IOT Based Air & Sound Pollution Monitoring System

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ABSTRACT

In this digital era every country try to dominate each other for that they focus on industry growth, but in this rapid growth of industry we forgot this rapid growth can harm nature. This chemical plant can emit harmful chemical that to dangers to breathing this air. To overcome this issue we created system that can measure air pollution with help of harmful gas, this massive pollution can harm every living being in upcoming years.

In this we use IOT technology to obtain data from sensor, this sensor sense toxic gas like CO_2, SO_2 and CO also grabbed high decibel sound. This data we can see without visiting actual location for that we have mobile application in which we get notify by the system and its report.

KEYWORDS: air pollution, sound pollution, IOT, sensors, monitoring system, Fire Brigade

1. INTRODUCTION

Day by day technology is evolving also introducing new technology to improve human lifestyle, Internet of thing (IOT) is a one of the emerging technology used in system. IOT in which they have sensor, software and network which is a connecting medium. This are basic thing are used to build IOT technology. Which is used to gather information from sensor and prepare report in software and notify to the user. This technology can be implemented in home application. In this smart city IOT is meanly use concept in whole world which can be implemented in every city. Back in earlier days it's really difficult to measure air pollution also it's hard to visit each places and measure air quality for that we need large amount of human efforts which was not very efficient also. This issue we can solve with the help of IOT technology. Which is very effective and feasible with low cost. IOT allows to interchange information among devices. This information sharing occurs in computer network.

Air and sound pollution this are two main component that are effecting every living being on the earth, so we need to control this pollution. Purpose of this system to calculate pollution in the air and calculate sound level. To calculate pollution we use sensor which sense harmful gas then this sensor generate data and transfer this data to users. In Tradition method for calculating pollution, person need to visit each and every places then need to collect data, after this data need to analyze it and Build report of that site and publish this report to peoples. This method is time consuming also data is not accurate. To overcome this issue IOT system build Air and sound pollution monitoring system which is used to collect data from polluted air and build the report for the people. We can monitor this data on computer system, we don't need physical presence to run this system. Through this accuracy of report is increase also it can collect the data from remote places. This system we can implemented in forest also if anywhere fire take places then by using this system it can notify to fire station, so we can save life of wild animals.

2. LITERATURE REVIEW

Primary Goal of this system to make human life easier by using technology, IOT plays important role to build next generation software. It is important to detect wide range of toxic gas with less human interference and less cost. IOT system is built on sensor this sensor are long life lasting and cheap. Automated air quality measuring mechanism is much needed for us when we are thinking of smart city, unpolluted air is basic necessity in smart city. In India pollution is big problem, Delhi is most polluted city in the world. Following are some metropolitan city with pollution rate, this rate is called as AQI which is Air Quality index.
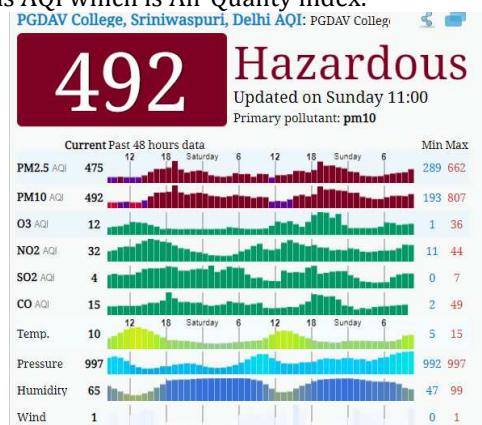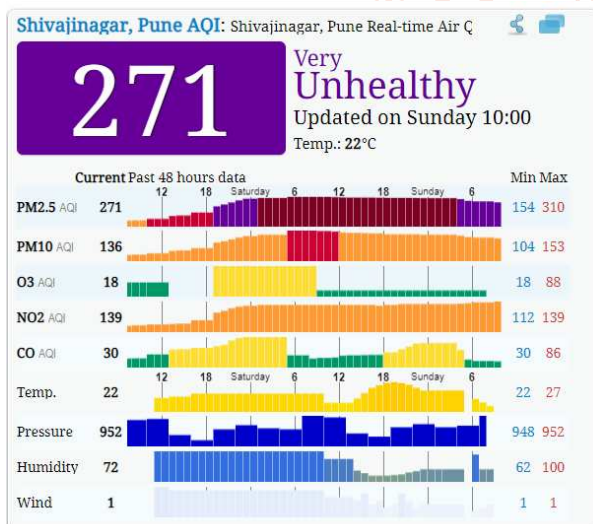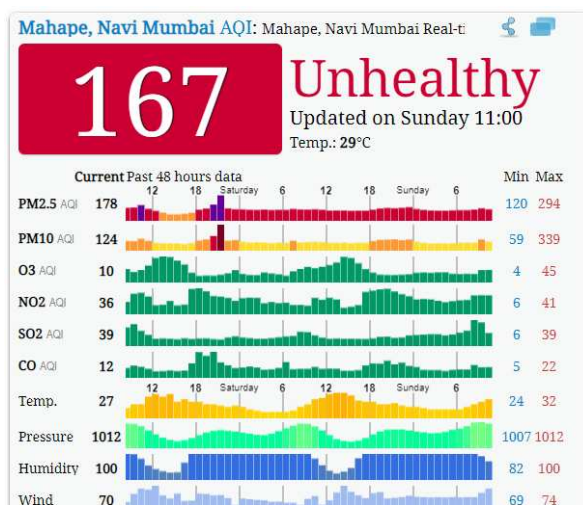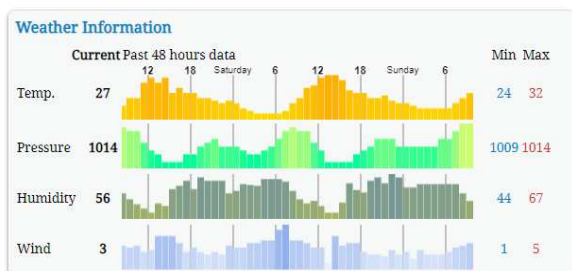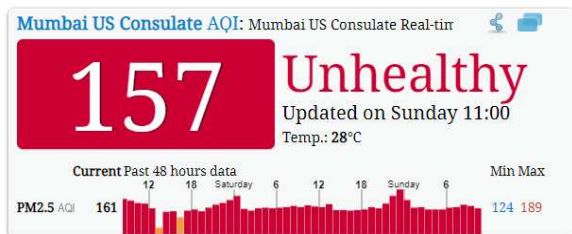
This are some report for Air pollution, we prepare some reports for sound pollution are as follows.

