INFOSYS SPRINGBOARD INTERNSHIP 6.0

Air Aware Smart Air Quality Prediction System

Presented By

R. Rajalakshmi

Batch – 7 (Python)

Team – 1

Infosys Springboard

CONTENT

INTRODUCTION

1. Air pollution is one of India's most critical environmental issues.
2. Cities like Delhi, Chennai, and Mumbai frequently record unsafe AQI levels.
3. People lack real-time, easy-to-understand air-quality insights.
4. AirAware provides a modern solution through monitoring, alerts, and visual analytics.

PROBLEM DEFINITION

1. No unified platform that shows real-time AQI + pollutant breakdown.
2. Existing tools are complex, lack trend analytics, or do not provide health guidance.
3. Users cannot make informed decisions about outdoor safety.
4. Need for a simple, accurate, intelligent air quality dashboard.

OBJECTIVES

1. To monitor real-time Air Quality Index (AQI).
2. To display pollutant levels (PM2.5, PM10, NO_2, SO_2, CO, O_3).
3. To visualize pollution trends using interactive charts.
4. To display weather parameters affecting AQI.
5. To provide alerts and health recommendations.

PROPOSED SOLUTION

1. A responsive, user-friendly dashboard for real-time AQI monitoring.
2. Backend APIs fetch pollution and weather data.
3. Trend charts for daily/hourly pollution changes.
4. Color-coded AQI categories with health messages.
5. Alerts when AQI crosses unsafe limits.
6. Downloadable PDF/CSV air-quality reports.

TECHNOLOGY STACK

- Frontend
    1. React.js
    2. Tailwind CSS
- Backend
    1. Python
- Chart & Visualizations
    1. Line Chart
    2. Bar Chart
    3. Area Chart
    4. Radar Chart
    5. Pie Chart

TECHNOLOGY STACK

- Machine Learning Algorithms
  - XGBoost
  - Random Forest
- Model Saving & Deployment
  - Joblib
- Data Processing & Analysis Libraries
  - Pandas
  - NumPy
  - Matplotlib

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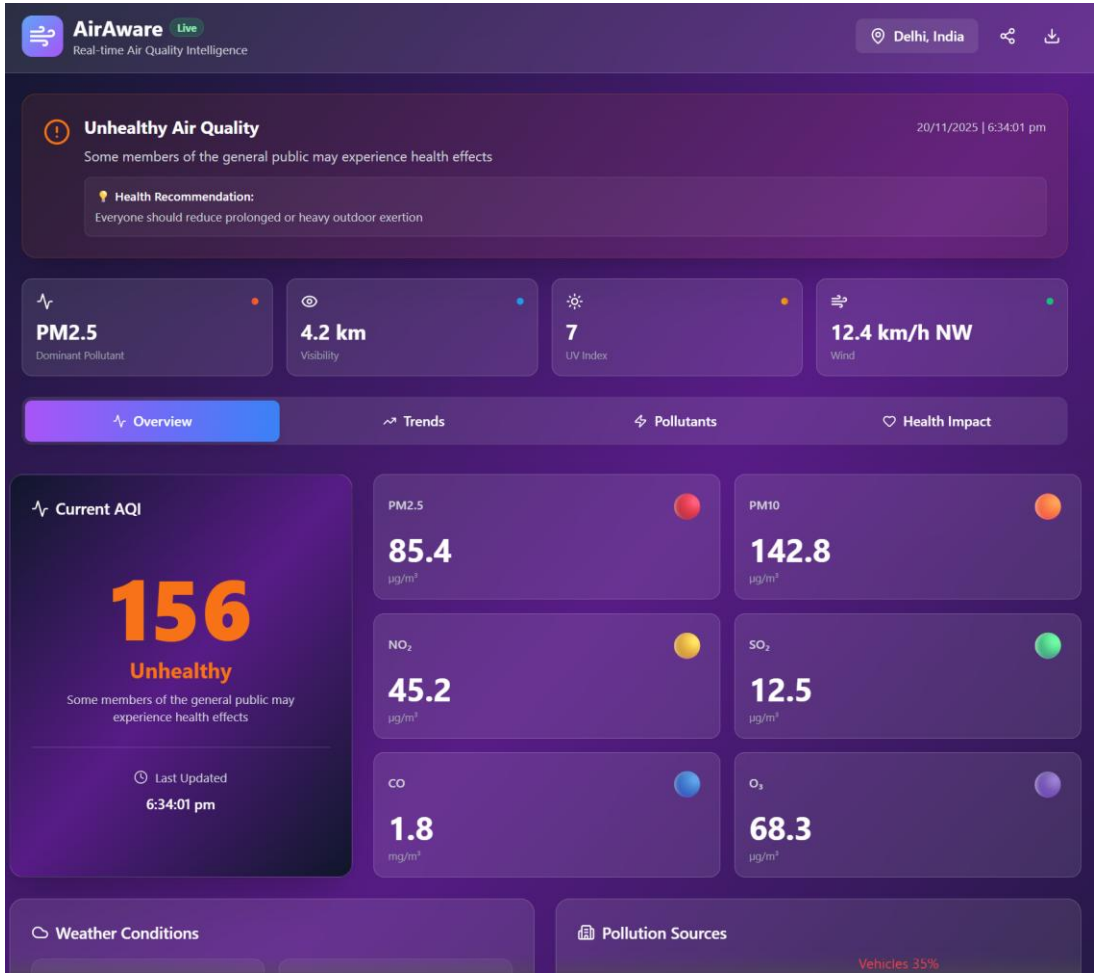
PROJECT REVIEW



