Will It Rain On My Parade?

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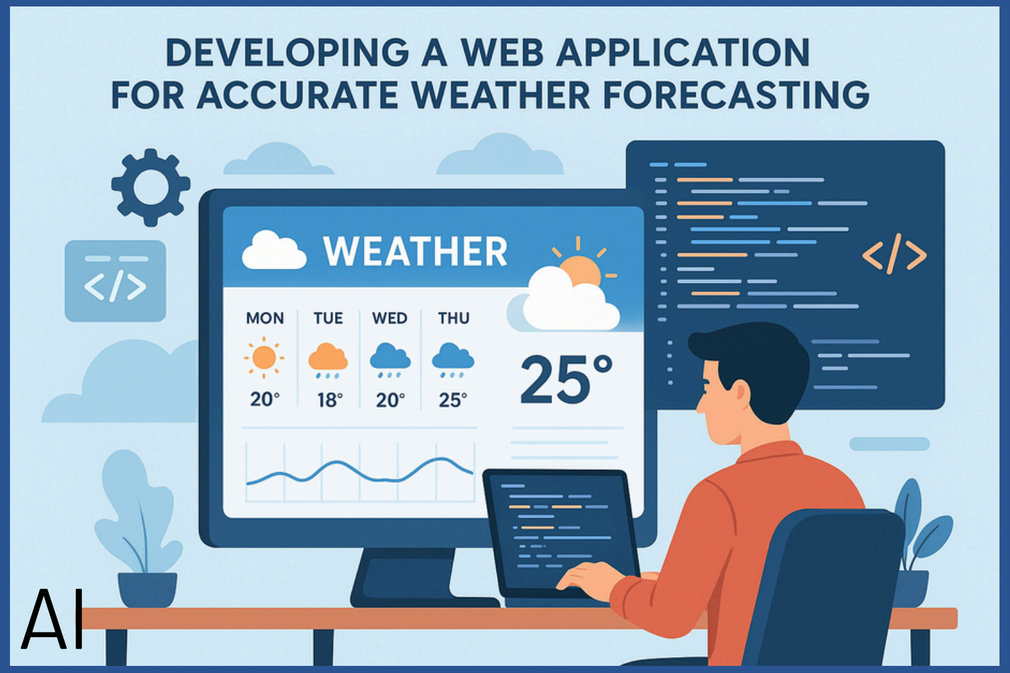
NASA INTERNATIONAL® SPACE APPS CHALLENGE

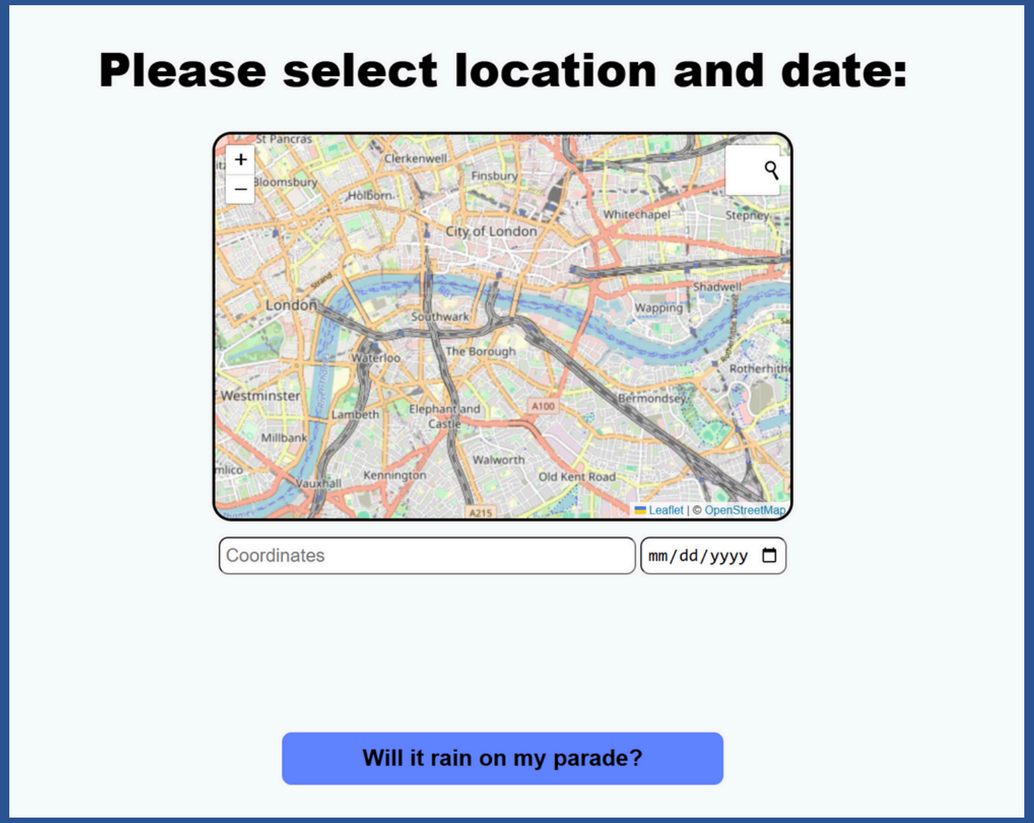


Project Overview:

