AIRNOM

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Abstract: There is the rapid increase in the air and noise pollution because of increasing of use of vehicles, mobiles, constructions etc. These project will detect the air pollution and noise pollution by using the sensors like gas sensors which will have module for the carbon dioxide, humidity and temperature sensors, modules for the combustible gases, sensors for the carbon monoxide, microphone. Here we are using arduino board. Then we will connect all the sensors and with the use of the code we will able to detect the how much proportion of components like carbon dioxide, carbon monoxide etc. are present in the air, from which we will able to know the pollution in the air and by using microphone as the noise sensor we can detect the measurement of noise pollution which is in the environment. Laptop is used for the display.

Keywords: sensors module for the carbon dioxide, humidity and temperature sensors, modules for the combustible gases, sensors for the carbon monoxide, noise sensors, Arduino model, WiFi module, Pc.

1.   INTRODUCTION

Rapid growth of urbanization is leading to the serious problem of the air and noise pollution. Air pollution is cause from the burning of fossil fuels such as coal, oil, natural gas and gasoline to produce electricity and power to vehicles. Carbon monoxide gas from motor vehicle exhaust or the sulfur dioxide released from factories. Secondary pollutants are not emitted directly. Ground level Ozone is the prominent example of a secondary pollutant.

Noise pollution is caused due to Traffic noise (cars, buses, trucks), planes, construction noise, home applications, industrial noises, etc.

The diseases caused due to air pollution is asthma, provoke development or profression of chronic illness including lung cancer, chronic obstructive pulmonary diseases and emphysema.

Noise pollution can caused both health and behavior unwanted sound (Noise) can damage psychological and physiological health. Noise pollution can cause hypertension, high stress levels, hearing loss, sleep disturbancess and other effects.

This project aim to detect the level of air pollution and noise pollution which is in the environment and we will know these by the taking help of sensors which is connected to the arduino board and the arduino board is connected to the laptop by USB cable, by executing the code we will able to detect the level of the air and noise pollution. From this project we can prevent rapid growth of air and noise pollution.

2.   RELATED WORK

Mobile Sensor Data EngiNe (MOSDEN), a collaborative mobile sensing framework designed to capture and share sensed data between multiple distributed applications and users. PEIR, the Personal Environmental Impact Report, is one of the first platforms for opportunistic sensing which estimates personal exposure to pollution and environmental impact based on location data sampled from user mobile phones. The collected data and exposure metrics are available for personal usage and can be viewed through a web interface. Common Sense is a sensing system which allows individuals to measure their personal exposure to air pollutants, while the CitiSense project aims to monitor environmental conditions and air pollution to which users are exposed to during their daily activities. The mobile phone analyses the data from a small wearable sensor to provide real-time feedback to the user about the ambient air pollution. All collected data is sent to the back-end server for further analysis and visualization so that users can observe their personal historical data.

3.   SYSTEM ARCHITECTURE

This project aim towards detection of the air pollution and noise pollution by using sensors and arduino board. The sensor which are used are module for the carbon dioxide ,humidity and temperature sensors, modules for the combustible gases, sensors for the carbon monoxide. This sensors are connected to the arduino board. The arduino board is connected to laptop for display. This project will show the proportion of the component which are contain in the air, as some components are dangerous if the proportion is high. The unnecessary sound is referred as the noise pollution, which is harmful. So to detect the noise pollution we will use noise sensors.
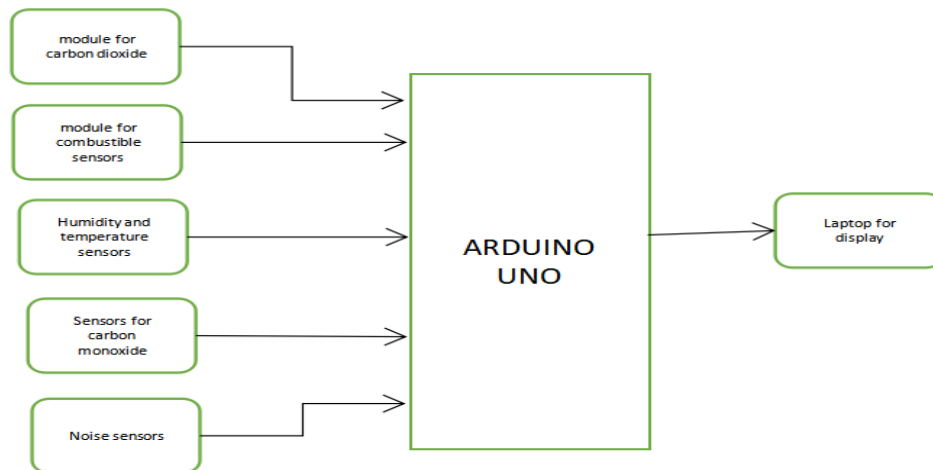

