

**Project Design Phase-I**  
**Proposed Solution Template**

Date	01 October 2022
Team ID	PNT2022TMID12506
Project Name	Project - Machine Learning Based Vehicle Performance Analyzer
Maximum Marks	2 Marks

**Proposed Solution Template:**

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The number of motor cars being registered for commercial and non-commercial purposes on a daily basis is enormous and yet continues to rise at an alarming rate due to the changing demographics of the population. This directly and unmistakably affects how much fossil fuel is used globally and the following environmental impacts, which are very concerning at the moment. Promising outcomes are anticipated from several current initiatives from diverse research fields to address this worldwide challenge. One such effort is this initiative, which uses machine learning approaches to map the elements impacting vehicle performance in terms of fuel efficiency.
2.	Idea / Solution description	To increase the performance effectiveness of the vehicle, it is crucial to analyse the elements utilising a variety of well-known machine learning methods, such as Multiple Linear Regression, XGBoost, Support Vector Machine, Artificial Neural Network, and Random Forest. Here, we take a performance in terms of mileage. We will create the models, utilising various techniques and neural networks, to resolve this issue. Then, we'll compare which algorithm accurately forecasts automobile Fuel efficiency.

3.	Novelty / Uniqueness	There are certain works that analyse vehicle performance using only a few characteristics, however in our concept, we consider the number of cylinders, displacement, horsepower, weight, model year, country of origin, bore, stroke, compression ratio, wheel-base, etc. to assess vehicle performance. The sensitivity of our metric is expected to rise when additional data are added to the model to make it fit. Our model will be exposed to a wider range of potential outcomes, allowing it to identify more data that is comparable to the previously unknown ones.
4.	Social Impact / Customer Satisfaction	The primary goal of this vehicle performance analyzer is to significantly reduce vehicle emissions. The air quality in our area will undoubtedly improve as a result of the decreased emission of toxic gases. The ability for customers to understand more about their own automobiles The vehicle's relative environmental friendliness will reduce costs.
5.	Business Model (Revenue Model)	A very user-friendly interface and thorough information regarding the vehicle performance will be provided by this system..The knowledge discovered from the system could be used by car manufacturers to design cars in future to mitigate the fuel consumption.
6.	Scalability of the Solution	This technology will analyse the performance of the vehicle regardless of the kind or number of cars. The system allows simultaneous access from several users, and it processes the findings immediately.