Bangladesh Army University of Science and Technology(BAUST)

Saidpur Cantonment, Nilphamari

Department of Computer Science and Engineering(CSE)

Course Code: CSE 4140

Course Title: Machine Learning Sessional

Project Title: Used Car Price Prediction

Date: 25-11-2025

Presented By:

1. Tanvir Fatemi, 220201055
2. Tanvir Hasan Priom, 220201069

Presented To:

1. Engr. Rohul Amin, Lecturer
2. Nadim Reza, Lecturer

Department of CSE, BAUST

OUTLINE

INTRODUCTION

- Used car prices are hard to estimate because the market keeps changing [2, 5].
- Many factors like age, condition, brand, and demand affect the value .
- Manual pricing often varies from person to person and is not consistent .
- Human bias can make the final price estimate less accurate .

PROBLEM STATEMENT

- Calculating the value of an old car is very difficult. Simple methods or guessing often lead to wrong prices [3].
- Prices change a lot depending on the market, so it’s hard to judge the right value [3,5].
- Two cars that look the same can still have very different conditions inside, which affects the price.

OBJECTIVES

Datasets: Collecting dataset from kaggle for the computer to learn

Training: Train the Linear Regression model to predict prices .

Deployment: Make a web app using Streamlit for easy use .

SCOPE AND LIMITATIONS

Scope:

- We focused on the "Secondary Automotive Market" (Used Cars).
- We used "Linear Regression" because it is simple.

Limitations:

- The model struggles with non-linear trends (complex market changes) .
- It is sensitive to "outliers" (cars with very unusual prices) [10].

RELATED WORKS

Previous Studies

- Many researchers have used algorithms like Random Forest and XGBoost for high accuracy [8].
- Studies usually focus on core features: Brand, Year, Mileage, and Engine size [2].
- Some research compares simple models (Linear) vs. complex models (Neural Networks) [9].

DATASET

name	year	selling_price	km_driven	fuel	seller_type	transmission	owner
Maruti Swift Dzire VDI	2014	450000	145500	Diesel	Individual	Manual	First Owner
Skoda Rapid 1.5 TDI Ambition	2014	370000	120000	Diesel	Individual	Manual	Second Owner
Honda City 2017-2020 EXi	2006	158000	140000	Petrol	Individual	Manual	Third Owner
Hyundai i20 Sportz Diesel	2010	225000	127000	Diesel	Individual	Manual	First Owner
Maruti Swift VXI BSIII	2007	130000	120000	Petrol	Individual	Manual	First Owner
Hyundai Xcent 1.2 VTVT E Plus	2017	440000	45000	Petrol	Individual	Manual	First Owner
Maruti Wagon R LXI DUO BSIII	2007	96000	175000	LPG	Individual	Manual	First Owner
Maruti 800 DX BSII	2001	45000	5000	Petrol	Individual	Manual	Second Owner
Toyota Etios VXD	2011	350000	90000	Diesel	Individual	Manual	First Owner
Ford Figo Diesel Celebration Edition	2013	200000	169000	Diesel	Individual	Manual	First Owner

Show 10 per page

1 2 10 100 800 810 813

Figure 1: Car Dataset

DATASET (CONT)

- **Market Size:** Analyzed a dataset of **8,128 (Rows) and 13 Attributes** of cars with models ranging from **1983 to 2020**.
- **Dominant Brands: Maruti** and **Hyundai** are the top players, capturing the majority of the market share.
- **Quality Insight:** 65% of vehicles are **First Owner** cars, ensuring better condition.