FIG 1. SYSTEM ARCHITECTURE

4.   HARDWARE REQUIREMENTS

ARDUINO UNO:

FIG 2. ARDUINO UNO

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board and a piece of software, or IDE that runs on your computer, used to write and upload computer code to the physical board.

MODULE FOR CARBON DIOXIDE:

FIG 3. SENSOR MODULE FOR CO_2

The output voltage of the module falls as the concentration of the CO_2 increases. The potentiometer onboard is designed to set the threshold of voltage. As long as the CO_2 concentration is high enough (voltage is lower than threshold), a digital signal (ON/OFF) will be released. It has MG-811 sensor module onboard which is highly sensitive to CO_2 and less sensitive to alcohol and CO, low humidity & temperature dependency. All components have industrial quality for stability and reproducibility. Onboard heating circuit brings the best temperature for sensor to function. Internal power boosting to 6V for heating sensor best performance. This sensor has an onboard conditioning circuit for amplifying output signal.

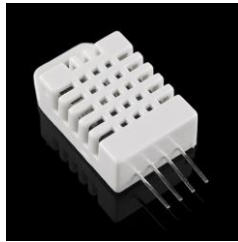**HUMIDITY AND TEMPERATURE SENSORS:**

FIG 4. HUMIDITY & TEMPERATURE SENSOR

The RHT03 (also known by DHT-22) is a low cost humidity and temperature sensor with a single wire digital interface. The sensor is calibrated and doesn't require extra components so you can get right to measuring relative humidity and temperature.

MODULE FOR COMBUSTIBLE GASES:

FIG 5. SENSOR MODULE FOR COMBUSTIBLE GASES

- High sensitivity to LPG, iso-butane, propane
- Small sensitivity to alcohol, smoke.
- Fast response.
- Stable and long life
- Simple drive circuit

SENSOR FOR CARBON MONOXIDE:

FIG 6. SENSOR FOR CO

This is a simple-to-use CO sensor, suitable for sensing CO concentrations in the air. The MQ-7 can detect CO-gas concentrations anywhere from 20 to 2000ppm.

This sensor has a high sensitivity and fast response time. The sensor's output is an analog resistance. The drive circuit is very simple; all you need to do is power the heater coil with 5V, add a load resistance, and connect the output to an ADC.

NOISE SENSOR:

FIG 7. NOISE SENSOR

This module allows you to detect when sound has exceeded a set point you select. Sound is detected via a microphone and fed into an LM393 op amp. The sound level set point is adjusted via an on board potentiometer.

5.   CONCLUSION

This project detects the level of the air and noise pollution. module for the carbon dioxide, humidity and temperature sensors, modules for the combustible gases, sensors for the carbon monoxide detects air pollution and noise sensor detects noise pollution This project is easy to handle and sensors are not much costly so we can implement it.

6.   FUTURE WORK

For the future work we can make an android application and there we can store the datas and we can also use the cloud server.

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