Developing a Web Application for Accurate Weather Forecasting

The NASA Space Apps Challenge encourages innovation in space-related projects. Our goal was to create a web application that predicts weather for specific dates and locations. This project highlights the importance of accurate forecasts for various sectors, including agriculture and disaster preparedness, offering valuable insights to its users.

Weather Prediction Overview



User Input Process for Forecasts

Users select a specific **date and location** to receive tailored weather predictions. This intuitive input process allows for seamless interaction, ensuring that users can easily access the information they need. The interface is designed for clarity, providing a straightforward experience for all users.

Data Sources for Accurate Predictions

The application integrates **NASA's database**. By leveraging real-time data from reputable source, the app enhances prediction accuracy and reliability. This ensures that users receive the most current and relevant weather information for their selected time and location.

Advanced Algorithms for Forecasting

Employing sophisticated algorithms, the app analyzes historical weather patterns and current trends. These algorithms process vast amounts of data to generate accurate forecasts, making it a vital tool for users needing dependable weather information for planning and decision-making.

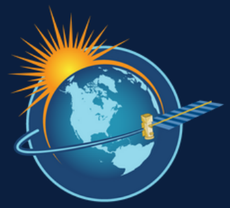
Technical Stack Overview:

Understanding the Architecture Behind the Application

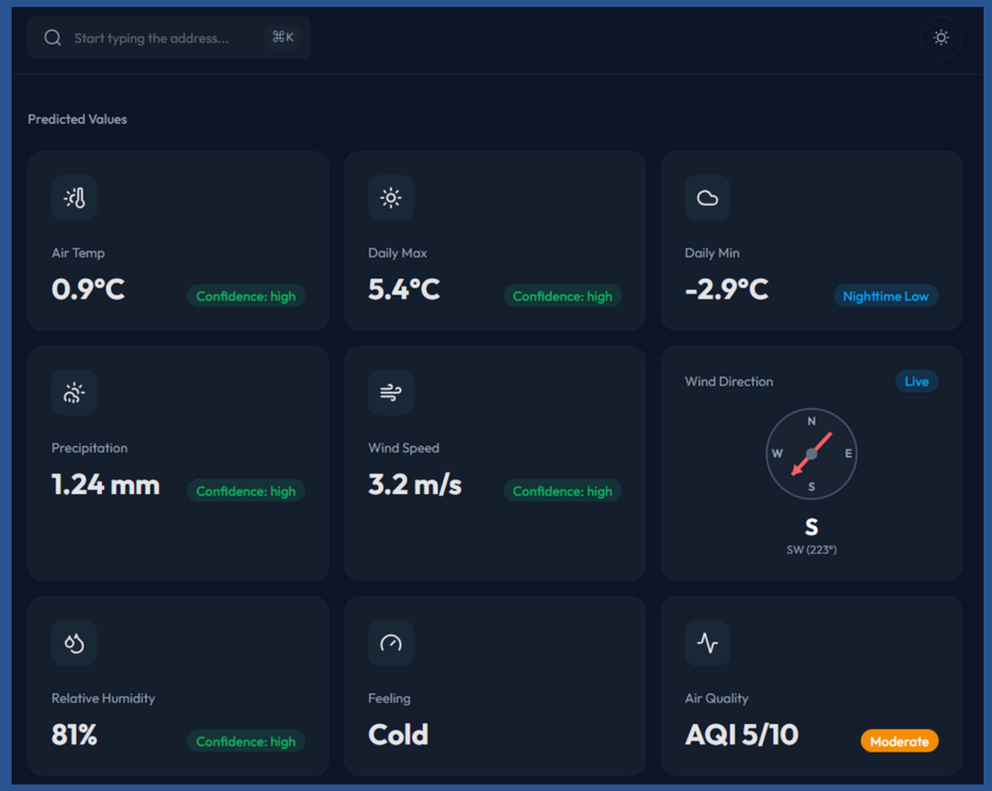
- Next.js 15.x: Main framework for building the dashboard frontend.
- React 19: UI library for building interactive components.
- TypeScript: Used for type safety and maintainability.
- Tailwind CSS v4: Utility-first CSS framework for rapid UI development and theming.
- NASA POWER API: Backend data source for weather and climate data.
- Python: Used in the backend scripts for weather probability estimation.








