting 3 resistors non parallelly

Step5:this is a low cost device works powerfully

Step6:it connect with devices using IOT platforms

Step7:then we are connecting to MQ135

Step8:Connect VCC and ground pin to arduino.

Step9:At the end we will connect to digital display.

Step10:pin1 to be connected at bottom.

Step11:Connect pin 4 to 12 of arduino.

Step12:Connect 5 to bottom of arduino.

Step13:Connect 5 to 11 pin of arduino

Step14:connect pin 11 to 12 of arduino..

Step15:connect pin 14 to pin 2 of arduino

Step16:Connect ground to pin 16

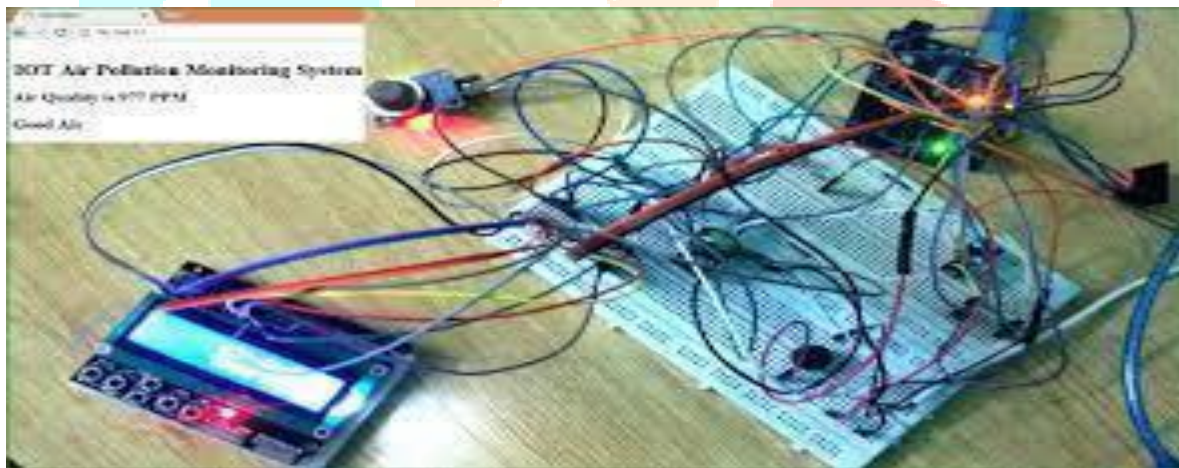


Fig2:Connection of arduino

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COM3 (Arduino/Genuino Uno)
|
| Send
OK
bBÖ†@eRcâuR%,#`BiyÉÉyDiyÅI□
[System Ready, Vendor:www.ai-thinker.com]
AT+CWMODE=2
no change
AT+CIFSR
192.168.4.1
OK
AT+CIPMUX=1
OK
AT+CIPSERVER=1,80
OK
 Autoscroll
Both NL & CR
9600 baud

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Fig 3:Result Screenshot

VI. CONCLUSION

Air pollution is the biggest drawback faced by the planet nowadays as verbal lead. Pollution and visual data concerning lead pollution and visual data concerning lead pollution causes nice impact on families. Environment lead pollution, which area unit exposed to vehicle exhaust in high traffic areas. Within the short-run, there area unit several intermediate solutions for pollution. However of these solutions need immediate actions.

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AUTHORS PROFILE



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