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IOT Based Air and Sound Pollution Monitoring System

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Abstract—The pollution of air and sound is increasing abruptly. To bring it in check its monitoring is majorly recommended. to beat this issue, we are introducing a system through which the extent of sound and therefore the existence of the harmful gases within the surroundings are often detected. The growing pollution at such an alarming rate has started creating trouble for the living beings, may it's high decibels or toxic gases present within the environment leaves a harmful effect on human's health and thus needs a special attention.

Keywords—air pollution, sound pollution, IOT, sensors,monitoring system,fire brigade.

1. Introduction:-

In this era of modernization, technologies are advancing rapidly. a day we realize some new technology coming in market to simplify our lives quite ever. Back in time checking the pollution during a particular area was a really tedious task which wasn't very efficient also. With the increasing pollution and advancing technology various new methods were introduced to stay an eye fixed on the rapid increase in pollution more efficiently. Internet of things is one among the newest works that has been wiped out this path. The increment in use of internet and therefore the interaction of human with machine gave rise to IOT. It allows exchange of data among various devices like fridge, washing machine, automobiles, watches etc. This exchange of information takes place with the assistance numerous sensors. The account for the success of IOT is its efficiency and makes it a feasible technology at low cost.[3]Air and noise pollution are two main constituents that have the foremost adverse effect on humans also because the entire earth.Therefore it's vital to see and control it.Traditional methods involves manual add which data loggers wont to visit the location to gather the info , analyze it and perform comparisons to supply the output which was very lengthy and time consuming besides being inefficient.[3] The pollution monitoring system involves use of sensors which measures the noise pollution concentration and level of harmful gases like CO and SO_2 which mainly pollutes the air. Comparisons are done automatically using previously stored data in database and output is stored on cloud to form it accessible from remote areas. This paper involves description of the system that presents its output with the assistance of an android application which the user can download in their mobile phones and access it whenever they need .[2] It are often used for notifying the hearth brigade authorities and fire brigades itself if and fire has taken place within the areas. This device may be a useful asset to save lots of precious lives of individuals and property.

2. SYSTEM MODULE AND ASSUMPTIONS

Here, the tier 1 provides information about the parameters under the region which is to be monitored for noise and pollution control. Tier 2 deals with the sensor devices with suitable characteristics, features and every of those sensor devices are operated and controlled supported their sensitivity also because the range of sensing. In between tier 2 and tier 3 necessary sensing and controlling actions are going to be taken depending upon the conditions, like fixing the edge value, periodicity of sensing, messages (alarm or buzzer or LED) etc. Based on the data analysis performed in between tier 2 and tier 3 and from previous experiences the parameter threshold values during critical situations or normal working conditions are determined. Tier 3 describes about the data acquisition from sensor devices and includes the decision making. Which specify the condition the data is representing which parameter. In the proposed model tier 4 deals with the intelligent environment. Which means it will identify the variations in the sensor data and fix the threshold value depending on the identified level of CO or noise levels. In this tier, sensed data will be processed, stored in the cloud i.e.in to the Google spread sheets and it will show a trend of the sensed parameters with respect to the specified values. The end users can browse the data using mobile phones, PCs etc.

