**Project Proposal: Car Market Trend Prediction & Price Estimation**

1. Project Overview

The goal of this project is to develop a machine learning-powered system for predicting car prices and analyzing market trends based on historical car sales data. The system will include:

* A regression model to predict car prices based on key features.
* An interactive dashboard for visualization using Plotly and Leaflet.
* A chatbot for car recommendations based on user preferences.
* An automated retraining pipeline to improve prediction accuracy as new data is added.

2. Objectives

Develop a predictive model to estimate car prices using linear regression.

Perform deep data analysis on existing car sales data.

Implement interactive visualizations that evolve with new data.  
Create a user-friendly interface for price prediction & market trends.  
Build a chatbot for car recommendations based on user input.

3. Data Sources

* Dataset: Recent car sales data (CSV format) from Kaggle https://www.kaggle.com/datasets/lainguyn123/australia-car-market-data
* Features Used:
  1. Price
  2. Brand & Model
  3. Year
  4. Kilometres Driven
  5. Fuel Type
  6. Seating Capacity
  7. Gearbox Type
  8. Car Condition (New/Used)

4. Machine Learning Approach

* Regression Model:

Algorithm: Linear Regression (using Scikit-learn)

Target Variable: Price

Feature Engineering: Encoding categorical data, handling missing values

* Active Learning & Retraining:

Model will continuously improve as new data is verified.

Manual human verification will be used before retraining.

5. Technologies & Tools

| Category | Tools/Frameworks |
| --- | --- |
| ML & Data Processing | Scikit-learn, Pandas, NumPy |
| Visualization | Matplotlib, Plotly |
| Dashboard & Front-end | Flask (API), React.js (UI) |
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6. Expected Deliverables

* Car Price Prediction Model (Regression-based)  
  Interactive Dashboard with Heatmaps, Barcharts & Scatter Plots  
  Car Recommendation Chatbot for users  
  Market Trend Visualization (Identifying clusters using ML)  
  Automated Model Retraining

This project will enhance car market analysis by providing an accurate price prediction model, an interactive dashboard, and an AI-powered chatbot for recommendations. By integrating machine learning, data visualization, and automation, it will serve as a valuable tool for car buyers, sellers, and analysts.