

Laptop Price Prediction Project

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github link: <https://github.com/vikash790/Feynn-laptop-price-prediction->

1. Introduction

This report details the process of predicting laptop prices based on various specifications and features. With the rise in online shopping, predicting prices can help businesses price competitively and assist customers in finding laptops within their budget.

2. Problem Statement

The main goal is to build a model that accurately predicts laptop prices using features like brand, processor type, RAM size, storage capacity, graphics card type, and display size. This model will assist in understanding the factors that influence laptop pricing.

3. Dataset Overview

The dataset used contains various attributes related to laptops, such as brand, processor, RAM, storage, graphics, and display size. The target variable is the price of the laptop. This dataset provides insights into how each attribute contributes to the final price.

4. Data Preprocessing

Before building the model, we preprocess the data by handling missing values, encoding categorical features, and normalizing numerical attributes. This ensures that the model can learn patterns effectively.

5. Algorithm

We used several machine learning algorithms to find the best approach for predicting laptop prices:

- Linear Regression**: A straightforward regression model to establish a baseline prediction.
- **Decision Tree Regression**: A non-linear model that captures more complex relationships

by splitting data into branches.

- ****Random Forest Regression****: An ensemble of decision trees providing higher accuracy by averaging multiple predictions, reducing overfitting.

6. Model Training

After data preprocessing, we trained each model and evaluated their performance. Random Forest Regression performed best, accurately capturing non-linear relationships and producing reliable predictions for laptop prices.

7. Business Model

This prediction model can enhance business strategies by helping retailers price laptops competitively and adjust pricing based on features that most affect costs. It allows online platforms to provide customers with a price range for specific features and recommend options based on budget, maximizing customer satisfaction and potentially increasing sales.

8. Evaluation Metrics

The models were evaluated using metrics such as Mean Absolute Error (MAE), Mean Squared Error (MSE), and R-squared (R^2) scores. These metrics helped in selecting the best-performing model for accurate price prediction.

9. Results

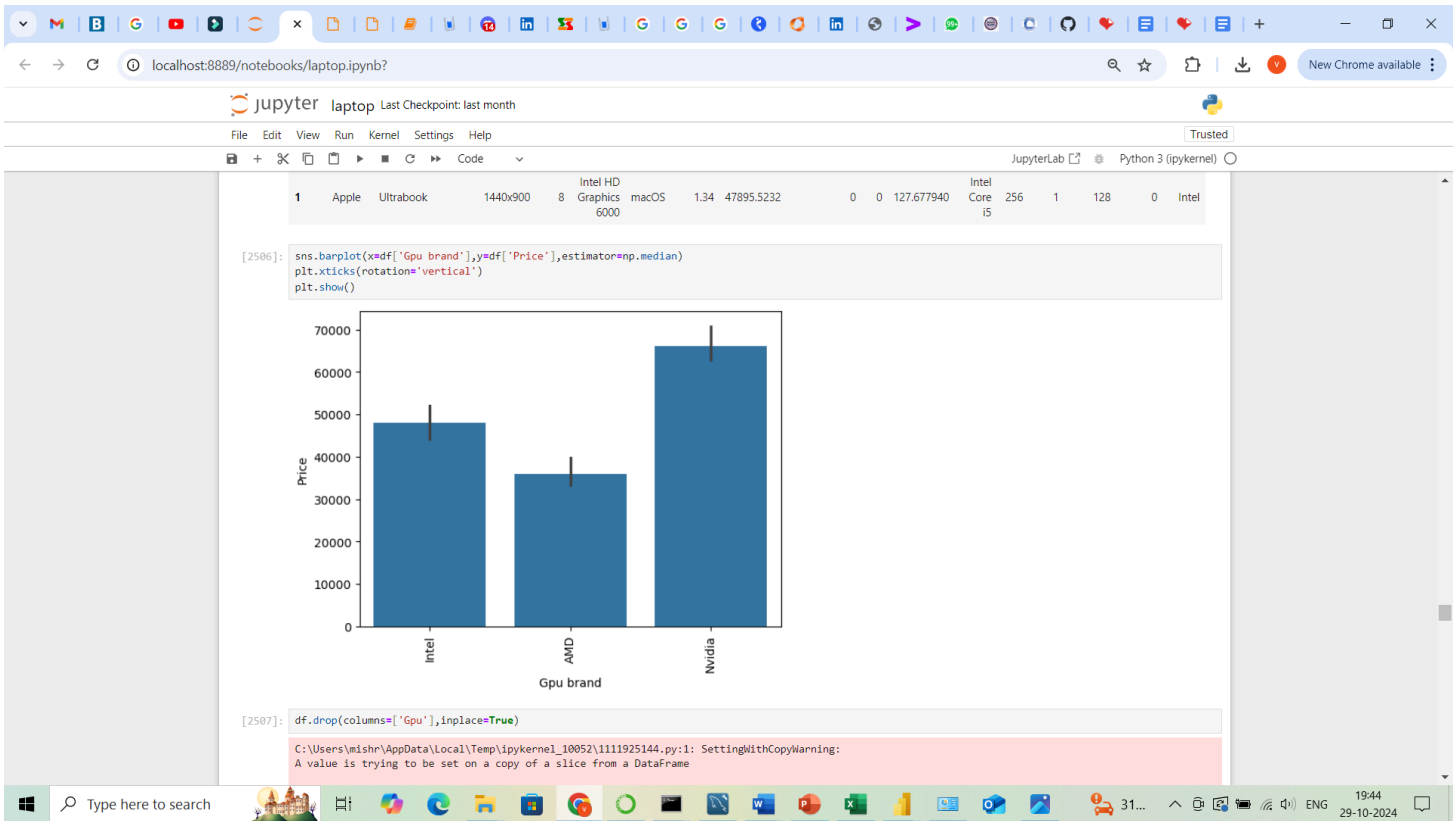
The Random Forest model achieved the best performance with a high R^2 score and low error metrics, making it effective for laptop price prediction. This model accurately captures the relationships between features and price.

