Used Car Price Evaluator

Submitted in partial fulfillment of the requirements for the award of degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE & ENGINEERING

Submitted to:

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April 2023

I. Abstract

Price prediction has always been a challenging task as there are several factors involved that tend to cause variation in prices. There is similar case with car price prediction. It is a difficult task to decide either a used car actually justifies the posted price. Factors such as mileage, model, year influence the car prices. The project aims to develop a system using random forest regression in order to predict used car prices based on its features. Among several machine learning libraries used such as pandas and others, we have also preferred sklearn for implementation. The dataset of Car Dekho is utilized which originally have 19974 instances and 13 attributes. A considerable amount of work has been done on this project domain; however, very little amount of work has been done using random forest regression. Our proposed model's predicted accuracy is carried out to be 93.70%.

II. Index

1. Introduction

The prices of new cars in the industry is fixed by the manufacturer with some additional costs incurred by the Government in the form of taxes. But due to the increased price of new cars and the incapability of customers to buy new cars due to the lack of funds, used cars sales are on a global increase. Predicting the prices of used cars is an interesting and much-needed problem to be addressed. Customers can be widely exploited by fixing unrealistic prices for the used cars and many falls into this trap. Therefore, rises an absolute necessity of a used car price prediction system to effectively determine the worthiness of the car using a variety of features.[1]

Due to the adverse pricing of cars and the nomadic nature of people in developed countries, the cars are mostly bought on a lease basis, where there is an agreement between the buyer and seller. These cars upon completion of the agreement are resold. So, reselling has become an essential part of today's world. Given the description of used cars, the prediction of used cars is not an easy task. There are a variety of features of a car like the age of the car, its make, the origin of the car (the original country of the manufacturer), its mileage (the number of kilometers it has run) and its horsepower. [1]

As the market develops, the growth of new vehicle market will slow down gradually in the coming 5-10 years. The sales of new cars will gradually contribute less profit to the dealers. Instead, service-related business and used car business will step by step become core businesses for the dealers. The residual value of used vehicles is critical to its sale price. The demand for used car evaluation will increase constantly.[2]

Machine learning models have ever been a remarkable choice for prediction purposes and by training statistical models for predicting prices, one can get a certain estimate of the price. In recent times, due to the growing trend of big data, machine learning is considered the most useful approach as it sustains the ability to make predictions more accurately on the basis of their attributes. The number of studies that have explored this problem has also justified the prediction capability of the machine learning approach.[3]

2. Background and Related work

Researchers at VIT in [4], has concluded that the prediction error rate of all the models was well under the accepted 5% of error. But, on further analysis, the mean error of the regression tree model was found to be more than the mean error rate of the multiple regression and lasso regression models. Even though for some seeds the regression tree has better accuracy, its error rates are higher for the rest. This has been confirmed by performing an ANOVA. Also, the post-hoc test revealed that the error rates in multiple regression models and lasso regression models aren't significantly different from each other.

To get even more accurate models, they developed more advanced machine learning algorithms such as random forests, an ensemble learning algorithm which creates multiple decision/regression trees, which brings down overfitting massively or Boosting, which tries to bias the overall model by weighing in the favor of good performers. More data from newer websites and different countries can also be scraped and this data can be used to retrain these models to check for reproducibility.

The study conducted by Maida Ahtesham and Zulfiqar J. in [3] at Jinnah University for Women, has evaluated comparative performances of models including linear regression, Decision Tree Regression, and Gradient Boost tree regression to predict used car prices. The car price has a strong dependence on its variety of factors or attributes, and it helps to yield forecast accuracy for used car prices. The results of the research study show that the linear regression method has performed significantly less than the rest of the methods, which makes the model less preferable for price prediction. On the contrary, it is observed that linear regression has been extensively used in literature for prediction.

In the research conducted by Laveena D'Costa, Ashoka Wilson D'Souza et al. in [5], has shown that the model that is created using this data can be used to predict the true value of used cars. The accuracy of the model was found to be 89.33%. The model is created using multiple

linear regression and it provides good accuracy. The same data can be used to implement more algorithms and it may give accurate result.

Researchers in [6], has stated that Buying a good used car is becoming a trend in most countries across the globe due to an increase in prices of new cars every year. A used car market plays a more crucial and significant role in daily life activities. However, there are hardly any specific pricing model which can be used by a car dealer in estimating the price on used cars. A simple linear regression over a make year, although is useful and powerful, it is not practical or dynamical to portray a real auto market phenomenon. An S-shaped curve model does give some significant proximity to a real-world situation. An S-shaped curve model has the potential to represent a better model in the world of prediction or forecasting in real-life scenarios. This research study is intended to achieve realistic pricing on a used car.

Shonda Kuiper in her study [7], has concluded that data set provides a real economics example that is of interest to students and at the same time does not require deep knowledge of economic theory. They have used this data set as a guided introduction to multivariate regression that encourages students to try various models and demonstrate the importance of checking model assumptions. This guided lab activity encourages students to think like a statistician when working with advanced regression techniques.