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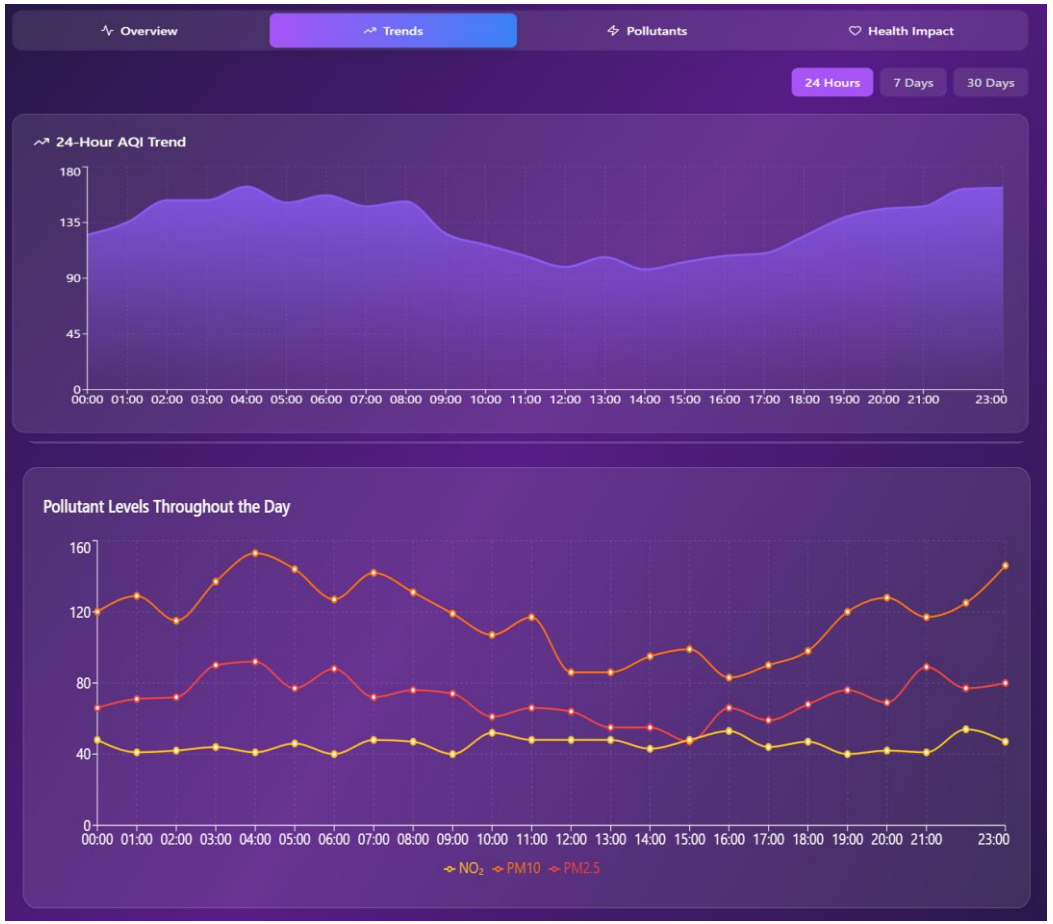
PROJECT REVIEW



