NIET Journal of Engineering & Technology

Volume 10, Issue 2, 2019 ISSN: 2229-5828 (Print)

STUDY ON AIR AND SOUND POLLUTION MONITORING SYSTEM USING IOT

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Abstract *: The system presented in this project is a solution for monitoring air and sound pollution in a specific location and safeguarding people from dangerous diseases by informing them of pollution rates on a regular basis. The Internet of Objects (IoT), a sophisticated and efficient method for connecting things to the internet and linking the entire universe of things in a network, is the technology underpinning this. Electronic devices, sensors, and automobile electronic equipment can all be used here. The system involves using sensors to monitor and manage environmental variables such as the number of dangerous substances in the air and the frequency of sound played in that area, as well as spreading a protective covering over objects we wish to protect from air and sound pollution. On the monitor, the device shows these readings in real time. This data may be shown on an LCD and sent to the user through the server, where the user can manage the system by choosing on/off, and the shed will respond appropriately. The data updated by the installed system is accessible from any location. We see many harmful diseases caused by air and noise pollution in our daily lives. This approach is developed to address the problem of hazardous illnesses spreading in a certain region as a result of pollution. The project is centered on resolving this issue and has a wide range of applications. The project is developed keeping in mind the best use of resources presents and that it benefits the society and is useful and easy to use by all classes of society. The aim of the project is to save people from harmful diseases that is caused due to gases that causes air pollution and the high frequency sound played in the area that causes sound pollution and incur minimum cost while fulfilling all its functionality. It will be ensured that the project stands for its aims.*

Keywords: pollution, air, sound, disease, environment.

1. Introduction

Existing technology mainly focus on controlling and monitoring of different activities. These are increasingly emerging to reach the human needs. An efficient environmental monitoring system is required to monitor and assess the conditions in case of exceeding the prescribed level of parameters. The main aim of this project is to design and implement an efficient monitoring system through which the required parameters are monitored remotely using the internet.

Sensors are essential components in many applications, not only in the industries for process control but also in daily life for buildings safety and security monitoring, weather condition monitoring, etc. By using the sensors for monitoring the weather conditions, the results will be accurate, and the entire system will be faster and less power-consuming. The project's goal is to protect people from hazardous diseases produced by gases that generate air pollution and high-frequency sound performed in the vicinity.

Temperature and humidity, for example, are important factors to consider while monitoring the weather. Thanks to technical improvements, these small and trustworthy electronic sensors can now better monitor environmental conditions. The current weather conditions are also displayed on the system's LCD. A DHT 11 temperature and humidity sensor, as well as an FC-37 rain sensor, make up the system. All of the sensors will be connected to a microcontroller, which will then connect to the internet. The technology used here is the

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Internet of Things (IoT) (IoT). The Arduino UNO is an open-source microcontroller board based on the Microchip ATmega328P microprocessor developed by Arduino.
Digital and analogue input/output (I/O) pins on the board can be used to connect to expansion boards (shields) and other circuits. The board contains 14 digital pins and 6 analogue pins, and it can be programmed using the Android IDE (Integrated Development Environment), allowing individuals to quantify their own noise exposure in their daily lives by utilizing GPS-enabled mobile phones as noise sensors [1].
Air pollution causes a great deal of harm. It causes hazardous ailments such as skin cancer and asthma, as well as affecting a person's everyday living routine. Humans, particularly the elderly, are affected by sound pollution, which promotes high blood pressure, stress, and other ailments. We devised this method in order to address these issues, as well as many more. Depending on the nature of the gadget, equipment damage might be highly costly. A mechanism must be developed to handle this problem. The project aims to solve this problem and may be applied in a number of ways. Our research focuses on resolving issues that arise from the presence or lack of required moisture in the subject under investigation. The presence or absence of moisture is determined using a predetermined threshold value.
Noise pollution is a significant issue in cities all around the world. Current evaluation methodologies fail to account for the real-world exposure that residents face, which might lead to erroneous results and skewed representations [2].
The project primarily focuses on monitoring weather conditions at a specific location and transmitting data to the weather department's server in real-time on rising pollution levels. Additionally, issue a pollution warning to the residents of that region. It is the future technology that will bring the entire planet together in one location. All objects, devices, and sensors may be connected to exchange data collected in multiple locations and process/analyze that data in order to coordinate applications such as traffic signaling, mobile health monitoring in medical applications, and industrial safety assurance techniques, among others. For a comprehensive machine-to-machine connection, IoT provides a wide spectrum of device connectivity with numerous protocols and application features. Home automation, wireless sensor networks, and control systems are examples of traditional technology. From the outset of monitoring and regulating air quality, traffic circumstances, and weather events, an intelligent and clever Wireless Sensor Network system can acquire and analyze a huge quantity of data [3].

