6115-MAHENDRA INSTITUTE OF ENGINEERING AND TECHNOLOGY

*NOISE POLLUTION MONITORING*

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Abstract

* Presently, noise pollution has become a very big issue around the world. The adverse effects of this pollution include hearing impairment, negative social behavior, annoyance, sleep disturbance and intelligibility to understand people’s speech. In learning context, noise can affect understanding and behavior of people and places with high noise level are not suitable for learning and teaching process.
* In near decades, the engineering and science professions have been hugely influenced by their responsibilities to the people. These responsibilities have send towards the protection of public welfare and healthcare. In the controls for emission of pollutants, engineers and scientists have created strategies for monitoring the environmental pollution problems.
* Environmental monitoring describes the activities and processes that should take place to monitor the quality of the environment. All strategies and techniques have justification and reasons which are often created to establish the status of an environment or to establish environmental parameter. In this paper, we have proposed an idea to monitor noise pollution using IoT Technique.
* The area covered by which the environment gets affected is noted andcontrol and prevention practice is implemented. By controlling the environmental noise pollution the cities are deprived of health issues.

Introduction

* Internet of things or commonly called IoT refers to the network of physical devices, vehicles, electronic appliances and other items embedded with sensors, software and connectivity which enables these things to connect, collect and exchange data without requiring human-to-human or human-to computer interaction.

* IoT is currently growing due to some factors such as convergence of multiple technologies, real time analytics, machine learning, commodity sensor and embedded systems. The term IoT was firstly coined by Kavin Ashton of Procter and Gamble and later by MITs Auto-ID centre (1999).
* Cisco System estimated that IoT was developed between 2008 and 2009. It is widely used in today’s applications such as consumer, commercial, industrial and infrastructure spaces. There is a lot of thing that can be implemented for the consumers’ daily uses.

* Take a smart home for instance, IoT is used in this invention to control lighting, heating, air-conditioning, media and security systems. This means it can save energy as it can automatically ensure lights and other electronics

Problem Statement

* Noise monitoring is very crucial since 20% of the European Union (EU) population or close to 80 million people suffer from noise level that experts consider to be unacceptable . IoT allows an exchange of information to and from a device or thing and due to its flexibility and low cost, IoT is getting popular day by day.
* Thus, IoT is very suitable to be implemented in monitoring the noise level in some areas to deal with the problem. The demands of modern society lead to the creation of noise sources such as industrial sources, transport vehicles, defence equipment and construction. The most significant example is inside UTM.
* Noise coming from vehicles and construction sites have significantly distract the focus and the intellectual development of the students. This issue results in the needs of a system that will monitor the noise level at that specified areas. It is also an alternative for students to know the suitability to study via app .

Literature Review

* IoT has been implemented in many noise monitoring systems nowadays including mobile phones and vehicles. These technologies were invented and developed because of the demand from society to have systematic and efficient system for monitoring purpose. With the use of cloud server, the users can access the data at anytime and anywhere . It is an effective way to reduce the work for authorities and less time consuming when recording data.
* The Noise Impact in the Learning-Teaching Process in an Elementary School Unnecessary or emission of noise that is coming from surrounding of school environment can become a barrier that distorts the communication within community inside the school. The aim of the project is to study the effect of noise from inside and outside of the school building also whether the noise can influence or not students’ performance in elementary school.
* World Health Organization (WHO) suggests that the maximum noise level and reverberation for school is 35dB for classrooms and 55dB for outdoor activities and the recommended reverberation time is 0.6 sec [14].

**Why is Noise Monitoring Important?**

* Noise monitoring is crucial for several reasons. First and foremost, it safeguards human health. Prolonged exposure to high levels of noise can lead to hearing loss and various physiological and psychological disorders, such as stress, sleep disturbances, and reduced productivity.
* Additionally, noise monitoring helps ensure compliance with legal regulations and standards set by authorities to protect workers’ well-being. Monitoring also identifies areas of concern, enabling proactive implementation of noise control measures to mitigate risks, improve working conditions, and maintain a harmonious environment for employees.
* Furthermore, noise monitoring contributes to good community relations, as industries that proactively manage noise pollution demonstrate their commitment to environmental responsibility and social welfare.

## Noise level Monitoring & Testing

* The answer to the question of how to measure sound lies in Noise level Monitoring or sound Measurement for a particular instance or for 24X7 hrs to analyze trends for better understanding of the environment. these Processes also used in Noise Impact Assessment (We love to do this ) by Noise level Testing companies. This process is also called as Noise level Measurement.

### Industrial Noise Measurement

* Industrial Noise is the loud sound in industries. In general, it is produced, at every stage in the industry by various aspects like welding, hammering, drilling, blowing, running machinery, motors, sheet metal work, lathe machine work, operation of cranes, grinding, turning, fabricating, forging, compressing, breaking, moulding, steaming, boiling, cooling, heating, venting, painting, pumping, packing, transporting etc. It creates very serious of large-scale noise problems; significantly affect the working people as well as surrounding people.

### Non-Industrial Noise Measurement

#### Road Traffic Noise:

* Road traffic is the most widespread source of the noise. It is directly proportional to the volume of vehicles. Increasing the population is increasing in vehicles and hence increasing of Noise pollution. The major sources of noise in automobiles are exhaust, intake, engine and fan, and tires at high-speed. Noise Level Monitor instrument (or with noise level data logger) measures the noise level.

#### Residential Noise Measurement:

In normal day –to – day activities, various home appliances in our residences produce noise. Some of the major sources are Exhaust Fans, lawn movers, grinders, Fan, Cooling & Heating System, T.V & Music System, motors used for pumping etc.

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