Traffilyzer: Traffic Incident Analysis Application

Overview

Traffilyzer is a lightweight web application designed to analyze traffic incident data in Lithuania for 2023. Its goal is to improve road safety awareness by visualizing accident data, with a particular focus on incidents involving intoxicated drivers.

Technology Stack

- Backend: Python + FastAPI - for fast RESTful API development and data handling.
- Frontend: React + TypeScript + Vite - for a responsive UI and efficient development experience.
- Deployment: Docker - platform-agnostic containerized setup.

Architecture & Data Pipeline

Data sourced from Lithuania's Open Data Portal.

Focus on incidents involving injuries or fatalities.

Data cleaning includes converting coordinates (EPSG:3346 -> EPSG:4326), filtering for 2023 only, and translating fields to English.

Key Features

- Interactive Visualizations: Charts and graphs help users explore trends.
- Accident Map: Location pins show where incidents occurred.
- Real-Time Data Fetching: Data is loaded fresh at each start.
- Containerized Deployment: Ready to run in any environment with Docker.

Current Limitations

- Slow Startup: Initial data aggregation is resource-intensive.
- No Database: All data is processed from scratch on every launch.

Future Improvements

- Database Integration (PostgreSQL): For persistent, faster data access.
- Redis Caching: To reduce redundant computation.
- User Filters & Authentication: For personalized, interactive experiences.

Demo and Dataset Links

Project Demo

Dataset Source