City	Country	Average Hearing Loss (years)	Rank
Delhi	India	19.34	1
Mumbai	India	18.53	0.98
Cairo	Egypt	18.03	0.89
Madrid	Spain	16.26	0.68

Table 1.1 Average Hearing Loss

| Zone	Time	Optimum Level
Residence	6:00 -22:00	55
Residence	22:00-06:00	50
School	Recess	55
Industrial/Commercial Sites	6:00 -22:00	68
Industrial/Commercial Sites	22:00 -6:00	63

Goal of this system:-
- ➢ By building this system we can monitor the system remotely.
- ➢ Accuracy to measure pollution is increase.
- ➢ By this report we will try to minimize the pollution level, for that we need to plant trees in nearby area.
- ➢ Those Carbon emitting power plant we need to shut down.
- ➢ We need to make awareness among people, those substances that are harmful for nature that product we need to stop using it.
- ➢ This is a first step towards smart city and this better future for the next generation of people.

3. ARCHITECTURE

To aim to build this system is that we can monitor Air and Sound pollution, by capturing data from the sensor. To build this system we need some basic components which is easy to available in the market, Such as sensor and LCD display. For healthy lifestyle we need to control air pollution also we need monitoring system, this we can achieve by IOT Technology. This system have air and sound sensor which is used to sense the air quality and sound level. Air sensor check whether harmful gases are present are in the air also check sound level in that area. After that it make report and send on user's mobile device. MQ2 is an air sensor used in this system

Block diagram of IOT Air and sound pollution monitoring system.
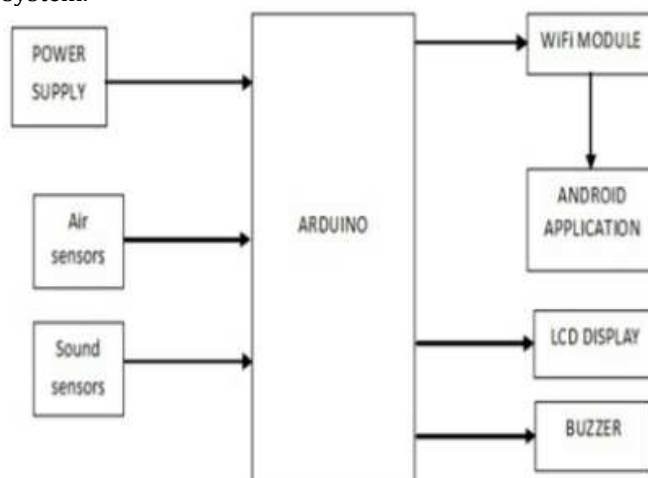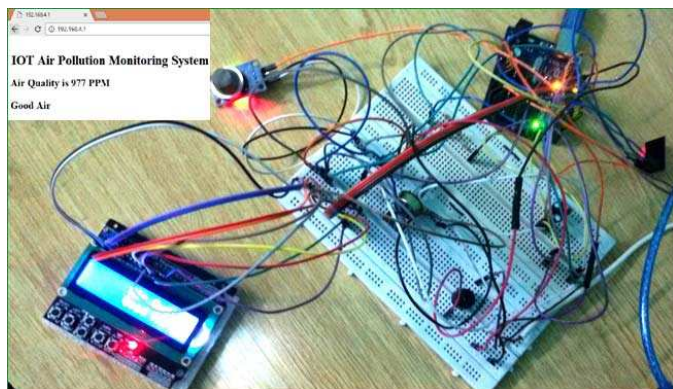
4. Working of module:- To build Air pollution and sound pollution system we need following components

- MQ135 Gas sensor
- Arduino Uno
- Wi-Fi module ESP8266
- 16X2 LCD
- Breadboard
- 10K potentiometer
- 1K ohm resistors
- 220 ohm resistor
- Buzzer

Arduino Uno is a main devices which is work as brain of all component. MQ135 Gas sensor sense smoke, CO2 and some other gases. This sensor is connected with Arduino Uno. Following are output will show on LCD.

Air Quality	Output
Less than 1000 PPM	Fresh Air
More than 1000 PPM but less than 2000 PPM	Poor Air, Open Windows
More than 2000	Danger! Move to fresh Ai

5. Result

The output of this device is provided by using wifi module by which we can show on any device. This monitoring system we can implement in every city and villages. Sensor sense data and give result in PPM, which is an air quality measuring technique. When Air Quality is more than 1000 PPM buzzer start beeping and started to notify all the user in particular area so people can move to other location.

6. Conclusion

By this system we can move towards healthy lifestyle also this will impact on every human being. By using this device all government bodies maintain their records, even common people also track record of polluted air. When we start measuring air quality then we can start introducing new technique to clean bad air. This are latest technology used into this system so we can easily implemented into any city.

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