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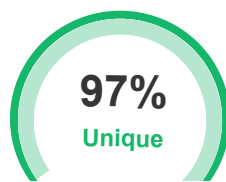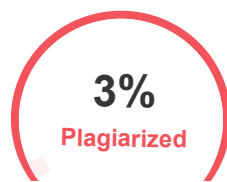
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The motivation behind the development of the provided code is deeply rooted in addressing pressing environmental concerns and the imperative need for informed decision-making when it comes to choosing vehicles. In today's world, where environmental sustainability has become a paramount global issue, the transportation sector stands out as a significant contributor to greenhouse gas emissions and air pollution. It is crucial to recognize the profound impact that our choices of vehicles have on the environment and the economy. First and foremost, the code is driven by the critical need to mitigate climate change. The automotive industry is one of the largest sources of carbon dioxide (CO_2) emissions globally. The burning of fossil fuels for transportation not only leads to increased CO_2 levels but also contributes to other pollutants harmful to air quality. The motivation for this code is to empower consumers with the tools to make environmentally conscious choices when it comes to their vehicles. By providing predictions of CO_2 emissions and fuel consumption, users can directly assess the environmental footprint of their vehicle selection. Furthermore, the economic aspect is a substantial driver for developing this application. Fuel consumption is a significant ongoing expense for vehicle owners. With the price of fuel continuously fluctuating, owning a vehicle with better fuel efficiency can lead to substantial cost savings over time. The motivation is to assist individuals and businesses in making more financially responsible choices, considering both the purchase price of the vehicle and the long-term operating costs. In addition, the code encourages the adoption of cleaner and more fuel-efficient technologies in the automotive industry. By making fuel efficiency data readily accessible and allowing users to compare various models, it indirectly exerts pressure on manufacturers to prioritize and innovate in this area. As consumers become more informed about the environmental and economic implications of their choices, the industry is incentivized to produce vehicles that align with these preferences. Ultimately, the motivation behind this code is to empower users with the knowledge and tools they need to make choices that are not only aligned with their personal preferences and needs but also beneficial to the environment and their financial well-being. It recognizes the interconnectedness of individual choices and their collective impact on the planet, reinforcing the importance of sustainable and responsible vehicle selection. 2.2 Objective: The primary objectives of the code are as follows: 2.2.1 Model Deployment: The code aims to deploy machine learning models for predicting CO_2 emissions and fuel consumption based on input parameters such as engine size, cylinder count, and vehicle class. It allows users to select from different regression models, including linear, ridge, lasso, and elastic net, to make predictions. 2.2.2 Data Visualization: The application visualizes fuel consumption

data using line plots, allowing users to explore how various vehicle makes and models compare in terms of fuel efficiency. This objective aids users in making informed decisions when considering different vehicles. 2.2.3 Model Comparison: The code also facilitates the comparison of specifications between two different vehicle models. This comparison includes attributes like engine size, cylinders, vehicle class, and transmission. This feature empowers users to evaluate and contrast the characteristics of distinct vehicle models. The model serves as a valuable tool for users who want to assess the environmental impact and fuel efficiency of various vehicles, thereby promoting eco-friendly and economically sustainable choices. It combines machine learning with user-friendly web interfaces to achieve these objectives. This literature survey outlines the motivation and objectives of the provided model, highlighting its relevance in addressing concerns related to environmental sustainability and the selection of fuel-efficient vehicles.

Sources