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IOT BASED AIR AND SOUND POLLUTION MONITORINGSYSTEM

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ABSTRACT

We are introducing a system through which thelevel of sound and the existence of the harmful gases in the surroundings can be detected.This article proposes and analyse a system which is used for air and sound pollution monitoring. The system is fully Internet of Things (IOT) based and highly desirable in field of pollution control. In this system we can detect the level of pollution (Air or Sound) time by time. The article explains the different units such as hardware and software used in the proposed system and also explains the modelling and working of the basic components used in the proposed system such that IOT and its working. This system keeps on measuring the sound level and air pollution and collects the data. This allows authorities to monitor air and sound pollution in different areas and act against them.

INTRODUCTION

The main aim of this paper was to design and implement an efficient monitoring system through which the required parameters are monitored remotely using internet and the data gathered from the sensors are stored in the cloud and to project the estimated trend on the web browser.It is necessary to monitor air quality and keep it under control for a better future and a healthy living for all. Here we propose an air pollution as well as sound pollution monitoring system that allows us to monitor and check live air pollution as well as sound pollution in an area through IOT, Project uses air sensors to sense presence of harmful gases/compounds in the air and constantly transmit this data. Also, it keeps measuring sound level and reports it. The sensors interact with Ardiuno 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. 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 a particular areas through IOT. System uses air sensors to sense presence of harmful gases/compounds in the air and constantly transmit this data to microcontroller. Also system keeps measuring sound level and reports it to the online server over IOT. The sensors interact with microcontroller which processes this data and transmits it over internet. This allows authorities to monitor air pollution in different areas and take action against it. Also authorities can keep a watch on the noise pollution near schools, hospitals

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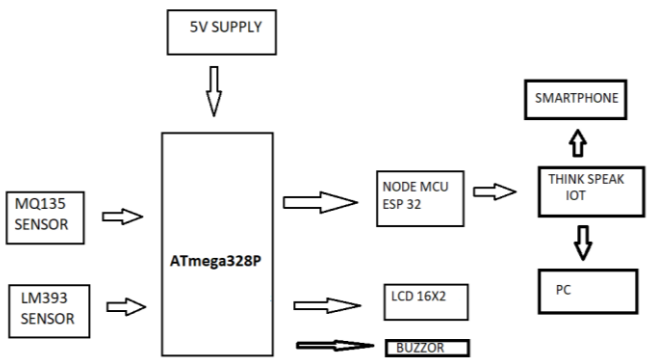
and no horn areas, and if system detects air quality and noise issues it alerts authorities so they can take measures to control the issue.

LITERATURE REVIEW

The motive of making a smart city can be fulfilled by using technology, thus making the life better and also enhancing the quality of services, therefore meeting every individual's needs. With modern technology in fields of information and communication, it has become easy to interact with the authorized people of city to tell the whereabouts of the area or city, how well the city is developing and how to make it possible to achieve a better life quality. In this system, an application was created to make one more step in the fulfillment of the goal. An area is analyzed for evaluating how much pollution is affecting the area. The components of gases and their amounts are calculated and checked. If the amount is higher than normal then the officials are reported about it. After that the people are made to clear the area and taken to a safe place. The combined network architecture and the interconnecting mechanisms for the accurate estimation of parameters by sensors is being explained and delivery of data through internet is presented. Some of the research work made for monitoring the pollution parameters in a particular location in order to make the environment safe and that area smart. Different methods were used in the past and are described in this section. First is Smart Environment Monitoring using Wireless sensor networks in which the main focus was on the developing an environment free of pollution by making it smart. Wireless sensors are fitted all over the city and in public transports. By monitoring all the sensor networks, all the environmental happenings can be gathered as a streaming database to analyze the environmental position. The monitoring data gathered from stationary nodes installed in the city to the mobile nodes placed on public transports is given by this technique. Second is Toward a Green campus with the internet of things. It is and implementation of idea to save energy through adequate management of computer machines and air conditioner. It is based on the theory of internet of things Third is WSN- and IOT based Smart Homes and their extension to Smart Buildings. This work is based on the use of reliable, efficient, real-time and economical sensor networks for making smart homes. In this, the sensor nodes are fitted into the different areas of home. These nodes produce data of the movement done in the home or any usage of an object. Further, these homes are extended to smart buildings.

ARCHITECTURE



WORKING

The MQ135 sensor can sense NH3, NOx, alcohol, Benzene, smoke, CO2 and some other gases, so it is perfect gas sensor for our system. When we will connect it to Arduino then it will sense the gases, and we will get the Pollution level in PPM (parts per million), MO135 gas sensor gives the output in form of voltage levels and we need to convert it into PPM. So for converting the output in PPM, here we have used a library for MQ135 sensor, it is explained in detail in "Code Explanation" section below.Sensor was giving us value of 90 when there was no gas near it and the safe level of air quality is 350 PPM and it should not exceed 1000 PPM. When it exceeds the limit of 1000 PPM, then it starts cause Headaches, sleepiness and stagnant, stale, stuffy air and if exceeds beyond 2000 PPM then it can cause increased heart rate and many other diseases. When the value will be less than 1000 PPM, then the LCD and webpage will display "Fresh Air". Whenever the value will increase 1000 PPM, then the buzzer will start beeping and the LCD and webpage will display "Poor Air, Open Windows. If it will increase 2000 then the buzzer will keep beeping and the LCD and webpage will display "Danger!

APPLICATION

1. Roadside pollution monitoring .
2. Uses by authorities to detect pollution.
3. Industries pollution monitoring.
4. Indoor air quality momitoring.
5. used in schools, colleges, hospitals to moniter sound pollution.

CONCLUSION

This IOT based air and sound 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. This automatic device, once installed is capable of continuously tracking the pollution level and analyse 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.

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