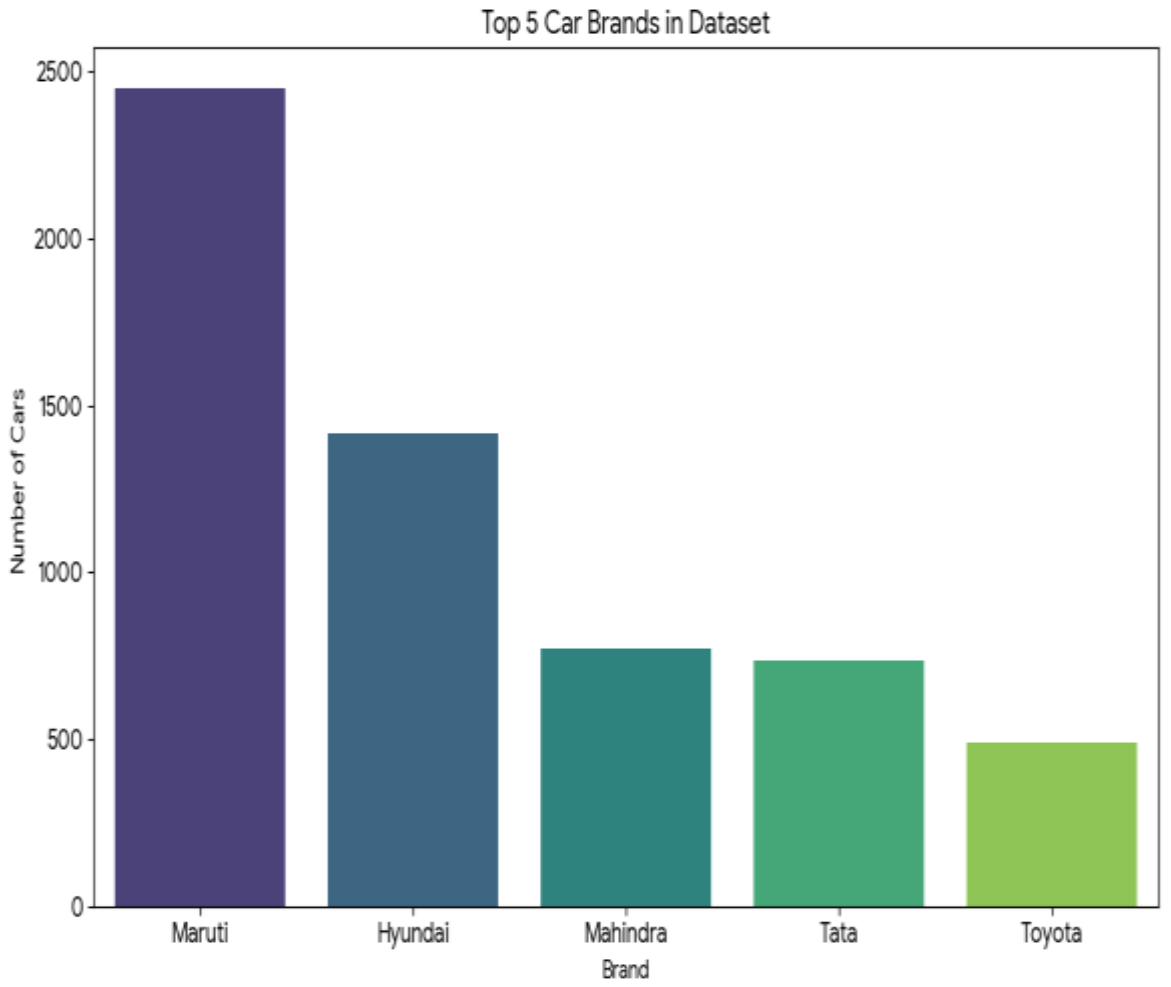

Figure 2: Top Car Brands

METHODOLOGY

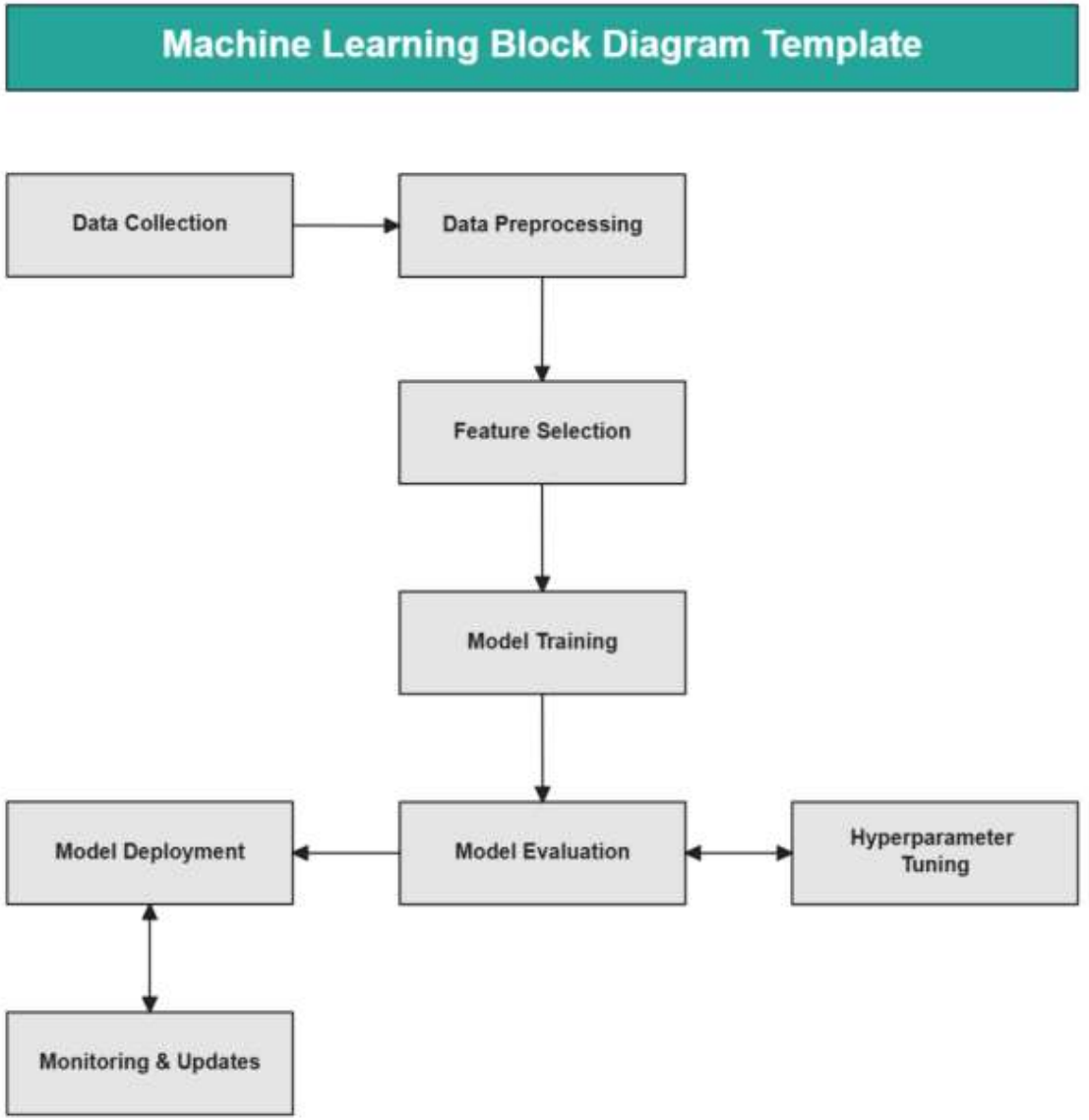

Figure 3: Machine Learning Block Diagram

METHODOLOGY (CONT)

Dataset: This section illustrates the initial phase of collecting raw data (From Kaggle) and passing it through Data Preprocessing and Feature Selection to prepare clean inputs for the model.

Model Development: The diagram shows the core Model Training process, which is refined through Model Evaluation and Hyperparameter Tuning to ensure accuracy.

Deployment & Maintenance: The final stage depicts Model Deployment, where the system is launched for use, supported by continuous Monitoring & Updates.

