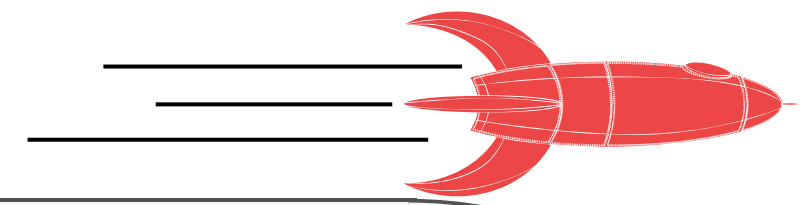


Straat-o-sfeer



Introduction

The aim of this project was to create an application for ANWB with the goal of increasing road safety in Breda.

Problem Statement

Our idea was to create an application that would predict risk levels per street and display it to the driver to increase their awareness, and make them pay more attention to their driving. By doing this, the drivers would drive more carefully, contributing to the overall road safety level.

Data analysis and preparation

In order to develop the application, we used Safe Driving data provided by ANWB. We accessed the PostgreSQL database, retrieved the data, and cleaned it by eliminating duplicates and unnecessary columns. We also visualized missing values. Additionally, we identified and removed outliers using box plots and z-scores. Weather data was integrated and conditions were categorized, and views were created. We separated, encoded, and scaled the features and target variables. Furthermore, we balanced the dataset through resampling and applied log transformation to normalize skewed features. These steps ensured that our data was well-prepared for building accurate predictive models.





Machine Learning Model

Our application uses our innovative, state-of-the-art Logistic Regression AI model to predict risk levels per street based on the current date and the past incident data for that particular date. The model uses the current date and the usual weather conditions for the date, as well as the monthly incidents and average yearly incidents. Although the model has a 55% accuracy, it can predict High Risk areas with 80% accuracy. The user can update the predictions in the app daily, and receive the most up to date information.

Deployment

We used Streamlit and Flask to deploy the application, and the geopy package using the Nominatim API to display the navigation route on a map. Additionally, we used hashlib to encrypt the user's login data.

Business value

Through the use of this app, the users would improve their driving standards, thanks to which they would have a lesser risk of getting into an accident, and they would spend less on car maintenance as a result of careful driving.

In the beginning of the application's lifecycle, it will be available for free in order to create an initial userbase. Once it is established, the application would switch to a freemium model, in which the users would be able to pay a fee for access to more sophisticated features.

Another option would be to offer the application license to other products on the market, which would allow for the integration of our application into the product.

However, the decision would depend on the development rate of the application.

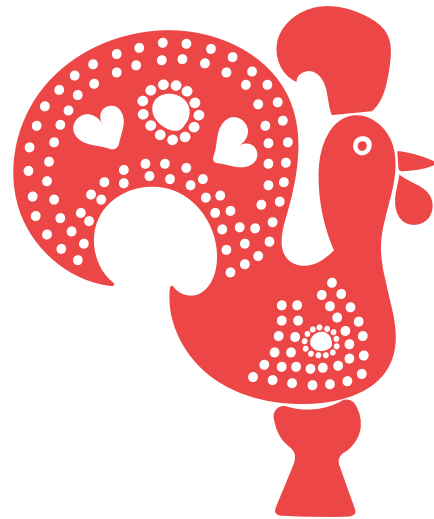


Thank you for listening!

-Team 17



Asta



Deuza



Kajetan



Marijn