10. Conclusion

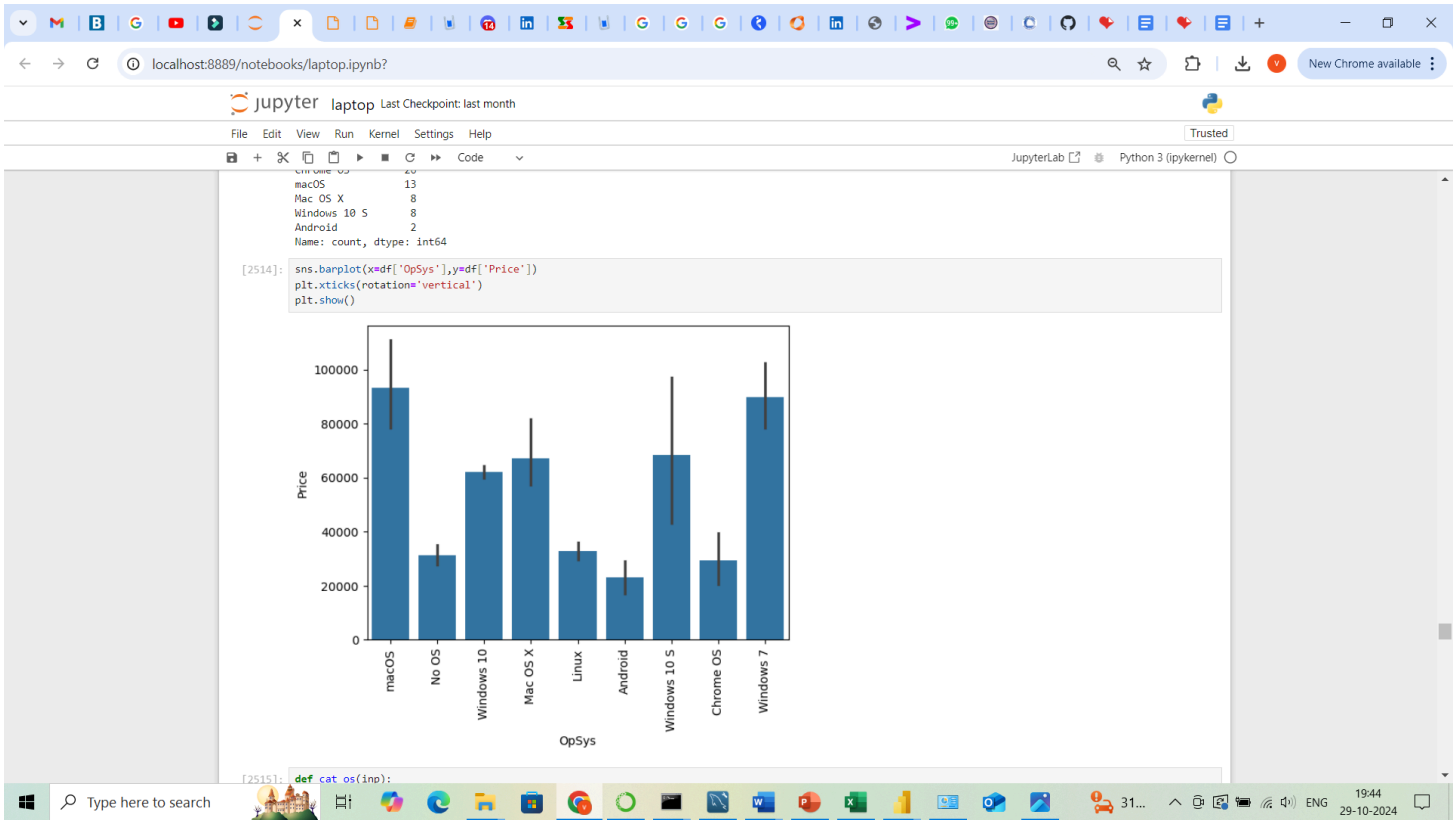
The project demonstrates that machine learning can effectively predict laptop prices based on key specifications. The Random Forest Regression model, with its high accuracy, can help businesses in pricing strategies, enhancing customer experience, and understanding market trends.

