Literature Survey
Machine Learning based Vehicle PerformanceAnalyzer

1. *Reza Tolouei, Helena Titheridge (2009) Vehicle Mass as a determinant of fuel consumption and secondary safety performance. An increase of vehicle mass is associated with an increase in its fuel use and a decrease of injury risk to its occupants during collisions. This paper confirms that there is generally a trade-off in vehicle design between fuel economy and secondary safety performance imposed by mass. The coefficient of the variable "Engine size" shows the elasticity of fuel consumption with respect to engine size. Positive values for this variable confirm that fuel consumption increases as engine size increases in both driving cycles. This paper thus concludes that increasing mass of all the vehicles within a fleet cannot be necessarily beneficial to overall safety as the, safety performance of a vehicle in the fleet depends on the mass of other vehicles.*

2. *Punith Kumar Nagaraje Gowda et al (2019) Performance of Motor Vehicle based on Driving and Vehicle Data using Machine Learning. This paper identifies the performance of small passenger cars in terms of fuel efficiency by considering the potential sources: the vehicle characteristics and the driver/driving behaviour and models are built using techniques like Multiple Linear Regression, XGBoost, Support Vector Machine and Artificial Neural Network and their performance is compared to discover the first rate technique in predicting the fuel efficiency and to propose the optimum driving behaviour in terms of throttle position to achieve better fuel efficiency. The results reveal that XGBoost model outperforms all other models developed in predicting the fuel efficiency for the different split ratios evaluated and comparing the throttle position with the predicted fuel efficiency explains that to achieve better fuel efficiency the throttle position must be around 70 to80onascaleof 100, referred to as full throttle position.*

3. *Rojas, J., Tabattanon, K., Goberville, N., D'Souza, C. et al.(2022) Vehicle Performance Analysis of an Autonomous Electric Shuttle Modified for Wheelchair Accessibility. The performance of three autonomous shuttle design configurations: an off-the-shelf shuttle that is not wheel chair accessible, the campus pilot shuttle that is wheelchair accessible, and a new design using wheelchair accessibility foresight were investigated. Physics-based simulations performed using MATLAB,ADAMS (Automated Dynamic Analysis of Mechanical Systems), and Autonomic demonstrated that the modifications aimed at providing wheelchair access had important implications for vehicle dynamics energy consumption (operating range and usage duration), and cost per passenger. In this paper it has been concluded that if wheelchair access and related accessibility considerations are incorporated in the design phase, the adverse performance of aftermarket modifications can be avoided.*

4. *Sandareka Wickramanayake and H.M.N. Dilum Bandara (2016) Fuel Consumption Prediction of Fleet Vehicles Using Machine Leaning: A Comparative Study. The factors that determine the fuel consumption is both internal and external factors. So, the challenge is predicting should be done with the available data. Machine learning is the suitable analysis as the model can be developed by learning the patterns in data. Here, based on the analysis Of data using different machine learning models they concluded that random forest technique produces a more accurate prediction compared with other neural networks and gradient boosting.*

5. *Raksit Thitipatanapongˌet al (2011) Effects of A Vehicle's Driver Behavior to The Fuel Economy. Driving behavior has a large impact on vehicle fuel consumption. Dedicated study on the relationship between the driving behavior and fuel consumption can contribute to decreasing the energy cost of transportation and the development of the behavior assessment technology for the ADAS system. In this paper, they introduce two kinds of machine learning methods for evaluating the fuel efficiency of driving behavior using the naturalistic driving data. In the first stage, they have used an unsupervised spectral clustering algorithm to study the macroscopic relationship between driving behavior and fuel consumption, using the data collected during the natural driving process. In the second stage, the dynamic information from the driving environment and natural driving data is integrated to generate a model of the relationship between various driving behaviors and the corresponding fuel consumption features. The dynamic environment factors are coded into a processable, digital form using a deep learning-based object detection method so that the environmental data can be linked with the vehicle's operating signal data to provide the training data for the deep learning network. The training data are labeled according to its fuel consumption feature distribution, which is obtained from the road segment data and historical driving data. This deep learning-based model can then be used as a predictor of the fuel consumption associated with different driving behavior.*