Survey Paper on “IoT Based Air and Sound Pollution Monitoring System”

Shrotika Ankush Shinde¹ Namrata Bhauso Ghayal² Prajakta Pradip Gaikwad³ 
Vrushali Vivek Deshmukh⁴

¹,²,³,⁴Department of Electronics & Communication Engineering
⁴S.B.Patil College of Engg., Vangali, Maharashtra, India

Abstract— In this project, to monitoring atmospheric conditions of environment like, air pollution and sound pollution an effective implementation for Internet of Things is used. This project presents a conceptual architecture for a versatile, flexible and cost efficient for monitoring the air and sound quality of a particular site. In the description about this integrated network architecture and the connected mechanisms for reliable and accurate measurement of parameters by sensors and transfer of information or data is done with the help of internet. This system is able to provide a mechanism for the operations of the devices to do better in monitoring stage. This monitored data can be obtained from remote location without actually visiting it due to the access of internet. The framework of this monitoring system is based on combination or collaboration of affective distributed sensing units and information system for data composition.

Keywords: Air and Sound Pollution Monitoring System, IoT, ADC, MATLAB

I. INTRODUCTION

Air pollution and sound pollution are major constituents for having adverse and harmful effects on environment as well on human beings. To monitor this pollution is a very difficult task. Traditionally, authorities like data loggers were used to collect the data of the site to be analyzed. They had to visit the site to be analyzed every time they wanted the data. This was a lengthy, time consuming and expensive task. Due to the use of sensors collaborated with internet can make pollution monitoring less complex, less time consuming and flexible. As modernization is growing rapidly internet technologies and wireless sensor networks are advanced, a new trend in the era of omnipresence is being realized. The increase in the number of internet users and application on the internet working technologies enable networking of everyday objects requiring human-to-human or human-to-computer communication. It can be anything such as refrigerators, watches, fans, air conditioner, automobiles, or anything. It is a communication between human a machine or machine and machine. With the urbanization and with the increase in the vehicles on road the atmospheric conditions have consider a by affected. Also, there has been the growth of industries and infrastructure which has caused increase in pollution in atmosphere like air and sound pollution. Air pollution and sound pollution are major constituents for having adverse and harmful effects on environment as well on human beings.

II. LITERATURE SURVEY

[1] Jadhav D. A.: proposed an model of air pollution monitoring by using zigbee and GPS module. for the communication he was use zigbee to connect central server by using RS232. The data received by the zigbee receiver and is stored & displayed in PC. The GUI displayed the data, time and name of gas in ppm. An GPS module interface with ARM7 processor LPC 2378 for with connector of RS 232. zigbee network layers supports star, tree and mesh topology with each node having capability of transmitting and receiving data over communication links the zigbee network has zigbee co-coordinator is responsible for initiating and maintain the device on the N/W and network may be external through the use of zigbee routers which move data and

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control message through the network using hierarchical routing strategy.

[2] Lalit mohan joshi (PhD research scholar): he proposed embedded device is for monitoring noise & co levels in the atmosphere to make the environment interacting with objects through wireless communication. He proposed architecture, that is discussed in four tier model with each individual modules function. First tier includes environment, second tier includes sensor devices in that dust sensor MQ(135), CO gas sensor (MQ7), smoke sensor (MQ2), temperature sensor(DHT11) for model. Third tier contains sensor data from the sensor is processed in MATLAB for analyze & visualize data to end user according to his model. The data analysis in MATLAB makes easier to set threshold level & to perform necessary controlling actions for the interfacing of sensor with cloud an Xmega 2560 microcontroller is used. All the data over the channel are collected & upload the data to the Google spreadsheets stored into cloud.

[3] Anjaiah Guthi:- In this model he used arduino board with Wi-Fi module is as embedded devices for sensing data & storing the data in cloud. Sensor are used for monitoring. ADC convert the sensor reading to its digital value an Wi-Fi connection has to be established to transfer the sensor data to end user also on the cloud storage. An MATLAB is used for analyze process and store in database, also the threshold value is set for controlling purpose. By using sound sensor sound intensity was checked at regular time intervals and night time interval. Average sound intensity levels entire day is shown by using graph. Depending upon average value threshold value is decided.

