



NAVGENIUS

Intelligent Route Optimization
for a Smarter Future

TEAM NAME : Bot to the Future

INTRODUCTION

Efficient delivery logistics are the backbone of modern commerce. However, most companies still rely on outdated or manual systems to plan routes, leading to inefficiencies and high operational costs. Navgenius is an AI-powered route optimization platform that intelligently maps out the most efficient delivery paths for fleets of vehicles, cutting costs, emissions, and delays, making logistics smarter and greener.



The Problem



Massive Fuel Wastage

Inefficient routes result in millions of dollars in wasted fuel annually for logistics companies.



Increased Emissions

Every extra mile driven means more carbon emissions, contributing to climate change.



Delayed Deliveries

Poor routing creates customer dissatisfaction, delayed shipments, and logistical headaches.



Complexity in logistics

Optimizing routes for hundreds of stops and multiple vehicles is a highly complex, computationally intensive task.

OUR SOLUTION



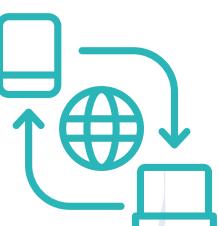
AI-Powered Optimization

Solves the Vehicle Routing Problem (VRP) using advanced algorithms.



Interactive Visualization and user friendly

Displays optimized routes clearly on an interactive map and web-based interface built for non-technical users, intuitive and simple.



Accessible Anywhere

Built with Streamlit, making deployment and usage easy and fast.

Product USP



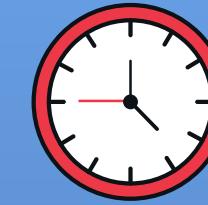
- **AI Optimization**

Solves complex routing with cutting-edge optimization algorithms.



- **Customizable**

Ready to integrate future constraints like time windows, vehicle capacity, and traffic data.



- **Interactive Maps**

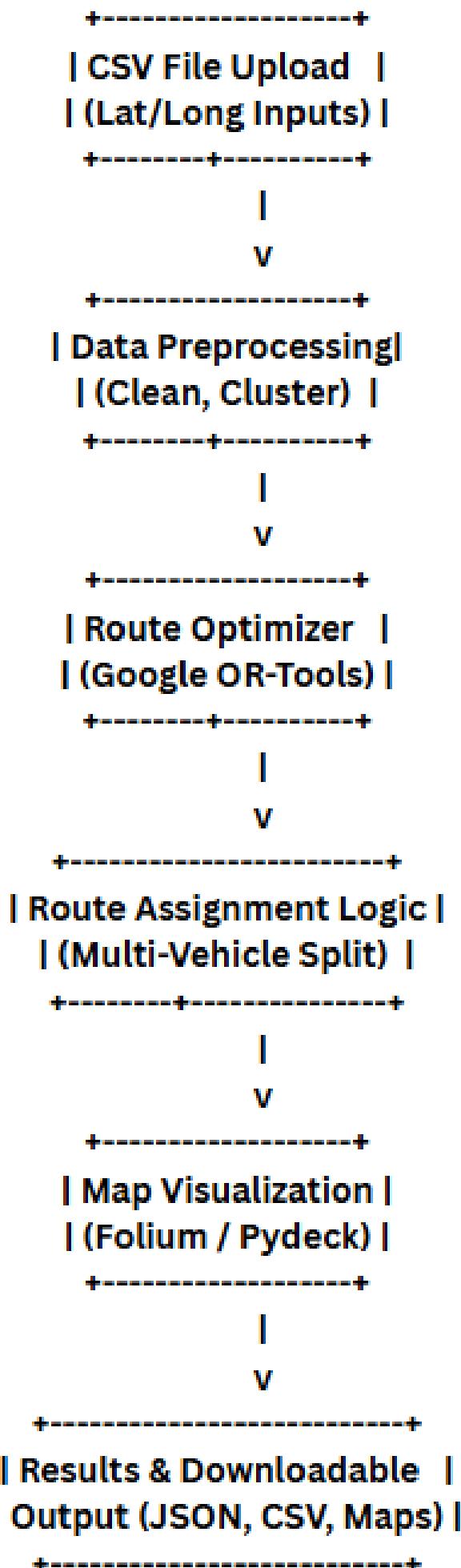
Instantly visualize which vehicle takes which route.



- **Very fast and accessible UI**

Generates results within seconds even for large datasets and built in streamlining for easy interface.

OUR WORK FLOW



OUR DESIGN



Simple upload interface for CSV files.



