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IoT BASED AIR AND SOUND POLLUTION MONITORING SYSTEM

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Abstract: Now a day in metropolitan cities air and noise pollution becomes serious issues, due to high decibels and toxic gases present in the environment which directly effect on humans health and thus needs a special attention. Therefore, it has now become necessary to control the pollution (air and noise) to ensure healthy livelihood and better future. In this paper, an effective implementation for Internet of Things is used for monitoring atmospheric conditions of environment like air pollution and sound pollution. This paper presents a conceptual architecture for a versatile, flexible and cost efficient for monitoring the air and sound quality of a particular site. 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. System uses air sensors to sense presence of harmful gases /compounds in the air and constantly transmit this data. Also, system keeps measuring sound level and reports it.

Keywords: Sound level, Gases, IOT, Pollution, Sensor

I INTRODUCTION

In this paper System uses air sensors to sense presence of harmful gases/compounds in the air and constantly transmit this data. Also, system keeps measuring sound level and reports it. The sensors interact with raspberry pi which processes this data and transmits it over the application. This allows authorities to monitor air pollution in different areas and act against it. Also, authorities can keep a watch on the noise pollution near schools, hospitals and no honking areas, and if system detects air quality and noise issues it alerts authorities so they can take measures to control the issue. Some future consumer applications envisioned for IOT sound like science fiction, but some of the more practical and realistic sounding possibilities for the technology include: Receiving warnings on your phone or wearable device when IOT networks detect some physical danger is detected nearby. Self-parking automobiles. Automatic ordering of groceries and other home. Automatic tracking of exercise habits and other day-to-day personal activity including goal tracking and regular progress reports. Network

Devices and the Internet of Things All kinds of ordinary household gadget scan are modified to working an IOT system. Wi-Fi network adapters, motion sensors, cameras, microphones and other instrumentation can be embedded in these devices to enable them for work in the Internet of Things. Home automation systems already implement primitive versions of this concept for things like light bulbs, plus other devices like wireless scales and wireless blood pressure monitors that each represents early examples of IOT gadgets.

II LITERATURE SURVEY

The air and sound pollution monitoring system is absolutely important for detecting wide range of gases, also sensors have long life time, easily available, less cost, easy to handle and are compact. Quality of air can be checked indoor as well as outdoor. This system has simple drive circuit, works on real time and has visual output. The main objective of this paper is to ensure that the air and sound pollution is monitored and kept in control by taking measure accordingly. The proposed paper have certain limitations regarding

humidity which should be less than ninety-five percent and exact measurement of contaminating gases cannot be detected in ppm. This paper can be used for monitoring pollution level and also to prevent excess of pollution which can cause huge problem in future. This paper gives an idea on how we can give instant alert to the authorities. The cost effective IOT technology is used. Hence air and sound pollution is monitored by using this technology. [1]

The Automatic Air & Sound management system is a step forward to contribute a solution to the biggest threat. The air & sound monitoring system overcomes the problem of the highly-polluted areas which is a major issue. It supports the new technology and effectively supports the healthy life concept. This system has features for the people to monitor the amount of pollution on their mobile phones using the application. So, it becomes very reliable and efficient for the Municipal officials along with the Civilians to monitor environment. Letting civilians also involved in this process adds an extra value to it. As civilians are now equally aware and curious about their environment, this concept of IOT is beneficial for the welfare of the society. And it is implemented using the latest technology. [2]

This IOT based air and noise pollution monitoring device is a great step towards a healthy livelihood. With the help of this device not only the municipal authorities but even the common people can participate in the process of controlling pollution and ensure safe environment. These automatic devices, once installed are capable of continuously tracking the pollution level and analyze the detected information. The most highlighting feature of this device is that the output is represented in digital as well as analog format with the help of a simple mobile application which is usable on all android devices like smart phones, tablets, PDA's etc. The device itself is very eco-friendly and does not harm the environment in any way. Moreover, it is based on one of the modern technology and also inexpensive as compared to other technologies developed so far and can be installed anywhere. [3]

For creating the system, first we did the research based on the system about IOT and various sensors. Sensors of air and sound based on availability and economical price were selected. For the interaction of internet with the system we are using a Wi-Fi module which is connected to the microcontroller through the serial port. So, the measured data is sent from the module to any location with its range from the data can be fetched using a laptop /mobile. We have tested this system at various places. We have used it at the places where standard devices for the measurement of pollutants are installed to compare those measured values with our system output values. [4]

