Zaki Qasim 21L-7642 L217642@lhr.nu.edu.pk

Abubakar Pirzada 21L-5201 L215201@lhr.nu.edu.pk

BCS-6M Artificial Intelligence

Project Title: Automotive Attribute-Price Correlation Analysis

Through data preprocessing, understand the crucial relationship between vehicle attributes and prices, essential for consumers and pricing strategies.

Factors such as color, transmission type, model year, 4-wheel drive, etc are analyzed to determine what price range gives you what vehicle with which features, and vice versa, facilitating informed decisions in the automotive market for both buyer and seller.

Problem Statement

The aim of this project is to conduct an in-depth analysis of the correlation between various attributes of vehicles and their corresponding prices using a dataset sourced from car advertisements. By leveraging machine learning techniques, we seek to uncover insights into how factors such as color, transmission type, condition, odometer, and others influence the pricing of vehicles in the market. It also reveals that on what price you can get what type of features, by analyzing thousands of observations and several characteristics.

Importance of the Project

Understanding the relationship between vehicle attributes and prices is crucial for both consumers and industry professionals.

Consumers can make more informed decisions when purchasing vehicles, while industry players can gain insights into market trends, customer preferences, and pricing strategies.

Additionally, this analysis can aid in optimizing advertising campaigns and inventory management for automotive businesses.

Dataset Description

The dataset comprises car advertisements sourced from various online platforms. It includes attributes such as color, transmission type, mileage, model year, condition, and price, among others.

The dataset requires preprocessing to handle missing values, standardize data types, and improve data quality before conducting the analysis.

The dataset comprises of thousands of observations and several characteristics. Several missing values are found. No explicit duplicate is found. And several data have mismatch type.

Preprocessing of Data

1. **Handling missing values:** Replace missing values with appropriate measures such as median or mode based on relevant parameters.
2. **Data type conversion:** Convert data types to ensure consistency and suitability for analysis.
3. **Feature engineering:** Create new features to facilitate analysis, such as calculating the age of vehicles and categorizing attributes.
4. **Outlier detection and treatment:** Identify and handle outliers to prevent skewed analysis results.

Integration with Webpage

The project will include the development of a webpage that integrates the machine learning model for analyzing the correlation between vehicle attributes and prices.

Users will be able to input specific attributes of interest and receive insights into the expected price range based on the selected criteria. The webpage will provide an intuitive interface for users to interact with the model and visualize the analysis results.

Conclusion

By conducting a comprehensive analysis of the correlation between automotive attributes and prices, this project aims to provide valuable insights for consumers and industry professionals in the automotive sector.

The integration of a webpage will enhance accessibility and usability, enabling users to leverage AI-powered tools for informed decision-making in vehicle purchasing and market analysis.

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