GROUP PROJECT DETAILS

- Project Title - Air Aware (Smart Air Quality Prediction System)

- Team Details

  Team Number: 1

  Batch: 7 (Python)

- Team Members :
  - Rajalakshmi
  - Rahul
  - Sai Sreya
  - Lokesh
  - Divija Nandana

TECHNOLOGY STACK

Frontend Technologies

1. React (Vite) – Fast and efficient frontend framework
2. JavaScript (JS) – Core scripting language
3. TypeScript (TS) – Type-safe development and better code quality

Styling Framework

1. Tailwind CSS – Utility-first CSS framework for responsive UI

MY CONTRIBUTION

Frontend Development

1. Designed and developed the **About Page** explaining project purpose
2. Created **AQI Report** Page to display air quality data clearly
3. Implemented **Dark Mode / Light Mode toggle** for better user experience
4. Developed **Weather Agent** to show real-time weather information

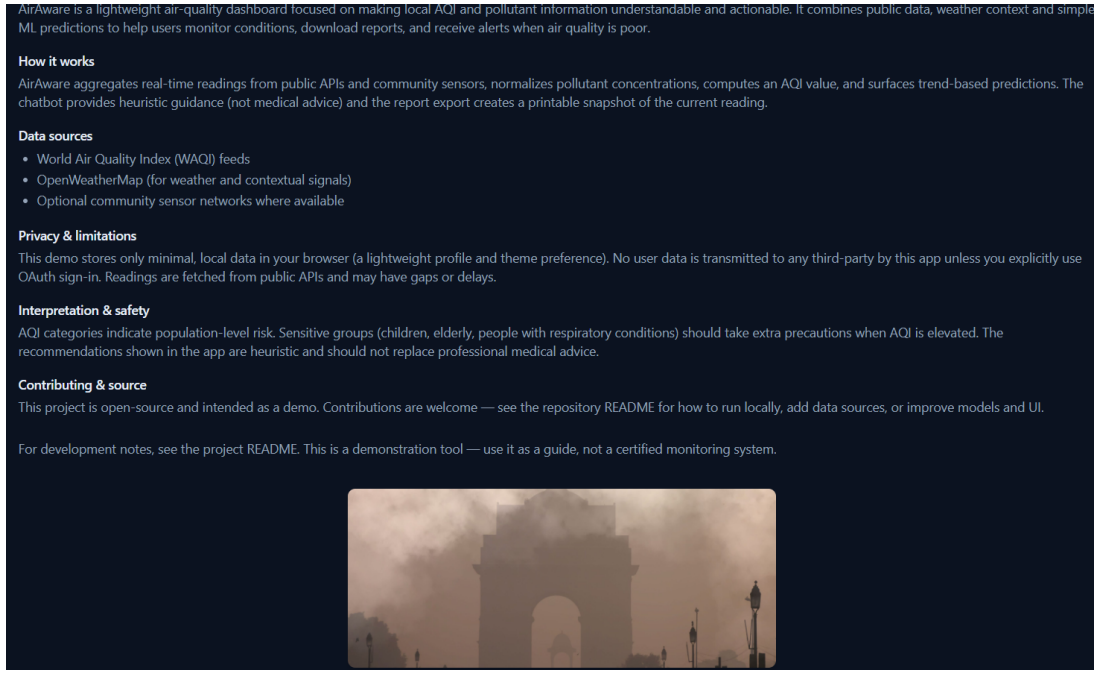
User Interaction & Features

1. Designed and implemented **Login Page**
2. Created User **Profile Page** for personalized user data
3. Integrated a **Chatbot** for user queries and guidance
4. Implemented **Air Quality Notifications** to **alert** users when AQI is poor

MY CONTRIBUTION

About Page :

1. Introduces AirAware and explains the purpose of the application
2. Helps users understand what the system does and how it works
3. Provides information about data sources used for AQI and weather
4. Explains privacy, limitations, and safety considerations
5. Guides users on how to interpret AQI values responsibly



