TRIP BASED MODELING OF FUEL CONSUMPTION IN MODERN FLEET VEHICLES USING MACHINE LEARNING

PROBLEM STATEMENT

Why do we need a trip-based modeling of fuel consumption in modern fleet vehicles?

Nowadays, The automotive and transportation sectors, a nation's economy, and the environment as a whole can all benefit from heavy-duty vehicles' high fuel efficiency. The cost of fuel used makes up about 30% of the total life-cycle cost of a heavy-duty truck. Even a small percentage decrease in fuel use can have a big impact on the transportation sector's expenditures. Effective and precise fuel consumption estimation (measured in L/km) can aid in the analysis of emissions and the prevention of fuel-related fraud. According to Environmental Protection Agency (EPA) estimates, transportation (heavy-duty trucks and passenger cars) is responsible for 28% of all greenhouse gas emissions.

OUR PLAN

Improving vehicle fuel economy and combating fraud in fleet management require the ability to model and anticipate fuel usage. A vehicle's fuel consumption is influenced by a number of internal and external factors. For the examination of fuel usage, some of these variables might not be measured or available. The primary goal of the project is to develop a machine learning algorithm to forecast, based on the type of gas used, how much gasoline fleet vehicles will need. A web application that incorporates an ML model has been created.

ABSTRACT

Approximately 20% of fuel consumed in the United States is from heavy-duty trucks (USA). Heavy-duty vehicles' (HDV) fuel economy is influenced by a number of real-world factors, including road conditions, driving habits, the outside environment, and vehicle characteristics. Despite the fact that modern automobiles adhere to emissions rules, the possibility of an engine problem, The performance of a vehicle could be impacted by normal wear and tear or other elements. fuel usage forecasting. The car industry can save money and effort by calculating the cost and time per trip based on dynamic on-road data for testing on roads. Diagnosing the cause of fuel use via data modelling is simple. Having an understanding of the input parameters An artificial neural network (ANN) was used in this paper to designed to simulate fuel use in contemporary heavy-duty trucks for estimating the overall and a trip's immediate fuel usage based on a select few crucial factors, such as engine load (%), Vehicle speed (km/h) and engine speed (rpm). Data on immediate fuel consumption can be used to ensure optimal fleet operations, forecast fuel usage patterns.

ARCHITECTURE