



Walk Safe in Cluj-Napoca

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TEAM 8

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PROBLEM

Unsafe walking routes
due to traffic and high
pollution



TARGET MARKET

Anyone seeking clean air,
free from pollution, traffic,
and noise.



SOLUTION

Our app offers safe, clean
routes, avoiding traffic and
pollution for a healthier
walk.

FURTHER DISCUSSION A white circular arrow pointing right.





Walk Safe in Cluj-Napoca

Project Introduction



OBJECTIVE:

To create a dynamic application that guides pedestrians through the safest and healthiest walking routes in Cluj-Napoca.

WHY WALK SAFE?

"Walk Safe" empowers citizens to make informed choices about their daily routes, improving quality of life and fostering a culture of safety and sustainability.



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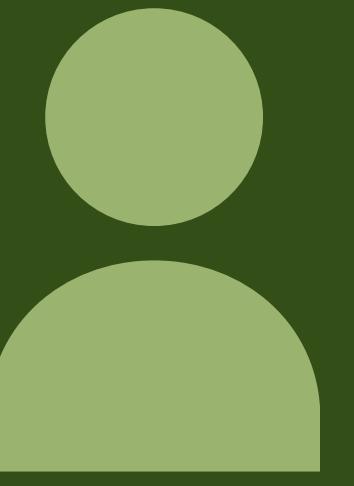
Our Project Target Market

Families prioritizing low-pollution areas for walking together and Daily travelers seeking safer routes for daily activities.



30%

Families



70%

Daily travelers



Key Problem

01

High traffic density increases accidents and stress.

Congested streets make walking unsafe and stressful, especially during peak hours.

02

Poor air quality harms health and discourages walking.

Exposure to pollution poses serious health risks, reducing the appeal of walking.

03

Lack of real-time, safe route guidance for pedestrians.

Pedestrians lack tools to navigate safely and avoid hazardous areas dynamically.