MY CONTRIBUTION

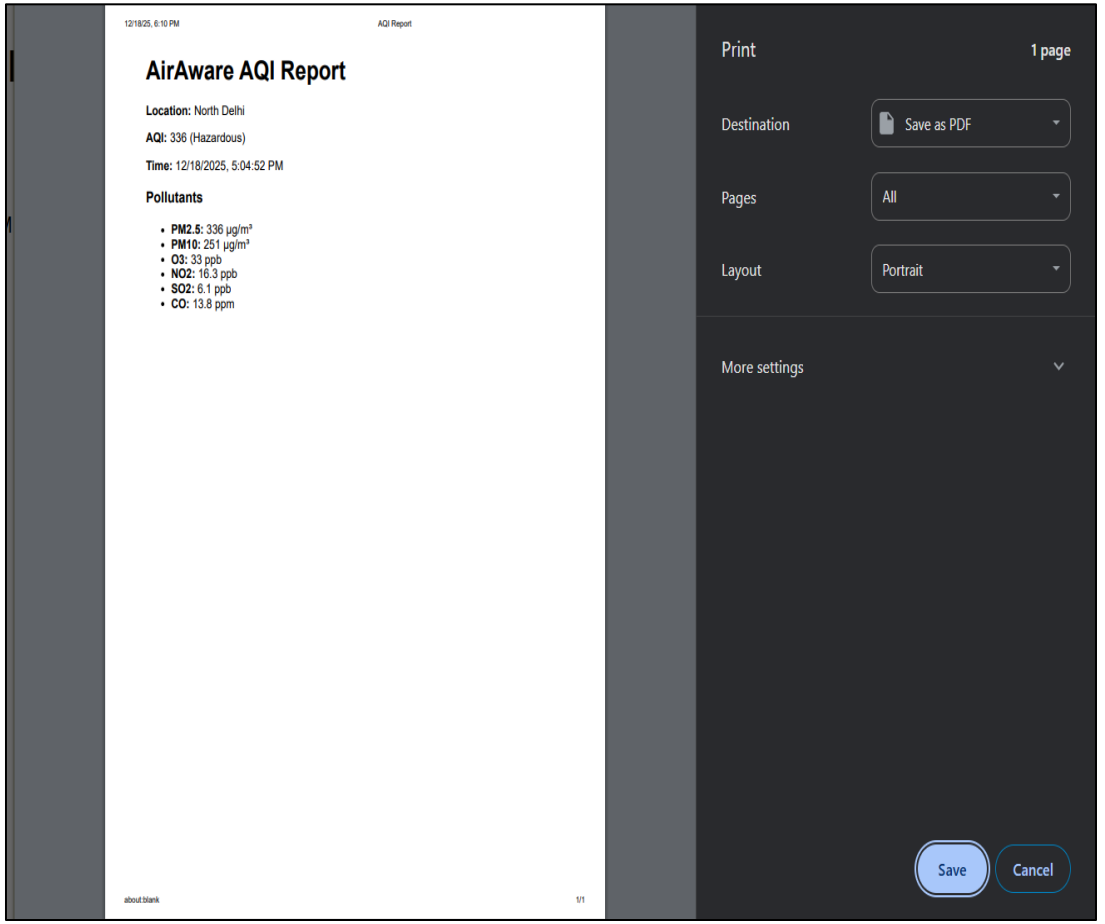
AQI Report Page :

Purpose

1. Allows users to download air quality reports in PDF format
2. Helps users save, share, and review air quality information offline

