

Project Initialization and Planning Phase

Date	15 JULY 2024
Team ID	739681
Project Title	Car Performance Prediction
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

To explain Car Performance Prediction (CPP) analyzer using machine learning (ML), you can structure it similarly to the project proposal template shown in the image. Here's an outline:

Project Overview			
Objective	Develop a machine learning model to accurately predict car performance metrics, optimizing design and enhancing vehicle efficiency.		
Scope	Project Overview: Develop a comprehensive model to predict car performance metrics, optimizing design factors for speed, fuel efficiency, and handling through advanced data analysis and modeling techniques.		
Problem Statement			
Description	Developing a model to accurately predict car performance metrics such as speed, fuel efficiency, and handling using data-driven approaches for enhanced design and optimization.		
Impact	Problem Statement Impact: Accurate car performance prediction enhances vehicle design precision, optimizes fuel efficiency, and informs market competitiveness, driving advancements in automotive engineering and consumer satisfaction.		
Proposed Solution			
Approach	Utilize machine learning algorithms to analyze vehicle data for accurate prediction of performance metrics like speed, fuel efficiency, and handling.		
Resource Type		Description	Specification/Allocation
Hardware			
Computing Resources		High-performance CPUs/GPUs	e.g., 2 x NVIDIA V100 GPUs
Memory		Sufficient RAM for large datasets	e.g., 32 GB
Storage		Large storage for data, models, and logs.	e.g., 512 SSD
Software			
Frameworks		Python frameworks	e.g., Tenser flow, sklearn, keras.
Libraries		Pandas, NumPy, Matplotlib for data manipulation and visualization	e.g., numpy, pandas.

Development Environment	Jupyter Notebooks, IDEs	e.g., Pycharm
Data		
Data	Source: Vehicle Manufacturers:Telematics and Sensor Data:Public Databases:	e.g., Kaggle

Data collection:	Sources: Manufacturer Specifications:Manufacturer Specifications:Telematics Data: Driver Behavior Data:Environmental Conditions: Historical Maintenance Records:
Data preprocessing:	Cleaning: Handle missing values, remove outliers Transformation: Normalize/standardize data Feature Engineering: Create new features from raw data
Model Training:	Algorithms: Linear regression, random forest, gradient boosting, deep learning models Evaluation: Mean Absolute Error (MAE) Root Mean Squared Error (RMSE) R-squared (R^2) Mean Absolute Percentage Error (MAPE) Integration: Real-time data ingestion and prediction Visualization: Scatter Plots.Histograms.Residual Plots

Resource Requirements

	platforms (e.g., Kaggle) Size: Varies depending on the region and time span Format: CSV, JSON, realtime API feeds	
--	---	--