Main Dashboard



Key Features of the Weather Dashboard

The dashboard offers users a seamless experience by allowing them to input specific dates and locations to receive tailored weather predictions. Key features include an forecast details, ensuring that users can easily access vital information at their fingertips.

University of Manitoba

Team Roles

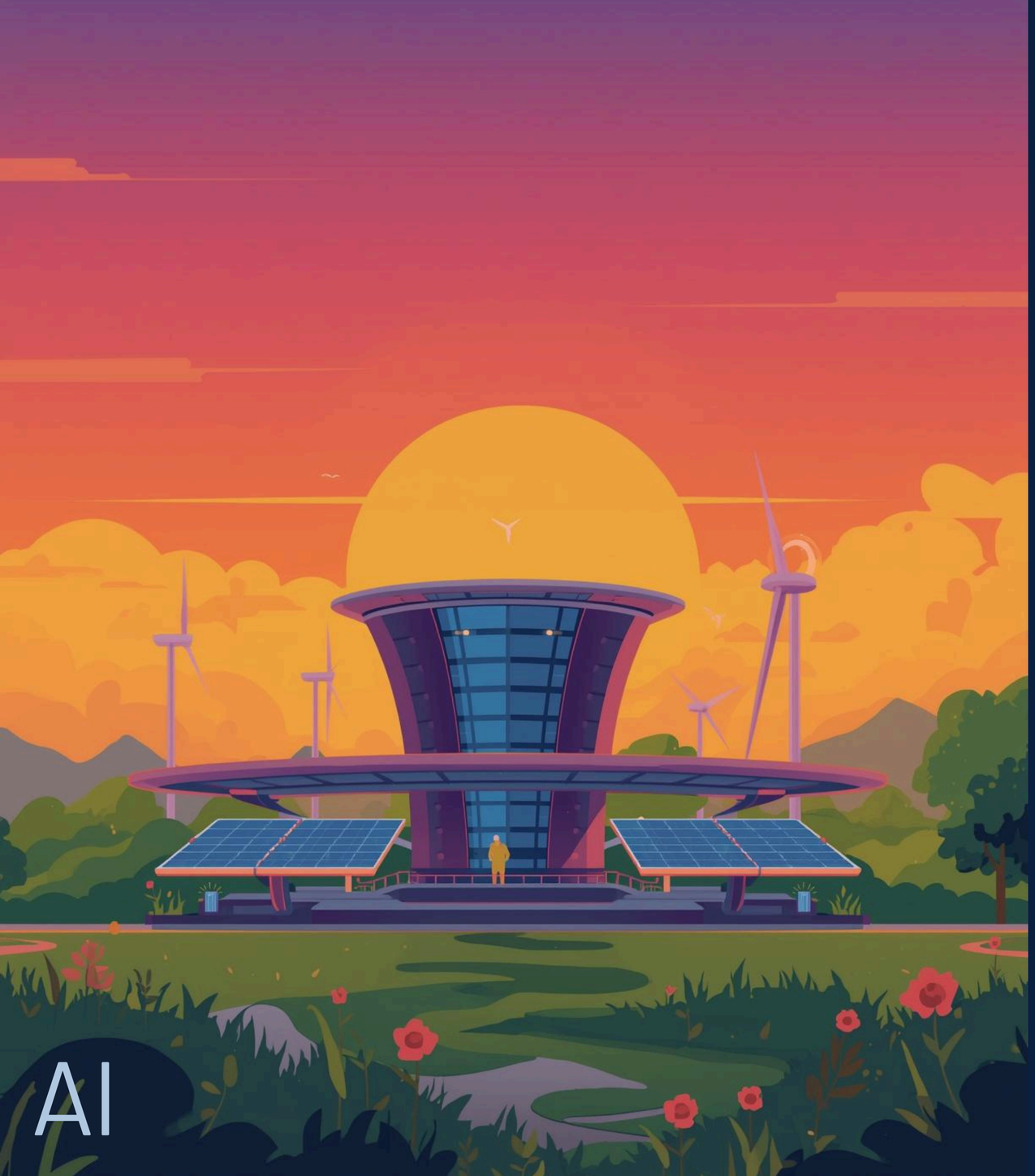
We are a group of six students from the University of Manitoba, united by our passion for science, technology, and innovation.
To maximize efficiency, we divided our work into two teams:

- Backend & Algorithm Team
- Developed the data processing pipeline and integrated prediction logic into the web platform.
- Frontend & User Interaction Team
- Designed an intuitive user interface, handled visualization of predicted weather data, and ensured smooth interaction across devices.

Lessons Learned from Challenge

Insights and feedback gathered during our project journey

Participating in the NASA Space Apps Challenge was an enlightening experience. We learned the importance of collaboration and adaptability, ultimately strengthening our technical skills and reinforcing our commitment to developing impactful solutions.



Thank You for Your Attention!
Merci pour votre attention!