Report Contents

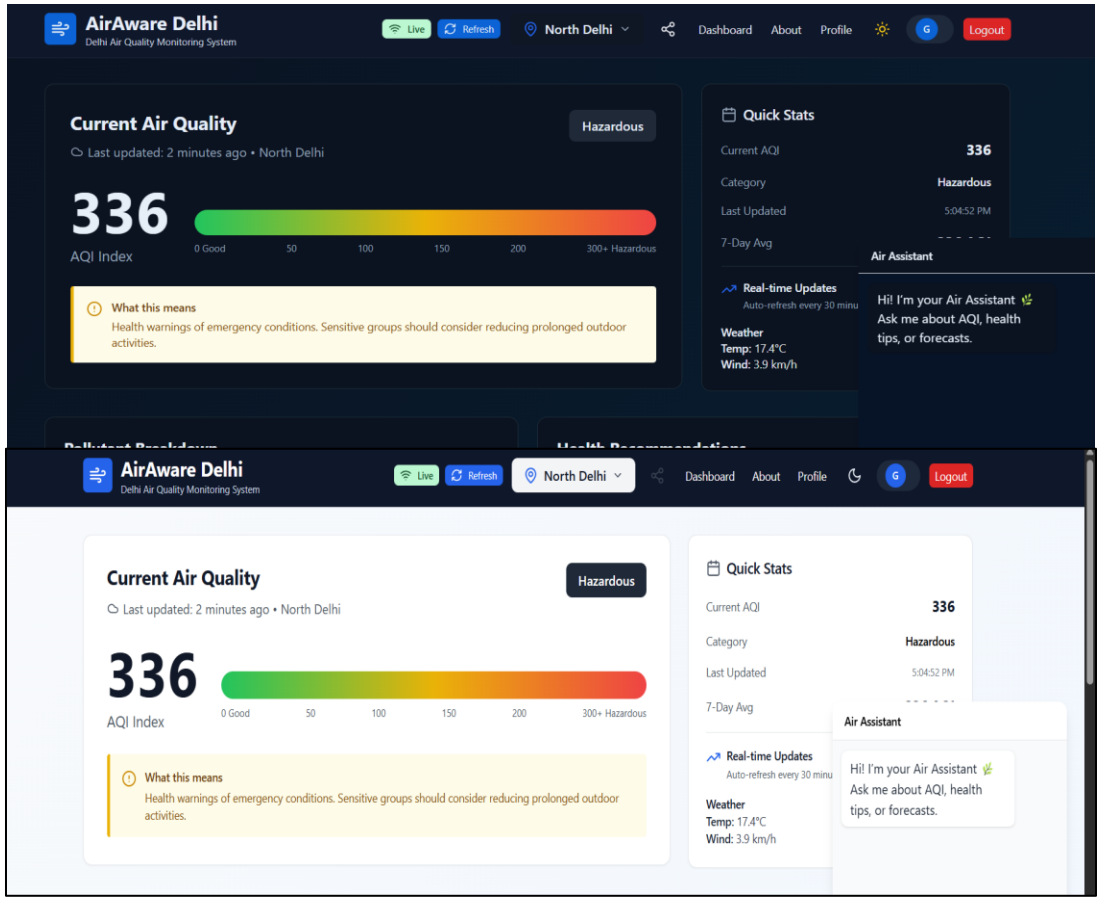
1. Location details (city / region)
2. Current Air Quality Index (AQI) value
3. AQI category (Good, Moderate, Poor, etc.)
4. Pollutant levels:
5. PM2.5, PM10, NO_2, SO_2, CO, O_3
6. Weather information (temperature, humidity, wind speed)
7. Date and time of report generation



MY CONTRIBUTION

Dark/Light Mode Toggle:

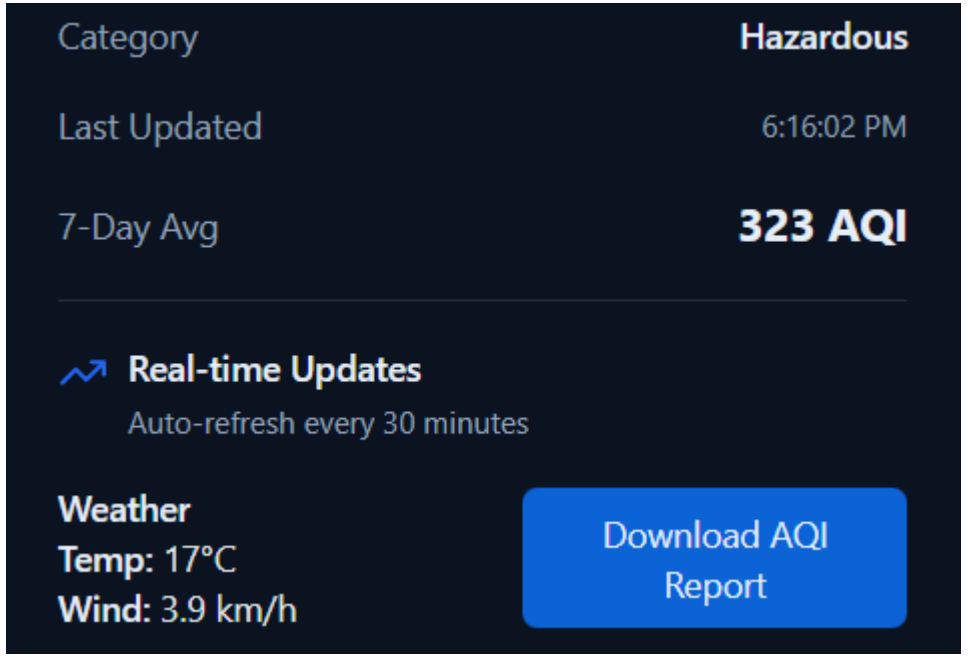
1. Allows users to switch between dark and light themes
2. Improves readability and reduces eye strain
3. Saves user theme preference
4. Enhances overall user experience