Exploratory data analysis

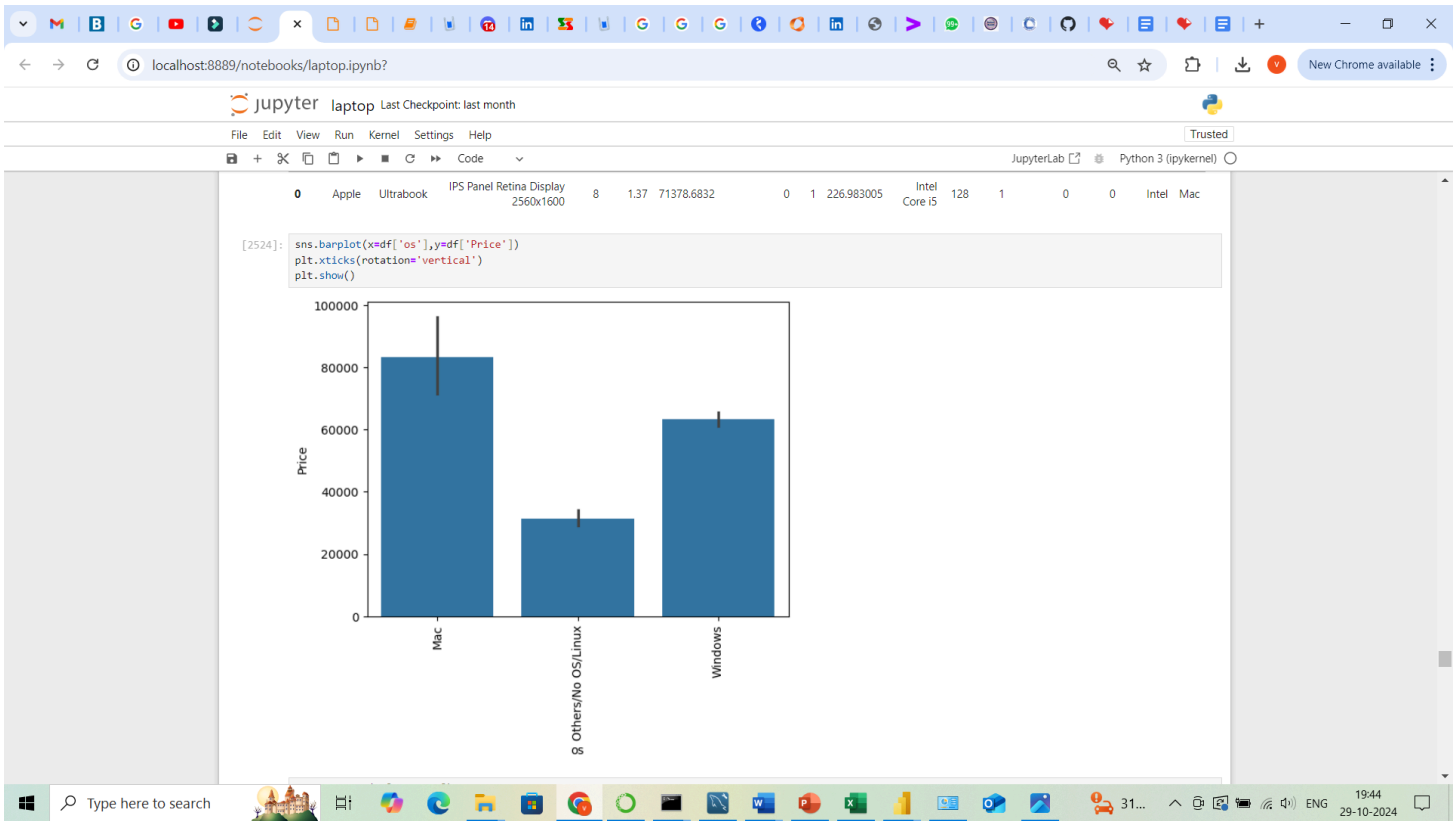
GPU vs Price



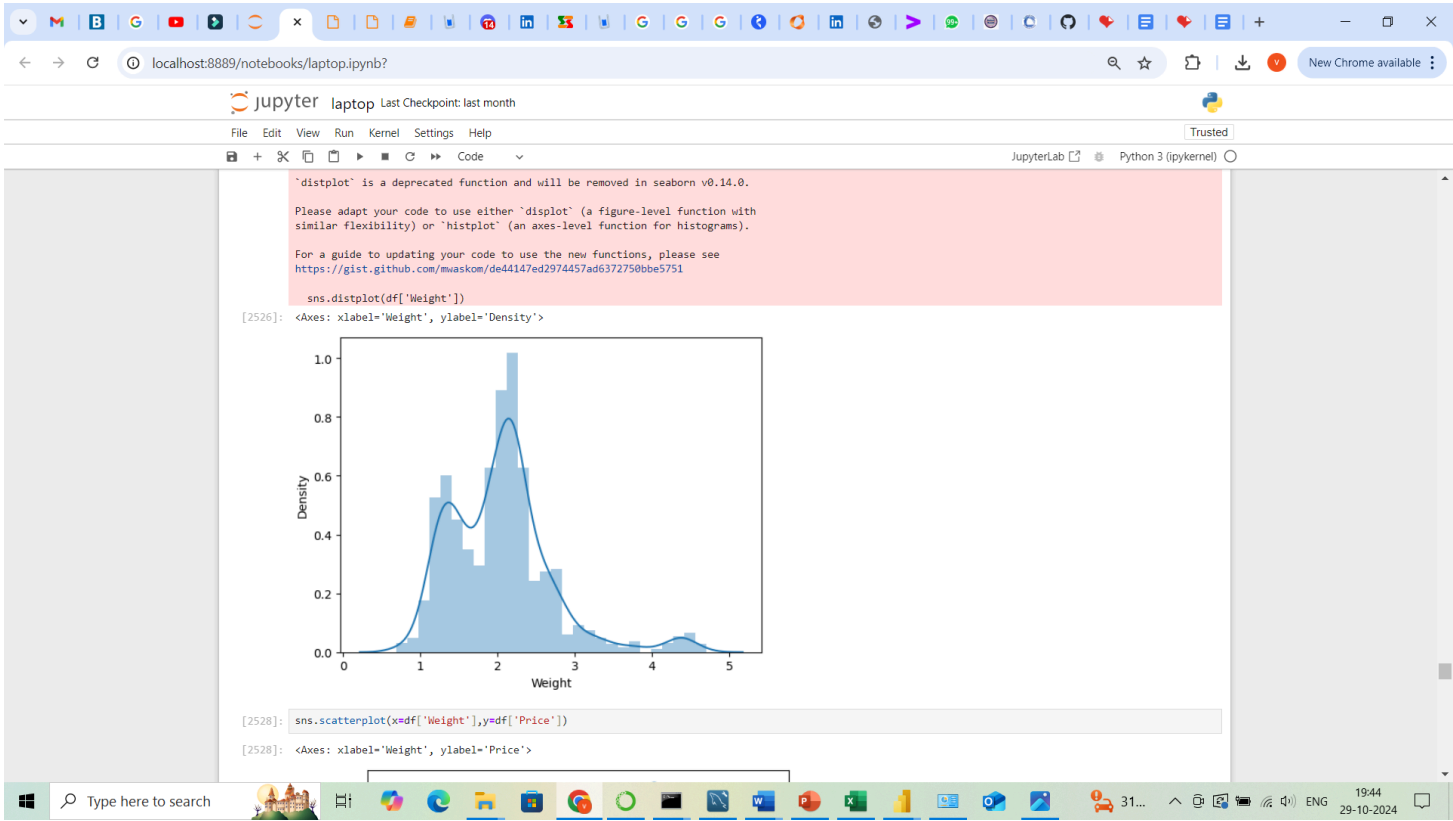
Price Vs OpSys



Price Vs OS



Density VS Weight



OUTPUT:

localhost:8501

Deploy

Laptop Price Predictor

Brand

Apple

Type

Ultrabook

RAM(in GB)

2

Weight of the Laptop

0.00

-

+

Touchscreen

No

IPS

No

Screen size in inches

10.00

13.00

18.00

Screen Resolution

Type here to search

25°C

19:51

29-10-2024

localhost:8501

Deploy

Screen Resolution

1920x1080

CPU

Intel Core i5

HDD(in GB)

0

SSD(in GB)

128

GPU

Intel

OS

Mac

Predict Price

The predicted price of this configuration is ₹ 52894

Type here to search

25°C

19:51

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