Selection controls for number of vehicles and other parameters.

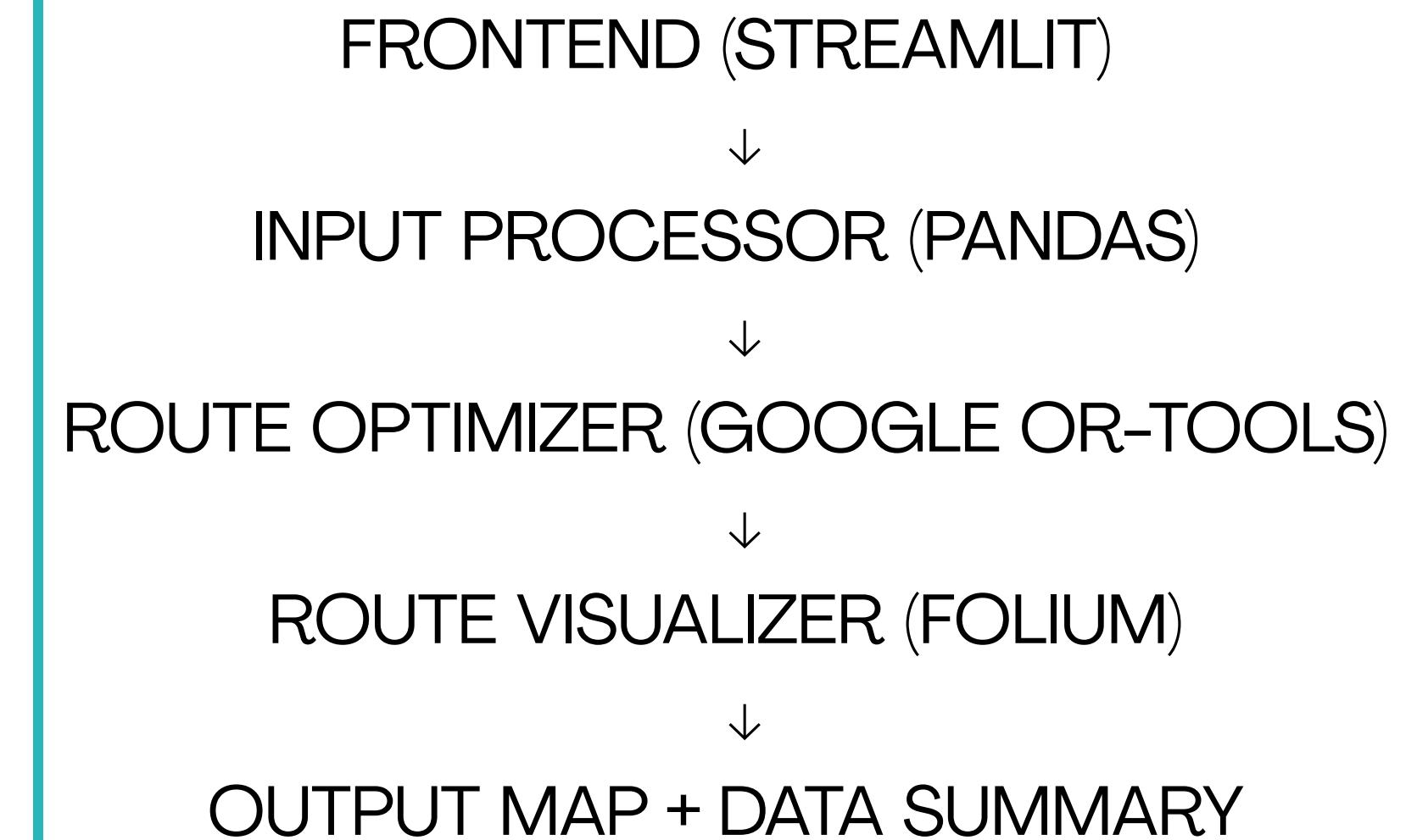


Interactive Folium map displaying each route in different colors.



Clean UI powered by Streamlit with clear instructions and one-click results.

