**Project Initialization and Planning Phase**

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| Date | 09 July 2024 |
| Team ID | 739652 |
| 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.

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| **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. |

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| **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 |

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| **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. |