MY CONTRIBUTION

Weather Agent :

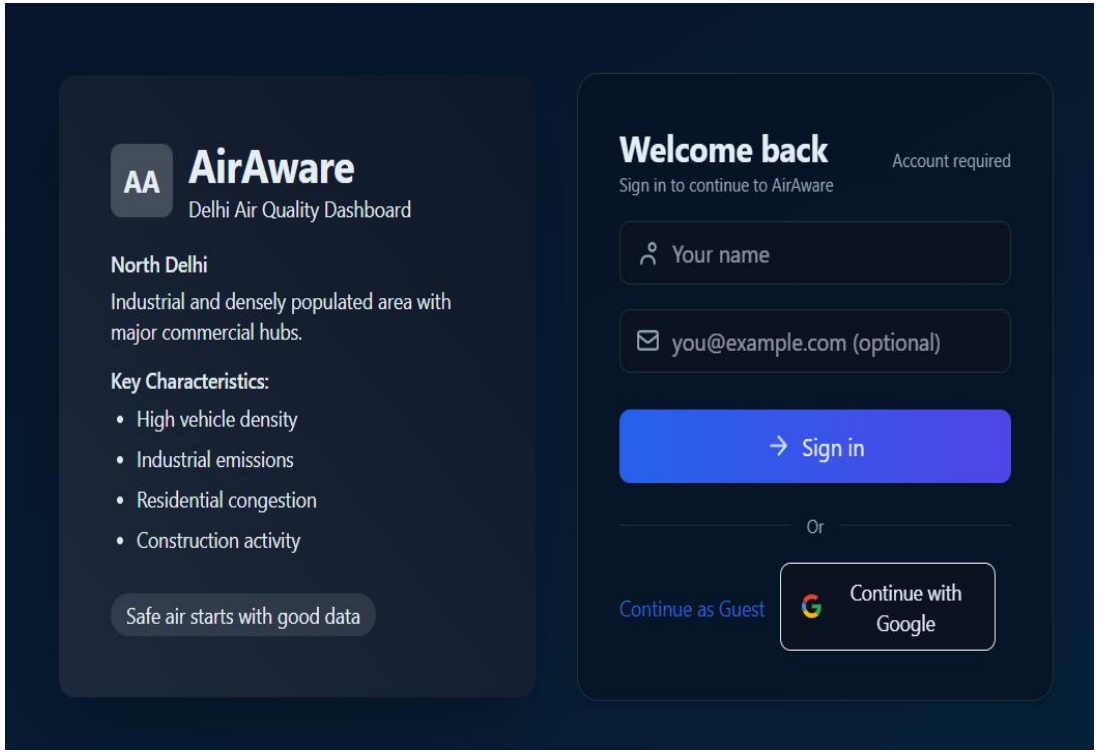
1. Displays real-time weather information
2. Shows temperature and wind speed
3. Helps understand weather impact on AQI
4. Improves accuracy of air quality awareness



MY CONTRIBUTION

Login Page:

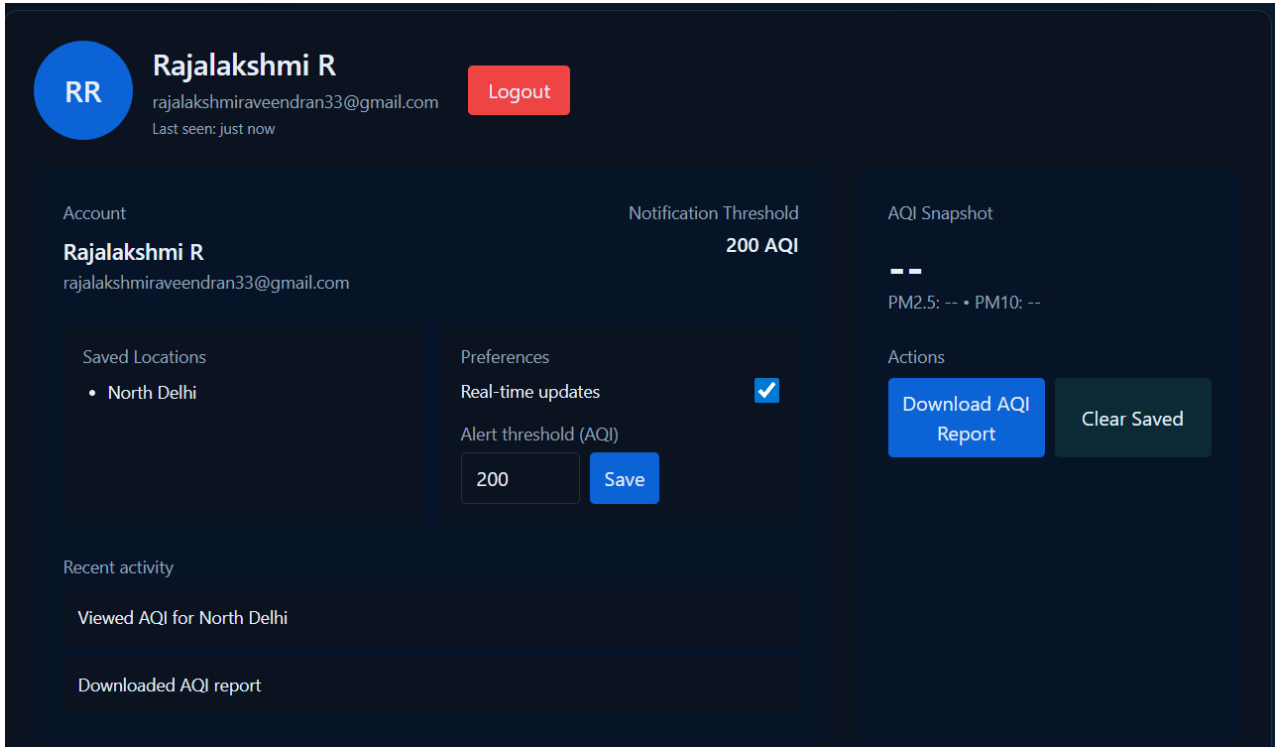
1. Allows users to securely access the application
2. Supports user authentication
3. Enables personalized features and settings
4. Ensures data privacy and user control



MY CONTRIBUTION

Profile Page:

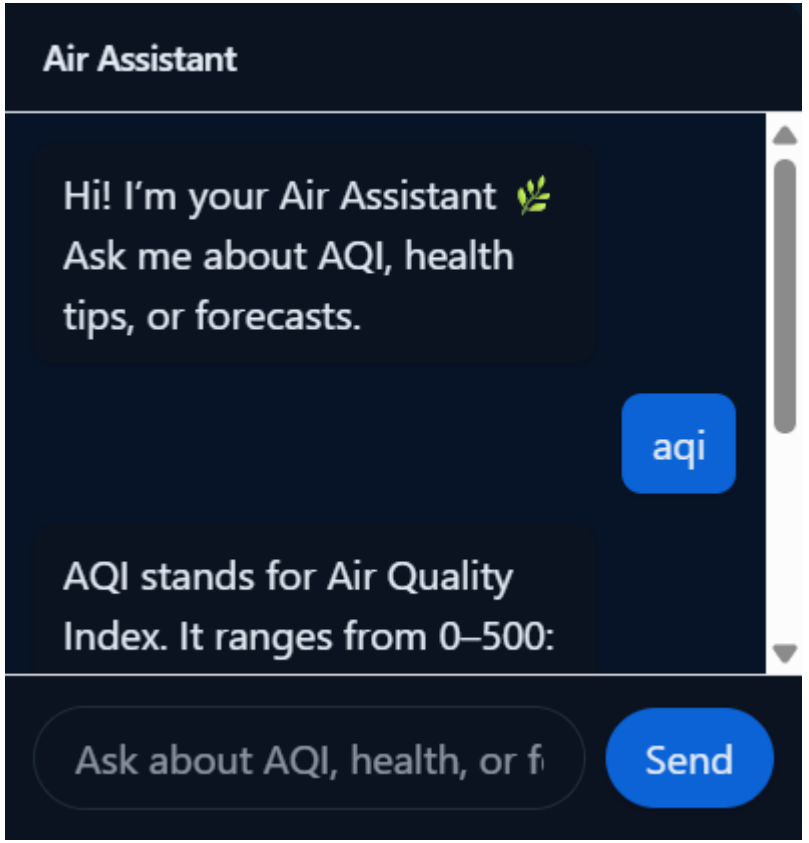
1. Displays user account details and login status
2. Allows users to set AQI alert threshold
3. Manages saved locations and user preferences
4. Provides activity history and quick actions (report download)



