AQI Project

Project and its main objectives

A predictive analytics application that forecasts future Air Quality Index (AQI) categories for a single U.S. city using historical AQI and weather data from the NWS.

What type of real-time data will the website handle (e.g., sensor data, user activity)?

Do you prefer Sockets or MQTT for real-time updates?

No real-time data, just historical AQI data.

EPA daily AQI - metro/county (CSV daily summaries)

https://aqs.epa.gov/aqsweb/airdata/download_files.html#AQI

More options for data:

https://aqs.epa.gov/aqsweb/airdata/daily_aqi_by_county_2024.zip (CSV)

https://aqs.epa.gov/aqsweb/airdata/daily_aqi_by_county_2024.zip (CSV)

What key metrics or analytics do you want to display?

Are there specific types of charts or visualizations you'd like to include?

For reference: EPA AQI Index. Provides a range and assigns number values to categories. This will allow us to convert into an easily understandable index.

https://www.airnow.gov/

https://www.airnow.gov/aqi/aqi-basics/

What kind of APIs do you require (e.g., for data retrieval, user authentication)?

Should the APIs follow any specific format or standard?

NWS 7-day weather forecasts

min/max temp, wind, humidity/precip proxies via forecast text

https://api.weather.gov/

Can use /gridpoints/{wfo}/{x},{y}/forecast

/gridpoints/{wfo}/{x},{y}/forecast/hourly (for more accurate data)

x and y = long, lat respectivel

What data formats should be supported for exporting (e.g., CSV, Excel, PDF)?

Will the export feature include charts or only raw data?

CSV raw data.

Do you have pre-trained AI models, or should I assist in developing/integrating them?

What specific tasks will the AI model perform (e.g., prediction, classification, anomaly detection)?

This is a classification problem, and a logistic regression model will predict tomorrow’s AQI category and output JSON.