**Project Title: Car Price prediction by features and MSRP using Machine Learning**

Dataset: <https://www.kaggle.com/datasets/CooperUnion/cardataset>

**1. Problem Statement:** The automotive industry continuously seeks innovative methods to optimize pricing strategies, enhance customer satisfaction, and streamline decision-making processes. As car manufacturers introduce vehicles with diverse features and specifications, accurately predicting their Market Suggested Retail Price (MSRP) becomes a critical challenge. The aim of this project develop a robust predictive model that can estimate car prices based on their features. By addressing this problem, we intend to empower car manufacturers, dealerships, and consumers with a reliable tool for evaluating car values, making informed purchase decisions, and enhancing competitiveness in the market.

**2. Dataset Description:** The "Car Features and MSRP" dataset contains information about various car features and their corresponding MSRP values. The dataset encompasses attributes such as make, model, year, engine size, horsepower, fuel efficiency, transmission type, number of doors, and more. It includes data on a diverse range of car models, making it suitable for training a predictive model for MSRP estimation.

**3. Aim and Tasks:** The aim of this project is to leverage machine learning techniques to develop a robust predictive model that can estimate car prices based on their features and historical MSRP data.

* Create a machine learning model that accurately predicts car prices using relevant features and historical MSRP data, enabling reliable pricing estimations.
* To Identify the most relevant features for prediction through analysis and domain knowledge and Perform feature engineering to create new attributes that might enhance predictive power
* To analyze the data and create dashboards in Tableau by providing insights into the impact of different features on car prices.

**4. Work Plan:** The project will be divided into several phases:

**Data Preprocessing & Feature Engineering (2 weeks):** Clean the dataset, handle missing values, and perform data analysis to gain insights into the data distribution and relationships from relevant features from the dataset, including model, engine and fuel type

**Model Development & Evaluation (1 week):** Implement machine learning algorithms using Evaluating the models' performance using appropriate metrics

**Documentation & Dashboard (1 Week):** Prepare comprehensive documentation for the developed solution, including code explanations, and model descriptions, and create a dashboard to showcase the visualizations