Noise Pollution Monitoring

**Innovation:**

**Data analytics to identify**

* + - Noise pollution patterns
    - High noise areas
    - Potential sources

**Potential Sources:**

Noise pollution can come from outdoor sources, such as road traffic, jet planes, garbage trucks, construction equipment, manufacturing process- es, lawn mowers, leaf blowers, and indoor sources, including: boom boxes, heating and air conditioning units, and metal chairs scraping on floors.

These are the major potential sources of noise pollution.

**High Noise Areas:**

An air quality and noise pollution monitoring system that uses the internet of things (IoT) to monitor and check real-time air quality and noise pollution in a specific location for smart environment.

It detects dangerous and poisonous chemicals such as NH 3 , benzene, smoking, and CO 2 using air sensors.

**Noise Pollution Patterns:**

* Sensor Deployment: Install IoT sensors equipped with microphones or sound level meters at various locations within the target area. Ensure that these sensors are capable of collecting real-time audio data.
* Data Collection: Collect audio data continuously from these sensors. Ensure that the data is timestamped and geotagged for accurate analysis.
* Data Pre-processing: Clean and pre-process the collected data. This may involve removing outliers, filtering noise, and converting raw audio data into a usable format for analysis.
* Feature Extraction: Extract relevant features from the audio data. These features might include sound intensity levels, frequency spectra, and temporal patterns.
* Data Storage: Store the pre processed data in a secure and scalable database or data warehouse.
* Analytics and Pattern Recognition: Apply data analytics techniques such as machine learning algorithms to analyze the data. Common approaches include clustering to identify noise sources, time-series analysis to detect patterns, and anomaly detection to find unusual noise events.
* Visualization: Create visualizations, such as heatmaps or charts, to represent noise pollution patterns over time and space. This helps in understanding the data and conveying insights effectively.
* Pattern Identification: Identify patterns in the data, such as daily or seasonal variations in noise levels, noisy hotspots, or specific noise events that require attention.
* Alerts and Notifications: Implement a system that can trigger alerts or notifications when noise pollution exceeds predefined thresholds or when unusual patterns are detected.
* Continuous Monitoring: Maintain an ongoing monitoring system to track changes in noise pollution patterns and assess the effectiveness of mitigation measures.

By combining IoT technology and data analytics, we can gain valuable insights into noise pollution patterns actions and take informed to address environmental concerns.