NOISE POLLUTION MONITORING

Indris P
3rd Year AI & DS
Kings Engineering College
(*Affiliated to Anna University*)

Immanuel Joshua P
3rd Year AI & DS
Kings Engineering College
(*Affiliated to Anna University*)

Mohan Babu R
3rd Year AI & DS
Kings Engineering College
(*Affiliated to Anna University*)

Prasanna Kumar S
3rd Year AI & DS
Kings Engineering College
(*Affiliated to Anna University*)

Gunaseker V
3rd Year AI & DS
Kings Engineering College
(*Affiliated to Anna University*)

Abstract:

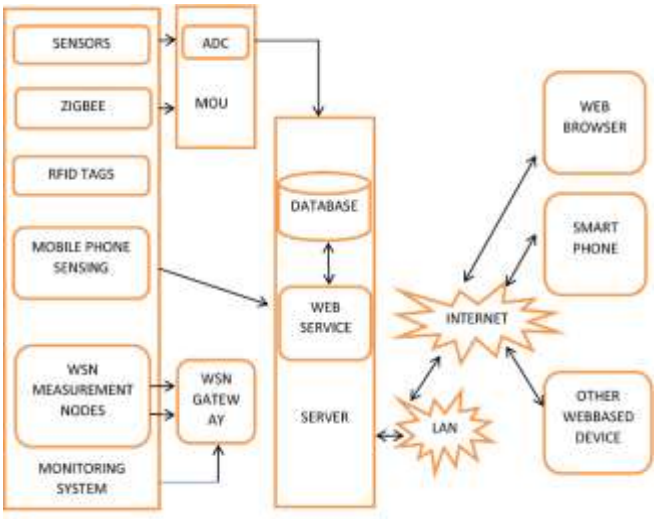
Noise pollution poses significant challenges to urban environments, affecting the health and well-being of residents. Effective noise monitoring and management are imperative to mitigate its adverse effects. This research paper presents a comprehensive review of the latest advancements in noise pollution monitoring technologies and their applications in urban settings. It emphasizes the role of open data initiatives in fostering collaboration and informed decision-making among researchers, policymakers, and the public. Furthermore, the review showcases case studies from cities worldwide that have successfully implemented advanced noise monitoring systems.

INTRODUCTION:

Noise pollution, a significant issue in urban environments, is a complex issue involving various sound emissions and can lead to physiological and psychological stress, sleep disturbances, cognitive impairments, and adverse health outcomes. Traditional monitoring methods often lack real-time data for meaningful change. The Internet of Things (IoT) and sensor technologies offer a revolution in detecting, measuring, and mitigating noise pollution. These technologies, backed by data analytics, can help unravel the complex tapestry of urban noise and develop evidence-based interventions. The Internet of Things (IoT) and sensor technologies are revolutionizing the way we perceive, measure, and mitigate noise pollution in urban environments. These technologies, backed by data analytics, can help unravel the complex tapestry of urban noise and formulate evidence-based interventions for quieter, healthier urban environments.

Methodology:

The project aims to monitor noise pollution, involving defining objectives, identifying stakeholders, adhering to local regulations, and allocating budget and resources. It involves identifying key stakeholders, ensuring regulatory compliance, and ensuring proper allocation of resources.



Calibrate noise sensors to ensure accurate and consistent measurements. Regularly perform

sensor testing and maintenance to maintain data accuracy.

Data Transmission: Implement secure data transmission protocols to send noise data from sensors to a central server or database.

IoT Platform: Utilize an IoT platform for data management, integration, and remote monitoring. These platforms offer scalability and facilitate data analytics.

Hardware Used:

- ***Noise Sensors or Microphones***
- ***Arduino IDE***
- ***Power Source***
- ***Wi-Fi / Bluetooth***
- ***Display***
- ***Jumper Wires***

Software Used:

- ***Blynk IoT***
- ***Arduino IDE***

The IoT-based noise pollution monitoring project begins with project initiation and planning, where objectives are defined, stakeholders engaged, regulatory compliance ensured, and resources allocated.

Hardware and noise sensors are carefully selected and deployed in strategic locations. Microcontrollers, power sources, and communication modules are set up to collect and transmit real-time noise data.

This data is then logged securely and transmitted to a central server or cloud-based database. The collected noise data undergoes preprocessing and analysis to identify patterns and establish noise pollution thresholds. User-friendly dashboards and visualizations are created for real-time monitoring and historical data analysis, accompanied by alerting mechanisms for timely notifications. Data storage and security measures are implemented to safeguard the information.

Throughout the project, stakeholders are engaged, and public awareness is raised, fostering collaboration and informed decision-making. Continuous monitoring and feedback collection ensure ongoing improvements in the noise pollution monitoring system, contributing to a quieter and healthier urban environment.

Conclusion:

The IoT-based noise pollution monitoring project is a significant step towards addressing urban noise pollution. It collects real-time data, analyzes it for patterns, and provides insights through user-friendly interfaces. This innovative approach has enabled informed decision-making for noise mitigation and raised awareness among stakeholders. The project has evolved through continuous improvement and feedback mechanisms, fostering a dynamic and responsive system that can adapt to urban challenges. The hope is that this project serves as a blueprint for other municipalities and organizations to harness IoT and data analytics to create quieter, healthier urban environments.