RESULT

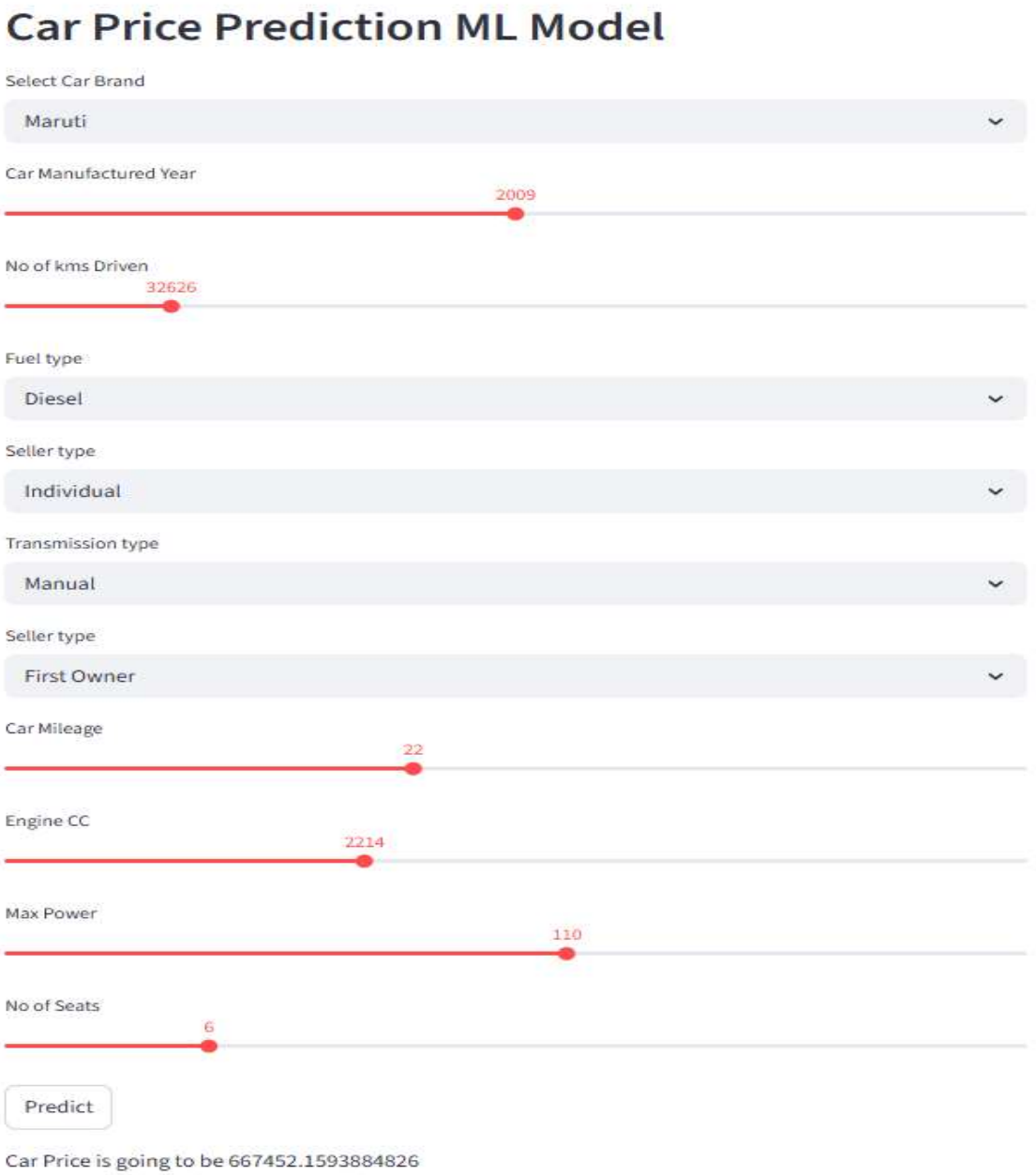

Figure 4: Predicting Price

COMPARISON WITH RELATED WORKS

Feature	Our Work	Related Works
Accuracy	Good (~80%)	High (~85-90%) [8]
Simplicity	Very Simple & Fast	Complex & Slower[8]
Interpretability	High (Easy to explain)	Low (Hard to explain)
Best Use	General Trends & Baselines	Complex & Non-linear Data

Table 1: COMPARISON WITH RELATED WORKS

CONCLUSION

- The project successfully built and launched a used car price predictor utilizing the Linear Regression (LR) method [4].
- By carefully cleaning the data, standardizing units, and using label encoding, we created a high-quality dataset [3, 4].
- This process resulted in a stable tool that accurately estimates car value based on its specs [5].
- The final Streamlit application shows that the machine learning system works by providing fast, reliable car valuation [5].

FUTURE WORKS

New Algorithms:

- We plan to try advanced model like "XGBoost". These can handle complex data better.

REFERENCES

[1] IEEE Project Report Structure - Biomarker Machine Learning Scribd.

[2] USED CAR PRICE PREDICTION USING ML - CKT College Panvel.

[3] Car Price Prediction.doc - Scribd.

[4] Car price prediction using machine learning.pptx - Slideshare.

[5] Using Linear Regression For Used Car Price Prediction - ResearchGate.

[6] Know The Best Evaluation Metrics - Analytics Vidhya.

REFERENCES (CONT)

[7] Car Price Prediction ML Model - YouTube.

[8] (PDF) CAR PRICE PREDICTION USING ML TECHNIQUES - ResearchGate.

[9] Car Price Prediction Using Machine Learning Topics.

[10] The 5 Evaluation metrics of Linear Regression - Medium.

[11] What are the Best Metrics for the Regression Model? - Deepchecks.

THANK YOU