

# MACHINE LEARNING BASED VEHICLE PERFORMANCE ANALYZER

Date	19 September 2022
Team ID	PNT2022TMID31735
Project Name	Machine Learning Based Vehicle Performance Analyzer

## TEAM LEADER :

BAVADHARNI T – 711719205011

## TEAM MEMBERS :

LEODAS L - 711719205029

NISHA T - 711719205032

NISSAN NAWAZ S A - 711719205033

SAMUEL V - 711719205045

## ABSTRACT :

The monitoring of car performance, especially gas consumption, has so far been approached only very superficially. A typical fuel gauge, when closely monitored, shows an extremely non-linear relationship between needle movement and fuel consumption. Inaccuracies occur especially in the range of critical low fuel values of 5-10% or more. In the past, due to this limitation, some luxury cars had an audible and flashing light alarm function to indicate a low fuel condition. These systems, which add to the existing fuel level, have no more accuracy than the fuel level monitor alone.

In recent years, with the availability of computer techniques and reliable and less expensive computer equipment, a number of systems have been developed to provide somewhat more accurate information about vehicle performance.

## LITERATURE SURVEY

TITLE	AUTHOR NAME	YEAR OF PAPER	METHODOLOGY
Car Damage Assessment for Insurance Companies	1. Mandara G S 2. Prashant Ankalkoti	2022	In this proposed project a neural network based solution for car detection; manage the problem of car damage analysis, prediction of car damage location and severity of the damage. This project carries out lot of functions in a one package. The system will definitely help the insurance companies to analyze the car damage a lot more successful and well organized. Simply by send the image of the car, the system will analyze the given image and show if there is any kind of damage to the car along with the location of the damage and also the severity of the damage.
Intelligent Vehicle Damage Assessment system based on computer vision	1. Zhu Qianqian 2. Guo Weiming 3. Shen Ying	2020	The core advantages of the intelligent damage determination system based on computer vision are as follows: Intelligent image algorithm has high precision, the accuracy rate is 87.3%. It can assist all or part of the damage fixing personnel to complete the damage fixing work. The speed of survey and damage determination is fast, the time of survey and damage determination can be raised from 9.94 days to minute level. Intelligent wind control is rigorous, covering the whole process of fixed loss.

Machine Learning Based Real-Time Vehicle Data Analysis for Safe Driving Modeling	1. Pamul Yadav 2. Dhananjay Singh	2019	The results have proven to be approximately 80% and are very helpful to be used in different use cases such as a parameter in finding the driver's driving performance in a driving school, as a good estimate for finding an optimal price for a used car that can be based on several factors. Trained Output values were used as the benchmark for testing against the gathered data. It is also possible that different features can be considered for improving the hypothesis.
Performance Analysis of Vehicle Detection Techniques: A Concise Survey	1. Adnan Hanif 2. Atif Bin Mansoor	2018	Evaluating the performance of three major vehicle detection algorithms under varying illumination, traffic density, and occlusion. Histogram of gradient (HoG) based detection has been observed to be more robust than Gaussian Mixture Model (GMM) and adaptive motion histogram-based detection, making it a priority for these applications due to high traffic density and high occlusion is a candidate.
Effects of a vehicle's driver behaviour to the fuel economy	1.Raksit Thitipatanapong 2.Thanad Luangnarutai	2011	The vehicle fuel economy in a passenger car was studied with three difference drivers. As results, the vehicle dynamic index (VDI) had been proposed to interpret the driver behavior, and the aggressive driver trended to have higher degree of VDI with poor fuel consumption rate (FCR). The analysis revealed that VDI and FCR are related, so the VDI can be applied to rate the driver behavior for improving fuel consumption

## **SUMMARY**

This study reviewed and summarized available data for commercial vehicle sales as well as real-world fuel consumption values for tractor-trailers in the U.S., EU and China. Together, these key markets constitute more than 70% of HDV sales worldwide. Looking at the breakdown of HDV fuel consumption in each of the three regions, tractor-trailers represent the largest (or nearly the largest in the case of China) share of fuel use and GHG emissions. As such, we chose this segment of HDVs as the initial focus of our ongoing effort to better understand how blossoming fuel efficiency regulations for heavyduty trucks and buses in various markets around the world are impacting technology penetration and real-world fuel efficiency performance. Fuel consumption data for full vehicles generally fall into one of the following four categories: national or regional data, aggregate data across a number of fleets, road test data for individual vehicles, and chassis dynamometer data. For this study, we had access to all four types of data, although the types of data available for each region varied widely. Overall, despite there being a general scarcity of data for real-world fuel consumption of tractor-trailers, we found the largest number of publicly available sources for the U.S., followed by the EU, with China having very few sources to reference other than chassis dynamometer results.