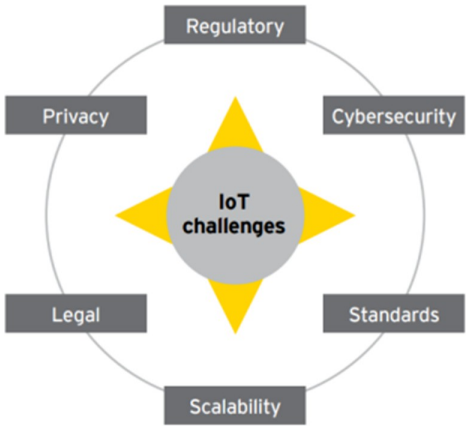

Fig 1. Risks of IoT

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Privacy is the top worry in practically every consumer poll. According to a consumer study conducted by IDC in the United States, over 55% of respondents said that their main expectation of third-party suppliers of home automation services is "ensuring my privacy." Security and privacy are also among the top five concerns for IoT adoption and growth, according to a Forrester survey of worldwide company decision-makers. As the IoT ecosystem strives to collect massive quantities of data and contextual inputs from sensors and other IoT solutions, privacy is a fundamental barrier that enterprises must solve.

To update health information or manage the gadget using a smartphone, all of these options require an internet interface. The Internet of Things is also important in media applications for advertising and information exchange throughout the world. Manufacturing operations also necessitate the use of IoT for supply chain management and digital control systems for monitoring. In the case of tracking applications, the space requirements of IoT technology and geographical parameters are always significant. The MQ135 gas sensor's sensitive substance is SnO2, which has a reduced conductivity in clean air. When from the outset of monitoring and regulating air quality, traffic circumstances, and weather events, an intelligent and clever Wireless Sensor Network system can acquire and analyze a huge quantity of data [3]. To update health information or manage the gadget using a smartphone, all these options require an internet interface. The Internet of Things plays a vital role in media applications such as advertising and information exchange throughout the world. IoT for supply chain management and digital control systems for monitoring are also required for manufacturing processes. The space requirements of IoT technology and geographical considerations are always crucial when it comes to tracking applications. SnO2, which has a lower conductivity in clean air, is the sensitive material in the MQ135 gas sensor. When it is inexpensive and versatile. Device to detect harmful gases in the home and surrounding environment. Ammonia, aromatics, Sulphur, benzene vapor, and other hazardous gases/smoke can all be detected with this technique. 10 to 1000 parts per million (ppm) were examined. While obtaining data from objects, the geographical dimension of the items is equally significant IoT [4]. Garbage on dumping sites is sometimes burned, resulting in a significant increase in air pollution in some places. We can extinguish the fire in the rubbish as soon as it is ignited by someone, thanks to the sensor and motor on the gadget. The Arduino Software (IDE) includes a text editor for writing code, a message area, a text terminal, a toolbar16 with buttons for common tasks, and a series of menus. It communicates with the Arduino and Genuine devices by connecting to them and uploading code. Sketches are programs created with the Arduino Software (IDE). These drawings are created in a text editor and stored as a file extension. The editor includes tools for cutting/pasting and rearranging text. Equipped with gaseous and meteorological sensors as well as data logging and wireless communication capabilities.

