TOPIC

REAL-TIME AIR QUALITY MONITORING

Abstract

Air pollution is a critical global challenge, impacting public health and environmental sustainability. This project presents a Real-Time Air Quality Monitoring Dashboard that provides live AQI data through API integration. The system fetches real-time pollution data from sources like OpenWeatherMap's Air Pollution API, processes it using Python**,** and stores it in a MySQL database for analysis.

The collected data is visualized using Power BI and Excel, enabling users to track air quality trends, compare pollution levels across locations, and analyze key pollutants such as PM2.5, PM10, NO_2, SO_2, CO, and O_3**.** The system supports automated data retrieval and real-time monitoring, ensuring users have continuous access to accurate air quality information.

A key feature is the AI-driven personalized health recommendation module**,** which assesses AQI data alongside user health conditions (e.g., asthma, heart disease) to provide customized alerts and precautionary measures. Built with Flask and React.js, the web-based dashboard ensures broader accessibility, helping individuals, researchers, and policymakers make informed decisions for improved environmental and public health outcomes.

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