Car Price Prediction Project Report

1. Project Overview

This project aims to build a machine learning model to predict car prices based on features such as brand, year, engine size, mileage, and condition. The application consists of a FastAPI backend and a React-based frontend dashboard.

2. Methodology

- Data Loading: Dataset containing 2,500 car records.

- Data Cleaning: Handling missing values and dropping irrelevant columns (Car ID).

- Feature Engineering: One-Hot Encoding for categorical variables and Standard Scaling for numerical features.

- Modeling: Linear Regression pipeline using scikit-learn.

3. Model Performance

- R-squared Score: 0.9018

- Mean Squared Error: 24721514.90

4. Dataset Insights

- Total Brands: 7

- Models Covered: 28

5. Conclusion

The model exhibits a strong correlation between features and car price, providing reliable estimates for market valuation. The interactive dashboard allows for real-time exploratory analysis and prediction.