The main objective of IOT Air & Sound Monitoring System is that the Air and sound pollution is a growing issue these days. It is necessary to watch air quality and keep it in check for a far better future and healthy living for all. Here we propose an air quality also as noise pollution monitoring system that permits us to watch and check live air quality also as noise pollution in an area through IOT. System uses air sensors to sense presence of harmful gases/compounds within the air and constantly transmit this data. Also, system keeps measuring sound level and reports it. The sensors interact with Arduino and raspberry pi which processes this data and transmits it over the cloud then to the appliance . This allows authorities to watch air and noise pollution in several areas and act against it.
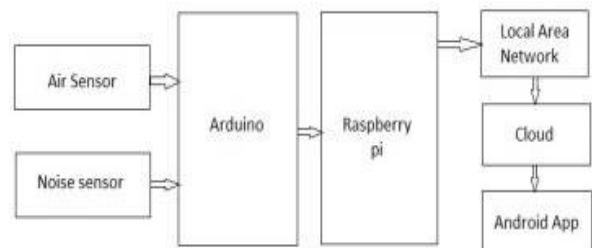
3. Block Diagram
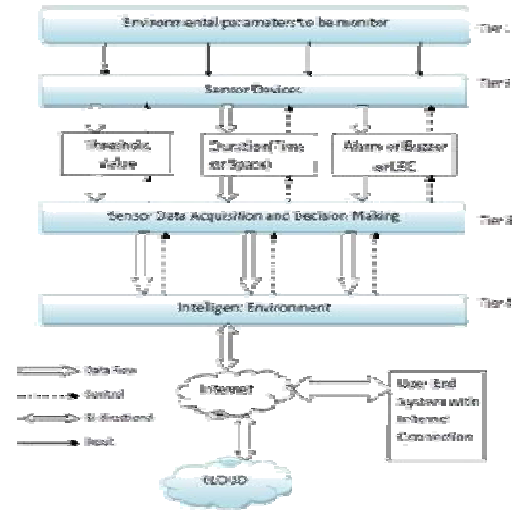
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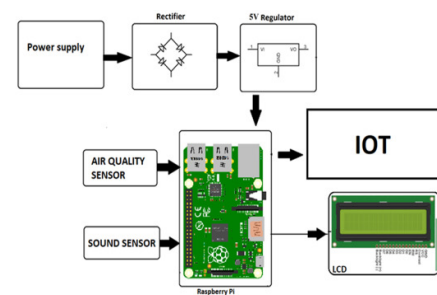
4. Circuit Diagram

5. Working of Project

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processes this data and transmits it over the appliance . This allows authorities to watch pollution in several areas and act against it. Also, authorities can keep a watch on the sound pollution near schools, hospitals and no honking areas.

Network Devices and therefore the Internet of Things all types of ordinary household gadgets are often modified to figure in an IoT system. Wi-Fi network adapters, motion sensors, cameras, microphones and other instrumentation are often embedded in these devices to enable them for add the web of Things.

6.Literature review

The motive of creating a sensible city are often fulfilled by usingtechnology, thus making the life better and also enhancingthe quality of services, therefore meeting everyindividual's needs. With modern technology in fields ofinformation and communication, it has become easy tointeract with the authorized people of city to inform thewhere abouts of the world or city, how well the town is developing and how to make it possible to achieve a betterlife quality. In this system, an application wa created to make one more step in the fulfillment of the goal. An areais analyzed for evaluating how much pollution is affectingthe area. The components of gases and their amounts arecalculated and checked. If the amount is higher thannormal then the officials are reported about it. After thatthe people are made to clear the area and taken to a safeplace. The combined network architecture and theinterconnecting mechanisms for the accurate estimation ofparameters by sensors is being explained and delivery ofdata through internet is presented.Some of the research work made for monitoring thepollution parameters during a particular location so as tomake the environment safe which area smart. Differentmethods were utilized in the past and are described during thissection [4]. First is Smart Environment Monitoring usingWireless sensor networks[5] in which the main focus wason the developing an environment freed from pollution bymaking it smart. Wireless sensors are fitted all over thecity and in public transports. By monitoring all the sensornetworks, 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 web of things. It is an implementation of idea to save lots of energy through adequate management of computer machines and air conditioning . It is supported the idea of internet of things [7].Third is WSN- and IOT based Smart Homes and their extension to Smart Buildings [7]. This work is predicated on the utilization of reliable, efficient, real-time and economical sensor networks for creating smart homes. In this, the sensor nodes are fitted into the various areas of home. These nodes produce data of the movement wiped out the house or any usage of an object. Further, these homes are extended to smart buildings [4].

7. RESULT

The air and sound pollution monitoring system monitors air and noise pollution employing a mobile application. It shows the digital value of air and noise pollution and user can analyse it with a graph. It becomes very easy for us to rectify the amount and air and sound pollution around and plan for a healthy living and surrounding. The figures that are included in our paper shows the way the system works and the way the output is obtained from the input after processing.

8. CONCLUSION

The Automatic Air & Sound management system may be a breakthrough to contribute an answer to the most important threat. The air & sound monitoring system overcomes the matter of the highly-polluted areas which may be a major issue. It supports the new technology and effectively supports the healthy life concept. This system has features for the people to watch the quantity of pollution on their mobile phones using the appliance .

So, it becomes very reliable and efficient for the Municipal officials along side the Civilians to watch environment. Letting civilians also involved in this process adds an extra value to it. As civilians are now equally aware and interested by their environment, this idea of IOT is useful for the welfare of the society. And it is implemented using the latest technology.

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