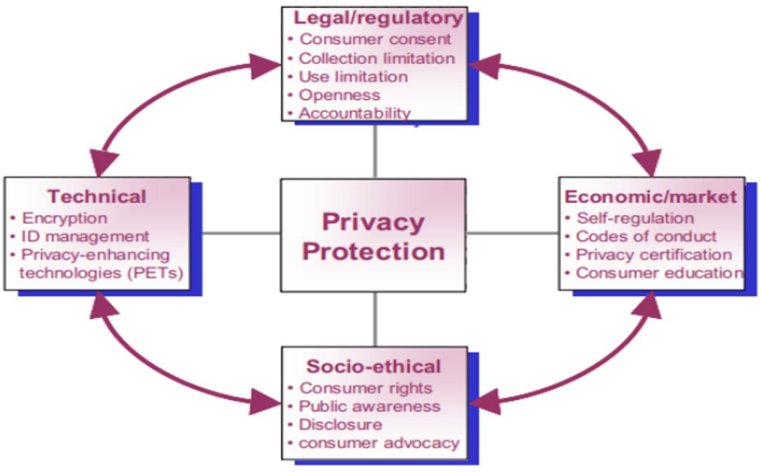

Fig 2. The many facets of privacy protection.

Problem Statement: We see a lot of equipment fail in our day-to-day lives because of moisture intrusion. When it rains, we hang our clothing out in the open, and they become wet. Depending on the nature of the

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gadget, equipment damage might be highly costly. To address this issue, a system has to be created. The project focuses on resolving this issue and may be used in a variety of ways. Our research focuses on resolving issues that arise from the presence or lack of required moisture in the subject under investigation. The presence or absence of moisture is determined based on a predetermined threshold value. The main goal of the project is to keep track of the weather in a certain location. to transmit: We see a lot of equipment fail in our day-to-day lives because of moisture intrusion. When it rains, we hang our clothing out in the open, and they become wet.

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2. Proposed Methodology

This system is built with a variety of hardware components. The parameters are measured using Arduino UNO, Node MCU, Motor Driver IC L293D, and several types of sensors. Arduino is an open-source platform for creating programs that can perform many more tasks than desktop computers. Sensors programmed using Arduino programming may be used to sense and control the physical environment. This open-source physical computing platform is built around a basic microcontroller board and a development environment for programming it. The Arduino UNO is a microcontroller board that uses the ATmega328 microprocessor (datasheet). It includes 14 digital input/output pins (six of which may be used as PW outputs), six analogue inputs, a 16 MHz crystal oscillator, and a USB port. The Arduino code is written in C++ and includes several unique methods and functions. C++ is a computer language that is easy to understand. A ‘sketch' (the term given to Arduino code files) is processed and compiled to machine language when you produce it. The main text editing application for Arduino programming is the Arduino Integrated Development Environment (IDE). Before uploading the code to the board, you want to program, it is written. This Arduino project is completely automated. It does not need any human involvement. It is a project that uses less energy and is therefore more efficient. The use of up-to-date software in the project makes it more secure than other projects on the market. Because this weather monitoring and management system is totally automated, As the amount of pollution in a certain area rises, the municipality will receive an urgent notification to take strong actions to reduce pollution in that region by eliminating polluting factories. In addition, hospitals are educated about pollution and are prepared to handle any problems that arise as a result of increased pollution. Again, adding a motor and sensor to the system will aid automate the process. As soon as pollution reaches a dangerous level, the air filter in that area is turned on, and it works until the pollution is reduced to a safe level. The sound system at some establishments is occasionally set to a high volume.

3.Conclusion

Because of technological advancements and users' desire to combine gadgets such as smartphones with domestic machinery, the future of IoT is almost limitless. The project was created with the intention of supporting a wide range of applications. The project was created with the goal of making the greatest use of the resources available, as well as ensuring that it benefits society and is helpful and simple to use for people of all social strata. The project's goal is to protect objects from being damaged or deteriorated by moisture while keeping costs low and ensuring that all of the project's functions are met. It was made certain that the project met its goals. This versatile system may be utilized on a big scale, such as in industries, or on a local scale, such as in homes.

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