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Our Project as Solution

Introducing Walk Safe App

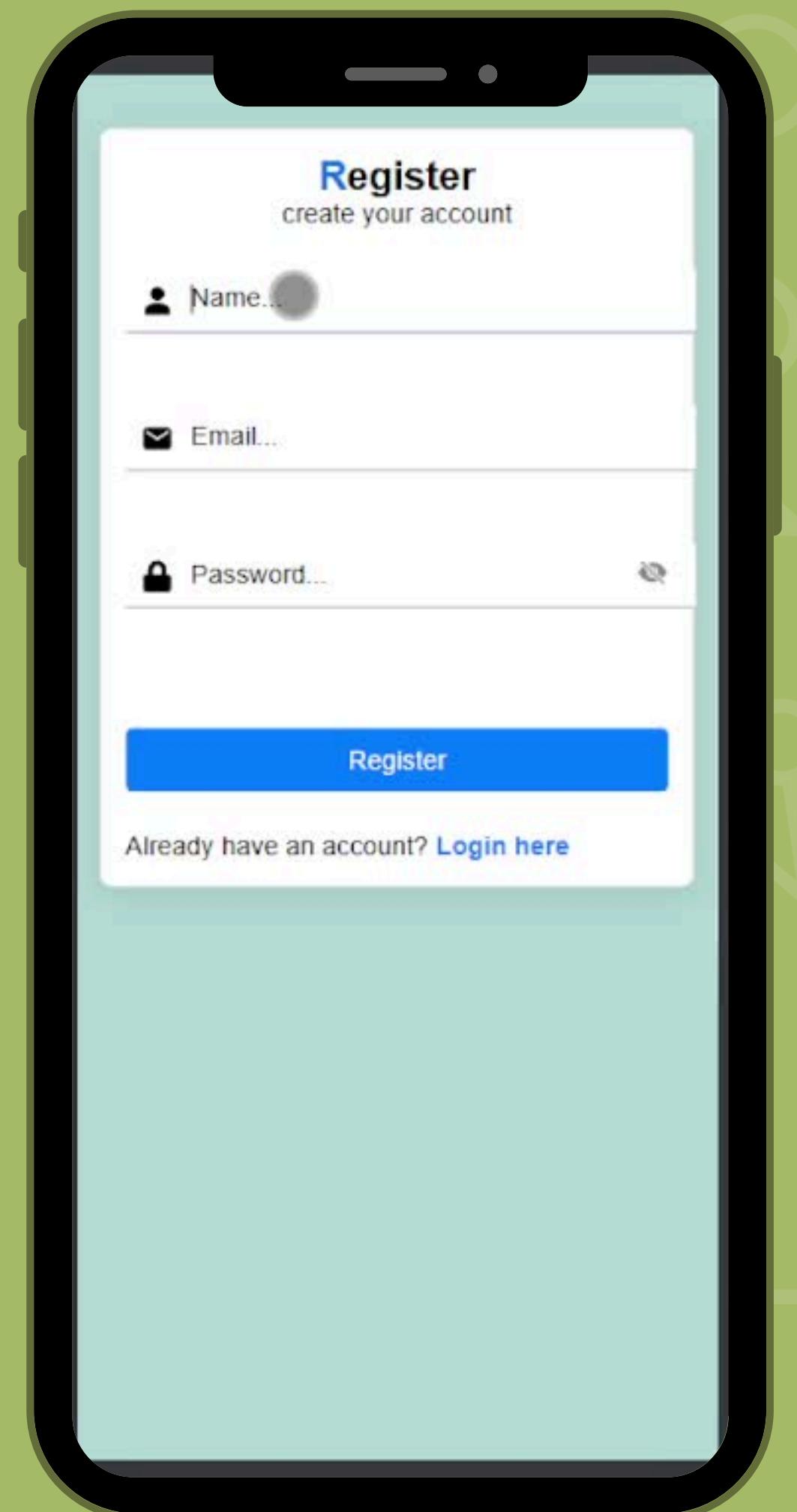
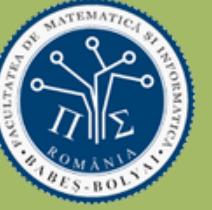
Your Smart Walking Companion





Walk Safe in Cluj-Napoca

InnoHUB
IMAGINE BETTER





Walk Safe in Cluj-Napoca

How the Project Works?

Walk Safe leverages real-time data on traffic, pollution, and weather to ensure the safest routes.



Technical Solution



DATABASE

Entity Framework Core used for the database management in the .NET application, allowing us to store user data and manage authentication securely.

REPOSITORY PATTERN

Ensured separation of concerns and easier data access logic through a clean and maintainable repository.



Technical Solution



ROUTE GENERATION

OSMnx: Utilized to download the map of Cluj and transform it into a graph for route generation. Dijkstra's Algorithm: Implemented to find the safest and optimal routes based on the user's preferences.

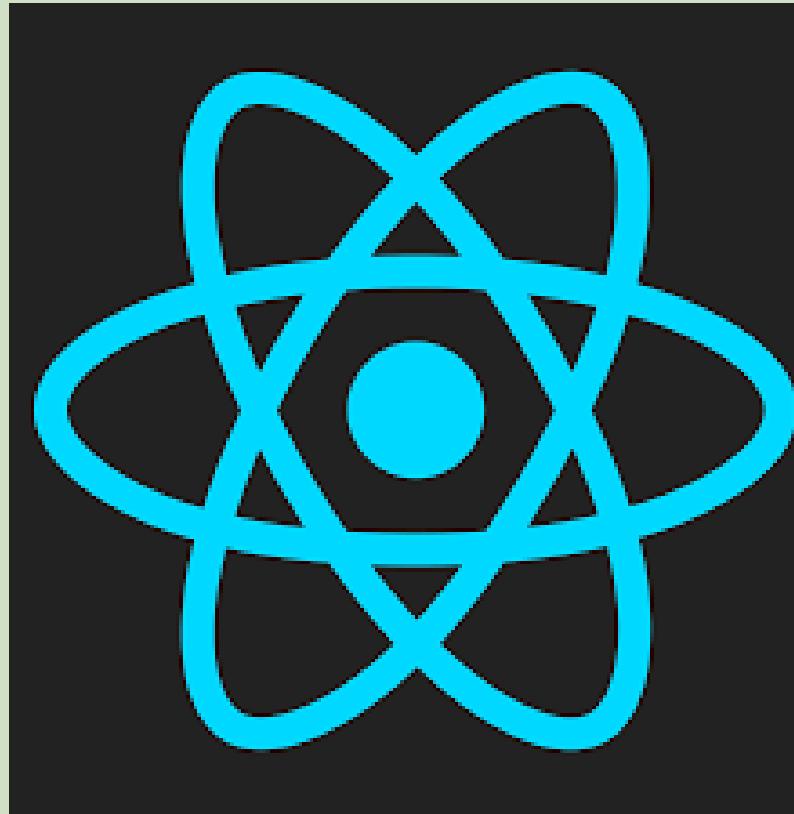
AIR QUALITY & GREEN SPACES:

Prioritizes routes passing through parks and green spaces, ensuring a safer and healthier journey for users. The application collects live data from Waze to avoid roads affected by traffic or construction zones.



Walk Safe in Cluj-Napoca

Technical Solution



REACT FRONTEND

Built a user-friendly interface using React to visualize the generated routes on an interactive map. Integrated map components and route display, ensuring seamless interaction between the user and the generated data.

UI FEATURES:

Real-Time Data: The UI dynamically updates with traffic and road alerts from Waze to keep users informed of current conditions.



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Technical Solution

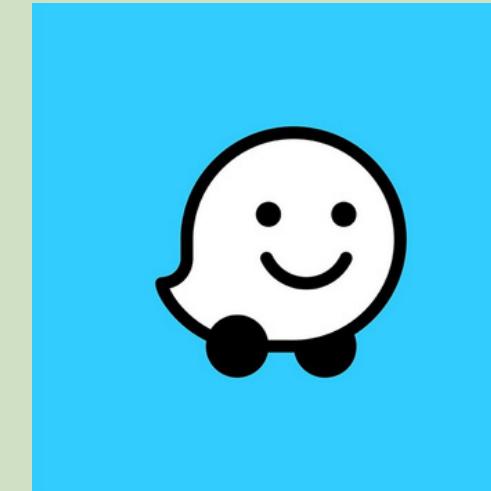
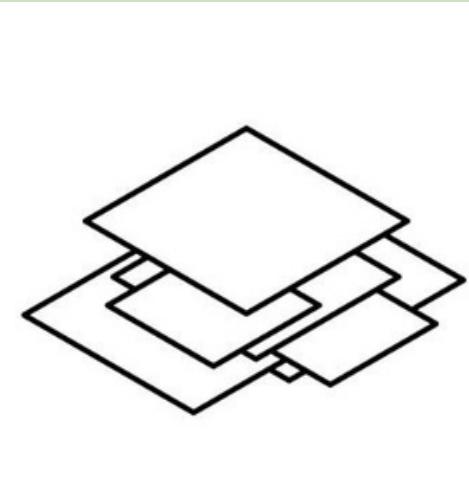
LEAFLET



Developed interactive routing in a React app using Leaflet for seamless map visualization and a custom API powered by machine routing algorithms to calculate, optimize, and dynamically render routes based on user-selected start and end points.



Technical Solution



DATA SOURCE:

Environmental Data sourced from [GetLayer](#) to obtain detailed information about parks, green spaces, and environmental features in Cluj.

Traffic and Construction Zones collected real-time data from Waze, including areas with heavy traffic and roads under construction.



Walk Safe in Cluj-Napoca

Our Team

Our team of four worked collaboratively, with two focusing on backend development and two on frontend.

We supported each other throughout the project, combining our skills to create a seamless mobile app experience.



Vaida Paul-Gabriel



Chiper Roberto-Marian



Cheran Andrei



Birsan Teodor



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End of the Presentation

Thank you for your
attention!

