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TRACKING AIR AND NOISE POLLUTION: AN INTERNET OF THINGS SYSTEM

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Abstract: There is an abnormally high level of noise and smog. As part of our effort to contain and eradicate this problem, we have begun regular monitoring of the noise level, and thus the concentration of potentially harmful substances in the grid. As the impacts of fatten pollution on living things worsen, caution is essential. Too much noise and potentially hazardous substances in the environment could be harmful to living beings' health.

Keywords**:** air pollution, sound pollution, sensors, IOT sensors, monitoring system,raspberry Pi.

1. INTRODUCTION

The current rate of technological advancement is unprecedented. Every day, it seems, we gain access to new tools that make our lives easier. up the past, checking up on pollutants at regular intervals was a time-consuming and arduous process. As technology evolved and pollution worsened, skilled labor resulted in the creation of creative techniques to slow the proliferation of contaminated areas. The only recent technological advancement in this field is the "internet of things." The rise of internet use and human-machine interaction spurred the creation of the Internet of Things (IoT). Refrigerators, autos, digital watches, and even fully automated washing machines may all interact and exchange information. A wide range of tools enable this type of information transmission. IoT has grown in popularity because to its low cost and ease of installation. Air pollution and excessive noise are the primary threats to all life on Earth. That is why it is vital to monitor and control. A data courier must physically visit to the area in question, gather the needed data, review it, and make any necessary comparisons to get the result of a manual addition. These tactics are not only time-consuming to adopt, but also extremely inefficient.

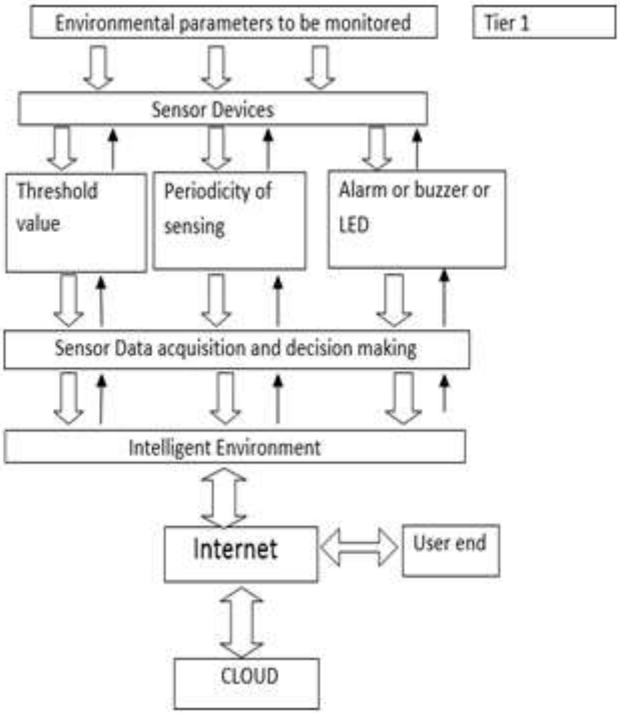
Carbon monoxide (CO) and sulfur dioxide (SO2) are the primary causes of ozone depletion, and both can be detected by the pollution monitoring system's sensors. Automated comparisons are performed in the datacenter using previously recorded data. The data is subsequently saved in the cloud, where remote control zones can access it. This conference paper covers the system that gives findings through an Android app that can be downloaded and utilized on mobile devices at any time. When a fire breaks out in one of the places, the officials in charge of the fire bridge usually find out about it through this method. This instrument has the ability to save lives and significant property.

