

GOVERNMENT COLLEGE OF ENGINEERING ERODE



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Government College of Engineering, Erode

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)



B.E Electronics and Communication Engineering

NOISE POLLUTION MONITORING

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INTRODUCTION:

Noise pollution is the propagation of noise with ranging impacts on the activity of human or animal life, most of which are harmful to a degree. Large amount of increasing noise pollution has made human life prone to large number of diseases. Therefore, it has now become necessary to control the pollution to ensure healthy livelihood and better future.

Noise pollution monitoring can be implemented in the following areas:

- Public transport areas like bus stops, railway stations, airports and busy routes.
- Sensitive areas like schools, hospitals, and residential neighborhoods.
- Industrial areas and working areas.
- Public sector areas like police stations, courts, collector office, banks etc.,

DESIGN ALGORITHM:

IoT Sensor Deployment:

A network of IoT noise sensors which are capable of measuring noise levels, collecting data at regular intervals, and transmitting it to a central server or cloud platform are deployed in strategic locations throughout the area of interest, ensuring even coverage.

IoT-enabled Noise Source Identification:

IoT devices are equipped with sound recognition capabilities to identify specific noise sources such as sirens, horns, or machinery.

App-development for data analysis:

An IoT-based app is developed that continuously collects and monitors noise levels in urban areas and creates real-time noise map which is used to identify high-noise areas and provide visualizations accessible to the public.

Environmental Impact Assessment Dashboard:

A comprehensive dashboard is created that integrates data from various IoT sensors which provides a holistic view of environmental parameters. Data analytics is used to assess the impact of noise pollution on air quality, wildlife, and human well-being.

PROJECT APPROACH:

- Wokwi, which is an online electronic simulator is used to simulate various ports like ESP32, Arduino UNO microcontroller and also various sensors that are deployed for noise monitoring.
- The sensors are designed in such a way that if the noise level exceeds 65dB (tolerable noise) it generates warnings and transmit the data to the central database.
- A web based app is developed in firebase which displays the noise level in a particular area to the public and it provides the users with notifications or suggestions to mitigate the noise pollution.

FUTURE DEVELOPMENTS:

- The manufacturers should set a noise limit (a maximum of 70dB) during manufacturing the electronic devices like televisions and speakers etc.,.
- They should attach a noise monitoring sensors in each device.
- A sensing unit should be developed along with manufacturing unit.
- The sensing unit should monitor each device whether the device is working under the noise limit. If the device exceeds the limit then they should automatically reduce the volume.

CONCLUSION:

A low-budget smart sensor unit for environmental noise level measurement is designed using IoT. I ensure that my project will perform efficiently. With some advanced developments in this project, we can create smart cities and a healthy environment.