Demo Video Link:

- 📄 Project_Demo.mp4

Online website link:

- [CarVis Dashboard](#)

CarVis: A Dashboard for Car Decisions-Making

Nishant Joshi

#New Jersey Institute of Technology
Newark, New Jersey, United States

nj26@njit.edu

Abstract— **This project introduces a visualization tool aimed at transforming the car buying and selling process by offering price forecasts and valuable market analyses. With a dataset containing over 19,000 entries and 18 different variables such as car make, model, year of manufacture, and safety features the tool is customized to cater to the needs of users including buyers, car enthusiasts, and dealers. Featuring a user interface the dashboard incorporates elements like Dropdowns, Sliders, Checklists, and Input fields to help users navigate through complex data effortlessly. The main goal is to equip users with insights that support informed decision-making in the automotive sector.**

I. Introduction

In today's evolving landscape having access to real-time market data can significantly influence purchasing choices and investment outcomes. Conventional methods of car valuation and market analysis often lack personalized insights which can result in decisions. To bridge this gap our project focuses on creating a tool for predicting car prices that utilizes data and interactive visualizations to provide tailored market intelligence. By simplifying datasets and presenting them through an interface the tool aims to democratize data analysis by making it understandable and actionable, for both industry experts and individual consumers.

II. System Design

The core of the project is centered on its system design seamlessly combining data science with user experience design. At its core, the dashboard processes a dataset utilizing models to accurately predict car prices. The interactive features of the dashboard thoughtfully selected based on user analysis needs facilitate a data exploration experience. Users have the ability to dynamically filter data using criteria such as price, age, mileage, and fuel type empowering them to conduct analyses of market trends and vehicle characteristics. Every design choice, from the arrangement of charts to the incorporation of tools, is guided by the objective of improving user interaction and decision-making effectiveness.

III. Use case

In this section, two use cases are presented to demonstrate the diverse applications and user interactions facilitated by the car price prediction tool.

A. First Use Case

In our first scenario, we observe Kartik utilizing the functionalities of the dashboard to narrow down his search for an affordable car. He adjusts the slider to set his desired range for vehicle production years and selects manufacturers and models from input fields; if none are chosen a broader search is initiated by default. Kartik then filters by fuel type initially focusing on cars. Has the flexibility to explore all types. He examines price versus mileage using a scatter plot and studies market share among manufacturers via a pie chart. Evaluates price distribution, across car categories through a bar chart. Moreover, a box plot illustrates the price ranges and outliers, for each car manufacturer while a histogram showcases how cars are distributed based on mileage. This gives Kartik insights to help him make decisions.
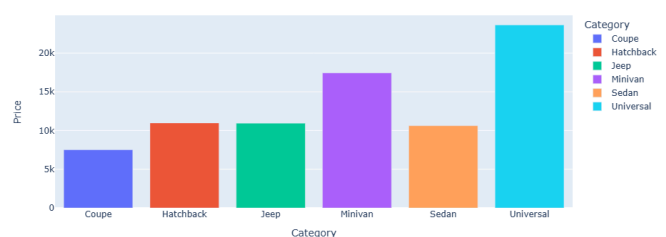
B. Second Use case

In another scenario let's consider Asmit, a researcher studying the impact of car usage on sustainability. Asmit uses the dashboard to filter vehicles from manufacturers and models to analyze their adoption rates and mileage patterns. By examining a pie chart showing manufacturer distribution and a histogram displaying car counts based on mileage, Asmit can gain insights into the prevalence and intensity of electric vehicle usage in areas contributing to research on sustainable urban transportation.

Car Distribution by Manufacturer
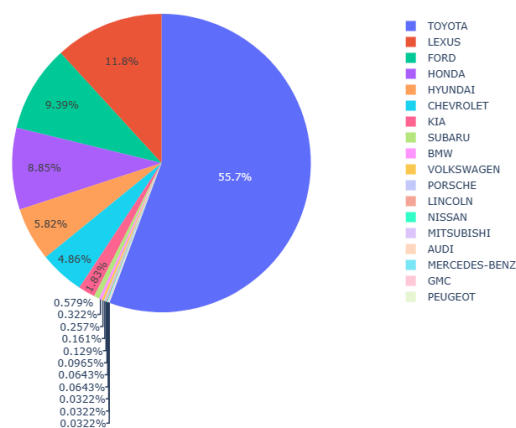
IV. CONCLUSIONS

In conclusion, this project introduces a tool in the market that enhances user engagement through data-driven insights. The immediate impact is seen in the decision-making process, for users ranging from buyers to car dealers. Moving forward the project plans to include real-time data integration, and AI-driven personalized recommendations and expand its dataset to cover a range of vehicles and market conditions. These upgrades aim to enhance the tool's ability to provide insights ultimately promoting an efficient automotive market ecosystem.

REFERENCES

[1] "Car Price Prediction Challenge," www.kaggle.com. https://www.kaggle.com/datasets/deepcontractor/car-price-prediction-challenge