MY CONTRIBUTION

Chatbot :

1. Provides real-time guidance on air quality queries
2. Offers heuristic advice (not medical recommendations)
3. Helps users understand AQI trends and health precautions
4. Enhances user interaction and support within the app



MY CONTRIBUTION

Notification Alert :

1. Sends alerts when AQI exceeds user-defined thresholds
2. Notifies users about poor air quality in saved locations
3. Helps take timely precautions for health and safety
4. Enhances awareness and engagement with real-time updates

MY CONTRIBUTION

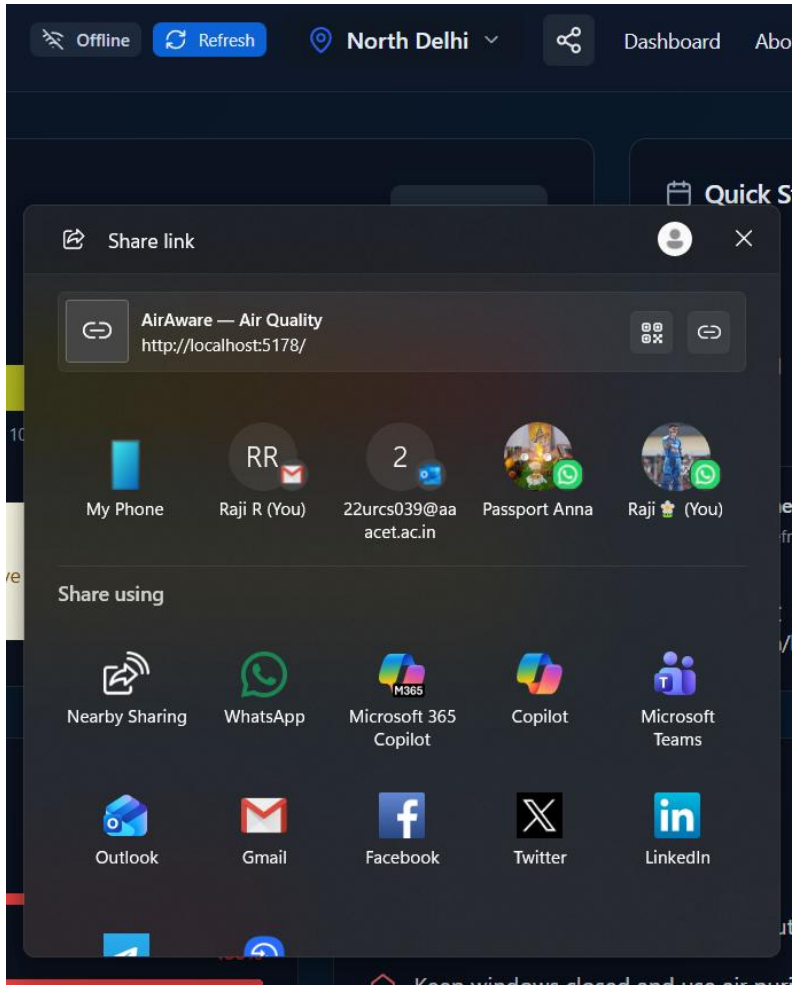
Shareable Option :

1. Allows users to share AQI reports and snapshots easily

2. Supports sharing via email, social media, or download links

3. Helps spread awareness about local air quality

4. Enables quick communication of air pollution updates



RESULT & OUTCOMES

1. Users get real-time pollution insights.
2. Enables safer decisions about outdoor activities.
3. Helps students/researchers analyze air-quality trends.
4. Easy, modern dashboard improves public awareness.
5. Solves the need for transparent environmental data.

THANKYOU