Project Proposal

Vehicle Fuel Consumption Ratings

Project Summary

We will use the “2022 Fuel Consumption Ratings” dataset from Kaggle to create a database application that will provide information about environmental factors, such as CO2 emissions and ratings, of new vehicles. The application will be aimed at environmental enthusiasts and car buyers who want to better understand and reduce the impact of new cars on the world.

Project Description

Team

Anne Wesley (aewesley@indiana.edu),

Shubham Saurabh (ssaurab@iu.edu),

Varun Joshi (vajoshi@iu.edu)

Objectives

As the world takes baby steps towards electric vehicles, we want to contribute by spreading awareness about the environmental impact of gas-powered vehicles. It is not possible for everyone to switch to an electric vehicle due to financial and logistic constraints. The main objective behind this project is to make environmental data about new cars available easily. We want to enable our customers to make wise decisions based not only on finance and features, but also taking into account the environmental impact a new car will have.

Usefulness

It is easy for car buyers to obtain information and compare cars based on features and prices. But the data about the emissions and environmental impact of any car is often hidden in a seldom visited corner. This application will focus on highlighting that same information.

Our target users are consumers planning to buy a car in the near future, car manufacturers, and environmental enthusiasts. Car buyers will be able to easily decide between vehicles based on CO2 emissions, CO2 ratings and Smog ratings. Environmental enthusiasts will be able to research easily available data to spread awareness about the impact of cars on the environment we all share. Car manufacturers can view public sentiment based on the fuel consumption and emission rating for their car models as well as compare their ratings with the ratings of the competitors.

Following two websites also provide similar services. We wish to join hands and help in spreading awareness.

- https://www.fueleconomy.gov/feg/Find.do?action=sbsSelect (The official US government source for fuel economy information.)
- https://www.carboncounter.com/ (Created at the MIT Trancik Lab.)

Dataset

The dataset was originally collected on open.canada.ca as a part of a study on fuel consumption on light-weight vehicles in 2022. The data was then published on Kaggle by a user who found the dataset interesting.

This dataset contains 946 rows and 15 columns (fields). Columns include information on the vehicle such as make, model, engine size, and fuel type, as well as environmental information such as CO2 emissions, CO2 rating, and smog rating. None of the columns contain null values, but there is ample opportunity for normalization amongst the dataset. For example, of the 946 values in the “make” column, only 39 of them are unique, with “Ford” being the most common value. The dataset is contained in one csv file.

Dataset link: https://www.kaggle.com/datasets/rinichristy/2022-fuel-consumption-ratings/

Description of the functionalities

Our application offers following functionalities to the users:

Basic functionalities:

- Ability to view the CO2 emission and fuel consumption data across the car models (Read).
- Ability to enter fuel consumption numbers based on the real-world use of the car model (Create).
- Ability to add/delete comments/sentiments on the real-world performance of the car model (Update/Delete).

Advanced functionalities:

- Visualization to compare average fuel cost incurred across the car models.
- Visualization to compare fuel consumption and CO2 emissions across car models.
- Statistical analysis to show the gap between the documented fuel consumption numbers and the consumer reported fuel consumption numbers.

Codebase

GitHub link: https://github.com/AnneWesley/D532FinalProject