Project Initialization and Planning Phase

Date	09 July 2024
Team ID	740064
Project Title	Trip-Based Modelling of Fuel Consumption in Modern Fleet Vehicles Using Machine Learning
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

The proposed solution is to develop a fuel predicting model, which is a Decision tree algorithm that can handle categorical features effectively. The model will be trained using a dataset of Fuel parameters for a trip and will predict fuel consumption based on the input features.

Project Overview	
Objective	• Develop a machine learning model that can predict the fuel consumption for a trip with high accuracy. • Identify the most important factors that influence a modern fleet vehicles fuel consumption for a trip.
Scope	The "Trip-Based Modelling of Fuel Consumption in Modern Fleet Vehicles Using Machine Learning" project aims to develop a machine learning model that can predict fuel consumption on various fuel-affecting attributes.
Problem Statement	

Description	Fuel consumption is a critical factor in determining economic stability of high fleet vehicles for a trip . Predicting the fuel required can be challenging due to the complexity of factor involved. A machine learning-based approach can provide a more accurate and efficient solution.
Impact	The impact of predicting fuel consumption is positive, it is because by precisely forecasting fuel consumption based on trip parameters, the Trip-Based Modelling of Fuel Consumption in Modern Fleet Vehicles Using Machine Learning research improves fuel economy and lowers operating expenses. By using data-driven insights, this method improves fleet management and route planning.

Resource Type	**Description**	**Specification/Allocation**
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	T4GPUs
Memory	RAM specifications	8 GB
Storage	Disk space for data, models, and logs	1 TB SSD
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	scikit-learn, pandas, numpy, matplotlib, seaborn
Development Environment	IDE	Jupyter Notebook, Spyder, Google collab notebook

Data		
Data	Source, size, format	Kaggle dataset, csv

Proposed Solution	
Approach	The project team can develop an accurate and reliable machine-learning model that can predict fuel consumption and provide valuable insights to drivers, travel managers and transport administrators
Key Features	• Predicts fuel consumption for upcoming journeys with accuracy by using machine learning algorithms and prior trip data. • Gives instantaneous information about fuel consumption, enabling drivers to make dynamic changes to their driving styles and routes. • Keeps track of and evaluates driving habits to suggest fuel-efficient methods and raise overall effectiveness. • Promotes environmentally friendly driving habits and maximizes fuel efficiency to lower carbon emissions.