OUR TECHNICAL ARCHITECTURE

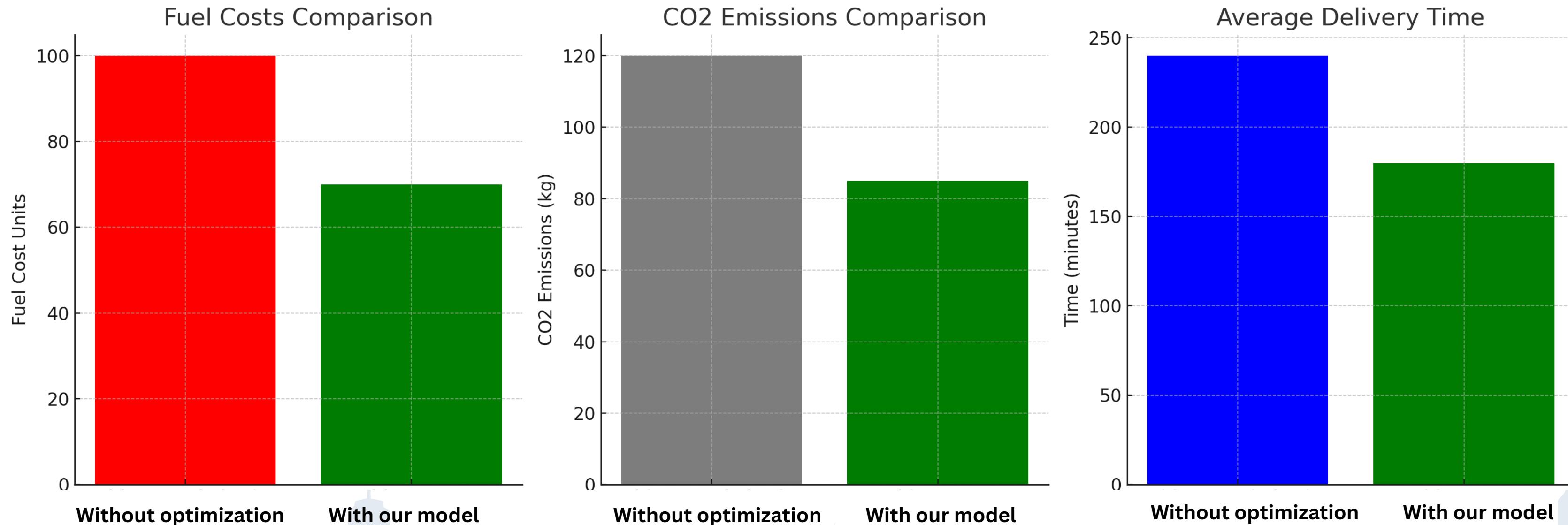


OUR TECHNICAL STACK

Layer	Technology	Description
Frontend/UI	Streamlit	Web interface for users to upload data, run optimization, and visualize results
Backend Logic	Python	Main programming language handling data processing and route generation.
Routing Engine	Google OR-Tools	Solves the VRP (Vehicle Routing Problem) with customizable constraints
Visualization	Folium / Pydeck	Renders optimized routes on interactive maps (leaflet.js or deck.gl based)
Data Handling	Pandas, NumPy	Processes input CSV files, filters coordinates, groups clusters
Clustering	KMeans (Optional)	Used for pre-processing if stops need grouping by region/zone
Deployment	Streamlit Cloud / Vercel	Hosting the app with public access for demo purposes
Storage	Local/SessionState	Outputs JSON/CSV routes for download and review

RELATED GRAPH

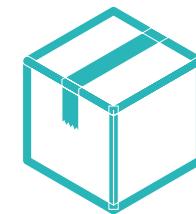
NAVGENIUS



OUR KEY COMPETITORS

Product	Strengths	Weaknesses
Routific	Feature-rich, SaaS	Expensive, limited free access
OptimoRoute	Real-time tracking	Enterprise focus, high pricing
Google Maps API	Route suggestions	Lacks multi-vehicle optimization
RouteAI	Customizable, Open	Currently lacks real-time traffic

MARKET SIZE



Global Last-Mile Delivery Market:
\$40 Billion (2023)



Fleet Management Software
Market: \$25 Billion by 2027



Sustainability Tech in Logistics:
Growing at 12% CAGR



Target Customers: E-commerce
platforms, 3PLs, hyperlocal delivery
services, NGOs, school transport
providers

Go-To-Market Plan



Pilot Project

Approach local courier startups and NGOs for beta testing.



Freemium Model

Offer a basic free tier; charge for advanced constraints, analytics.



Partnerships

Collaborate with fleet providers, NGOs, and government transport initiatives.



Scale via API

Build API layer for enterprise integrations and SaaS offering.

GITHUB LINK :

<https://github.com/soumya025/Navgenius>

DEMO VIDEO :
LINK

https://drive.google.com/file/d/1DyxJUNnzL_z9jgASernFL_bsKlat_DQOM/view?usp=drivesdk



Thank You