2. SYSTEM MODULE AND ASSUMPTIONS

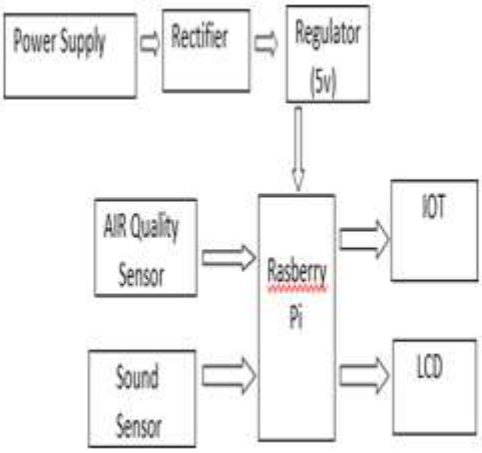
Specifically, stratum 1 describes the elements of the region that must be monitored for noise and sanity management. Each individual sensor that performs well and maintains sensitivity in accordance with its sensing environment belongs in Tier 2 of the sensor device tiering system. Extreme situations around levels 2 and 3 will demand sensing and moderating procedures such as establishing an edge value, increasing sensing frequency, sending out alert messages, and so on. Tiers 2 and 3 data interpretation and prior groundings are utilized to define parameter threshold values for normal operating scenarios. Tier 3 will teach you the intricacies of receiving and acting on sensor data. This provides the parameters that can be used to infer a certain measure from data. The fourth stage of the proposed system is concerned with incorporating environmental intelligence. In this case, as CO and noise pollution levels rise, the threshold values must be modified. This will make it easier to understand and save identified data in Google Spreadsheets in the cloud, in particular. The identified parameters' trend relative to the supplied values will also be shown. Users can access the data using any device, including PCs, smartphones, and tablets.

The major goal of the Internet of Things sound and air monitoring system is to attract attention to the growing problem of noise and air pollution. To maintain a healthy population and a brighter future, air quality must be regulated and monitored. The level of noise and pollution in a certain location can be measured using IoT, as we will explain.

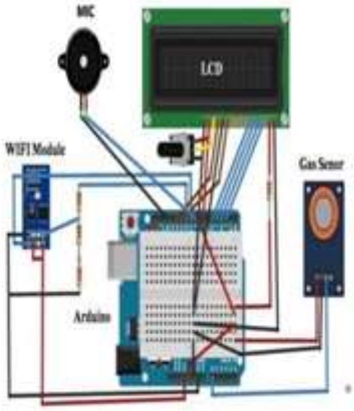
The air monitors in the system are constantly reporting their findings to detect if there are any potentially dangerous gases or chemicals in the air. In addition, the device continuously measures and reports the ambient noise level. The sensors send data to the raspberry pi, which processes it and sends it to the devices via the cloud. With these systems in place, the government can concurrently monitor noise and air pollution in numerous areas.


Environmental parameters to be monitored
Tier 1
Sensor Devices
Threshold value
Periodicity of sensing
Alarm or buzzer or LED
Sensor Data acquisition and decision making
Intelligent Environment
Internet
User end
CLOUD

The Block's strategy

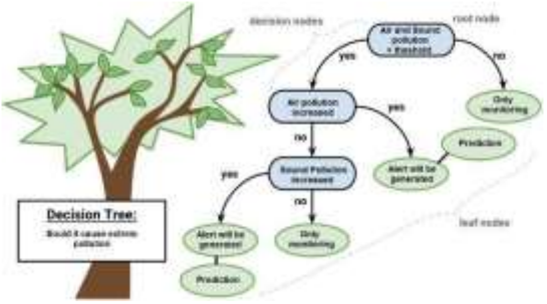

Power Supply
Rectifier
Regulator (5v)
AIR Quality Sensor
Sound Sensor
Rasberry Pi
IOT
LCD

The system's inner workings


MIC
LCD
WIFI Module
Gas Sensor
Arduino

Algorithm

A decision tree is a type of flowchart-like diagram. Each internal node represents a "test" on an attribute, such as whether a coin lands heads or tails, and each leaf node represents a category label (the choice reached after all attributes have been computed). The arrows from stem to bud indicate the various classifications of our ideas. For determining the expected values (or expected usefulness) of the options under discussion, we use a choice tree and, by extension, the closely related impact diagram as a visual and analytical tool. A decision tree has three sorts of nodes, which are as follows: Rectangles are widely used to represent decision points. Random spots are typically represented by circular forms. Terminal nodes are commonly represented by triangles. Decision trees are extensively used in operations management and research. When neither remembering nor possessing all relevant information is attainable, a decision tree that replicates a probability model would be the best choice model or technique for making decisions online. Another visual representation of conditional probabilities is decision trees.