The Automatic Air & Sound management system is a step forward to contribute a solution to the biggest threat. The air & sound monitoring system overcomes the problem of the highly-polluted areas which is a major issue. It supports the new technology and effectively supports the healthy life concept. This system has features for the people to monitor the amount of pollution on their mobile phones using the application. To implement this need to deploy the sensor devices in the environment for collecting the data and analysis. By deploying sensor devices in the environment, we can bring the environment into real life i.e. it can interact with other objects through the network. Then the collected data and analysis results will be available to the end user through the Wi-Fi. The data can be an important source when addressing the issue of the impacts of motorcycles at idles (e.g. waiting for a green light) on air quality. Moreover, to achieve real-time monitoring, the data of CO concentration in a particular place could be reviewed from mobile communication devices, such as PDAs, smart phones, and tablet PCs to help keep air quality in check.[5]

III PROBLEM DEFINATION

Air and sound 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.

Here 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 particular areas.

IV PROPOSED SYSTEM

This system is made to fulfill the purpose and need of the society to monitor and check the live air quality and sound pollution in an area through IOT. The system uses air sensors to check the presence of harmful and hazardous gases/ compounds [such as Methane, propane, Butane, alcohol, noxious gases, carbon monoxide etc.] in the air and also uses the sound sensor to keep measuring sound level in the surroundings. MQ2 is the air sensors which are used to collect air pollutants and a sound sensor module mic is used to capture sound. These sensors interact with Arduino which processes this data and then transmit it over the mobile application. To send the data over remote location WIFI modem is also installed. And whenever the air pollution is detected, a buzzer immediately beeps and when there is a noise pollution an LED starts blinking continuously. With this system not only the authorities but also the localized people can check the transmitted data through their mobile phone and that too without spending single penny and the people can act against it on their level and try to bring the pollution level under control. This system would contribute as a part in the building of a healthy society.

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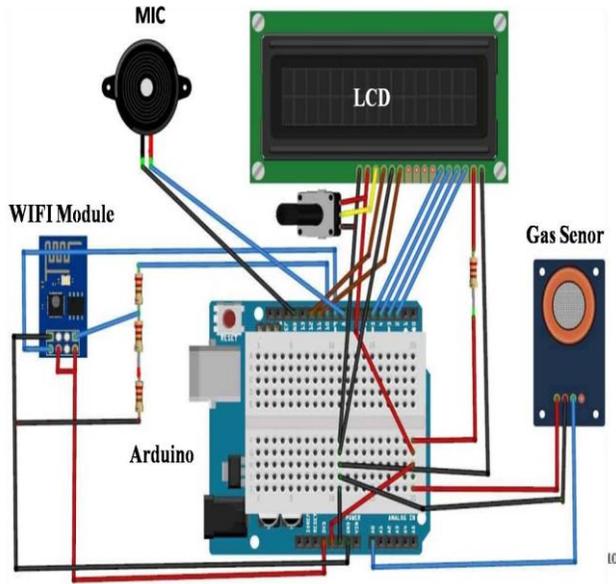


Figure 1.: System Architecture

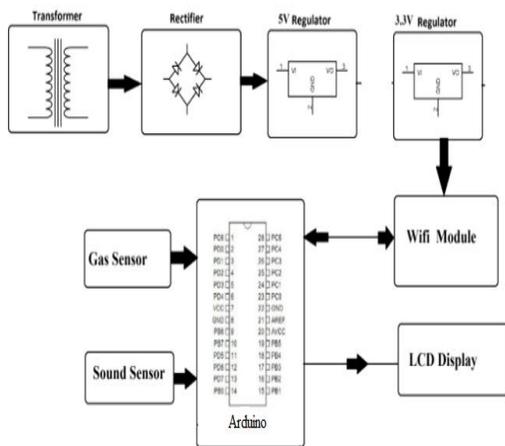


Figure 2.: Block Diagram

V CONCLUSION

In this paper, an effective implementation for Internet of Things is used for monitoring atmospheric conditions of environment like air pollution and sound pollution. This paper presents a conceptual architecture for a versatile, flexible and cost efficient for monitoring the air and sound quality of a particular site. 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.