[4] Palaghat yaswant sai : He present a paper in this system he was use MQ135 Gas sensor for monitoring a gas in the environment and sound sensor (LM39) for monitoring live sound quality. He was also use a WI-FI modem along with the arduino board. he was invented a system in this he monitor live air and sound quality in the environment. the arduino board is a heart of a system, both the sensor and WI-FI modem are interface with arduino board. Air and sound sensor continuously monitor a quality of air and sound and give to the value to the board. This board continuously communicate with WI-FI modem and all the data related with air and sound (value of air and sound) was displayed on the web page.

[5] The K.Nirosha:- present a paper, in this he was going to make an IOT based air pollution monitoring system in which he was monitor air quality over a web server using microcontroller and internet, and trigger an alarm when air quality goes down beyond certain level, means if harmful gases are use in air this value was displayed on the LCD and webpage.

[6] The p.sai chandan : present a paper in this paper, he was used embedded devices for monitoring noise and co levels in the atmosphere through wireless communication he develop a architecture. this architecture discussed in 4 tier model with function of each individual modules developed for the tier 1 is the environment, sensor device in the tier2, sensor data acquisition and decision making in tier3 and tier3and intelligent environment in tier4. the system uses a gas and sound sensor for monitoring a quality of gas and sound in the air and constantly transmit this data. The sensor interact with raspberry-pi which process this data and transmit it over the application. the node broadcast mechanism is used. This system monitor air and noise pollution using a mobile application. It shows the digital value of air and sound pollution and visualize it with a graph. By typing the assigned IP address in the web browser we was get web server page. The web server gives the information about temperature, intensity of sound and gas level variation in particular region.

[7] M. sushma reddy : present a paper, in this model she was used a raspberry-pi PI3,MQ135 gas sensor. The gas sensor and sound sensor both are interface with the raspberry-pi3 modal and the output was displayed on the LCD display. at the output part she used a cloud computing techniques. The raspberry-pi3 is an embedded device for sensing and storing the data in cloud. The raspberry-pi3 have a inbuilt WI-FI modem, the result was displayed by using the graph. This shows the value of sound and gas in day time and night time, the value coming from the sensor that value are compare with threshold value and then decide whether the pollution is take place or not, and displayed on the LCD display.

[8] The poonam pal: present a paper in this, model she used arduino board,ESP8266 WI-FI module,MQ135 gas sensor,16*1LCD,resistor ,buzzer etc. the ESP8266 Wi-Fi module connect directly to the arduino board. The WI-FI module give the access of internet. She was connect MQ135 sensor with arduino. Then she connect a buzzer to the arduino board. Then this gas sensor sense NH3.NOX.alcohol.Benzen .CO2 and some other gasses, This sensor gives the output in voltage then this voltage is converted into ppm. When sensor exceeds the limit of 1000ppm, then it stirs cause headaches, sleepiness and stagnant, stuffy air. When value is less than 1000ppm then the LCD and webpage was display fresh air. Whenever the value was increase 1000ppm, then the buzzer was start beeping and LCD and webpage was display “poor air”, open windows. If this value was increase 2000ppm then buzzer was keep beeping and LCD and webpage was display danger move to fresh air” message.

[9] Uppugunduru Anil Kumar : present in this model he was use a raspberry-pi3 model,gas sensor , LM 393 sound detection sensor for to sense the air quality and sound quality in the environment. For interfacing sensor he was use a raspberry-pi3 model,gas sensor and sound sensor continuously sense a data and given to the raspberry-pi3 board. In the raspberry-pi3 model use an inbuilt WI-FI modem. By using this modem raspberry-pi3 continuously communicate with the cloud. According to the performance of air and sound it display the data on the cloud. Data present in the form of analog waveform then this signals are converted in to the digital value.

III. ADVANTAGES

1) Sensors are easily available.
2) Detecting a wide range of gases including Nox, CO2, CO etc and also detecting various noise levels.
3) Simple, Compact and easy to handle.
4) Visual output.
IV. APPLICATIONS

1) Roadside pollution monitoring.
2) Industrial perimeter monitoring.
3) Indoor air quality monitoring.
4) To make this data available to the common man.

V. CONCLUSION

For pollution monitoring this model can be expanded to monitor the developing cities and industrial zones to detect the air gases and sound pollution. It Overcomes the problem of the highly-polluted areas which is a major issue. It supports the new technology like internet of things. It becomes very reliable and efficient. IOT is beneficial for the welfare of the society.

The air and sound pollution monitoring system monitors air and noise pollution using a web server

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