Working Of The Project :-

We present an IoT-based setup for monitoring environmental noise and air quality in this article. We can test all of these at the same time with this arrangement. Using an air sensor, the device continuously informs the user of the presence or absence of potentially dangerous gases and chemicals in the air. The system also does real-time sound level measurements and broadcasts the results in real time. Data is sent from the sensors to the Raspberry Pi, which processes it before posting the results to the internet. This enables the government to monitor pollution levels across the country and direct resources where they are most needed. Noise pollution around major intersections and no-honking zones, like air pollution, can be monitored by the government.

Network devices and the Internet of Things have enabled practically any product in the home to function in a networked setting. Wi-Fi network adapters, cameras, microphones, and other tools that enable the Internet of Things are common examples of such devices.

3. LITERATURE SURVEY

A smart city frequently meets the demands of its citizens by utilizing technology to improve living conditions and service quality. If you have any issues about the city's location, the rate of community expansion, or suggestions for improving the quality of life, modern information and communication technologies make it easier to contact local officials. Progress toward the goal was made with the creation of the system's application. Assessing the level of smog pollution in a given location visually. Several estimations and analysis have been conducted on the quantities and compositions of gases. Authorities should be notified if the sum is much more than usual. They are then forcibly removed from the area and relocated to a safer location. A data transfer over the internet is presented, as well as the combined network design and connecting methods for precise assessment of sensor parameters. The study involves measuring pollution levels in one region in order to build a more intelligent setting. This section will look at several approaches that have been employed in the past. The significance of an intelligent environment cannot be emphasized. The main goal is to monitor wireless sensor networks in order to ensure that technology improvements result in a pollution-free environment. The entire city is wired for wifi connectivity, including all kinds of public transportation. Monitoring all sensor networks enables the recording of all environmental phenomena as a streaming library. This can be used to learn about the state of the world. Tracking data is relayed from stationary nodes placed across the city to mobile nodes, which are subsequently connected to public transportation. The section that follows is labeled "Internet of Things Toward a Green Campus." It is the process of putting into action an energy-saving strategy by making better use of electronic devices such as computers and air conditioners. The concept of the "internet of things" gives validity to this argument. The third group includes "smart" dwellings and structures powered by WSN and IOT. A reliable, efficient, real-time, and low-cost monitoring network is required for this type of operation. The sensor nodes are scattered throughout the house. These nodes transmit information on building destruction and product use. These residences have clever structures as well.

4. RESULT

To acquire data, the device for monitoring air and noise pollution uses a smartphone app. A graph illustrates the monetary cost of being exposed to noise and air pollution. Making goals for a healthier lifestyle and less noise and pollution in the neighborhood is much easier. Images in our study demonstrate the process of transforming input into output.

5. CONCLUSION

The Automatic Air & Sound control system could provide a new line of defense against the greatest threat. Polluted areas are no longer a concern as a result of the noise and air quality monitoring system. It's a compelling case for using current methods and leading a healthy lifestyle. Mobile phones can be used to monitor air quality thanks to the characteristics of this technology.

As a result, both municipal officials and ordinary individuals can keep an eye on the environment with high reliability and efficiency. The more people that have access to this technology, the better it will be. The Internet of Things (IoT) benefits society as a whole because it has rekindled people's interest in and care for their local physical environment. Furthermore, cutting-edge technology is used in its operation.

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