While this data set and lab were originally created to be used in a second statistics course, they have also used this lab as part of a final project for talented students in introductory statistics classes. This data set and lab are particularly helpful for students planning on conducting research in economics. This is one of several lab modules they were developing to emphasize the process of data analysis relevant for science and social science students. This helps students and future researchers in many fields to understand the conditions under which studies should be conducted and gives them the knowledge to discern when appropriate techniques should be used.

K Puteri and L N Safitri in their manuscript [8], had declared employing the variable age of use of cars in predicting the selling price of cars can be used as a reference to determine the price of used cars sold because it has a trust value of 63.2%. If using the car mileage variable only in predicting the selling price of the car only has a trust value of 33.2%. The selling price can also be predicted based on the age and distance of the used cars sold because of the trust value of 63.6%. To predict the selling price of cars with other additional variables namely age, distance, colors of cars, transmissions and cities car sales have a trust value of 76.2%.

The P value indicates the value that helps to conclude whether the calculation is correct or not. If the value of P <0.05 then the value can be said to be good. But conversely if the number P>0.05 then the results obtained means that it is not used to make an estimate of the conclusion. The best result of P value is if P is below 0.05. In the experiment above, the more variables used to predict car prices, the higher the accuracy in predicting prices. The price of a car can be predicted when several variables, namely age, distance, color of the car, transmission and cities of car sales are combined and get an accuracy value above 75%.

3. Methodology

A. Data Exploration

The dataset of Car Dekho used in this research is taken from Kaggle. It is a massive data set that has about 19974 entries along with 13 features as given in Table1. The data set might contain null, unhandled, and unwanted values that need to be checked and verified before training the dataset for model development.

The data set contains the Car Name along with its different features such as Model Year, Mileage, Transmission Type, etc. The Feature description of the data set is given in Table 1.

B. Data Pre-Processing and Data Cleaning

It is one of the most crucial steps that must be performed before the implementation phase. It refers to identifying and correcting errors in the data set that might negatively affect the predicting model. It includes all kinds of activities that help in detecting and repairing errors.

In this procedure, we removed the rows that holds missing values and also dropped the features or attributes that might not be effective. Only those features are kept that are most important and strongly correlated. After data preprocessing, we were left with 7 features.

TABLE 1

DESCRIPTION OF FEATURES BEFORE PREPROCESSING OF DATA SET

Sr. No.	Feature Name Data Type	Data Type
1	fullname	Categorical
2	price	Integer
3	new-price	Categorical
4	year	Integer
5	sellertype	Categorical
6	kmdriven	Integer
7	ownertype	Categorical
8	fueltype	Categorical
9	transmissiontype	Categorical
10	mileage	Integer
11	enginecc	Integer
12	maxpowerbhp	Integer
13	seats	Integer

C. Separating Categorical and Numerical Data

The dataset we are using contains both categorical and numerical values as described in Table 1. The numerical features are separated from the categorical ones including New Price, Fuel Type, Transmission Type and others.

D. Conversion of Categorical Data into Numerical Data

Most machine learning algorithms are unable to handle categorical data unless we con-vert them to numerical values to make it more machine understandable. The Dataset obtained after preprocessing is described in Table 2.

TABLE 2

DESCRIPTION OF FEATURES AFTER PREPROCESSING OF DATA SET

Sr. No.	Feature Name Data Type	Data Type
1	price	Integer
2	new-price	Integer
3	year	Integer
4	kmdriven	Integer
5	fueltype	Integer
6	transmissiontype	Integer
7	mileage	Integer
8	enginecc	Integer

4. Innovations in Project

- This system of used car price prediction provides better accuracy than the ones present in current studies, especially in context of Indian consumers
- There is also no need for an individual to call a mechanic or visit a car evaluation service centre to evaluate their car for resale value nor should they be required to sell it to the showrooms for lower prices.
- Thereby, resulting in saving time and money spent on hiring a service for evaluation and travel required to do so.
- The innovative target of the project is that every option to enter detail must require minimalistic details from user and utilizing picklist when necessary with one click evaluation or prediction as defined in machine learning.

5. Source Code

A. Source Code for HTML Website

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <!--meta name="viewport" content="width=device-width, initial-scale=1 ,user-scalable=0"-->
    <meta name='viewport' content='width=device-width, initial-scale=1.0, maximum-scale=1.0, user-scalable=no'/>
    <title>Used Car Evaluator</title>
    <link rel="stylesheet" href="static\css\style2.css">
    <link rel="stylesheet" href="static\css\style.css">

</head>
<body>
<!-- Navbar (sit on top) -->
<div class="top">
    <div class="bluebar row">
      <a class="col" href="#home"><img src="static\css\assets\logo.png" alt="logo" style="max-width:210px;;"></a>

      <!-- Right-sided navbar links. Hide them on small screens -->
      <div class="col m" style="text-align-last: right;">
        <a href="#about" class="bar-item button hover-text-red">About</a>
        <a href="#evaluator" class="bar-item button hover-text-red">Evaluator</a>
        <a href="#facilities" class="bar-item button hover-text-red">Facilities</a>
        <a href="#contact" class="bar-item button hover-text-red">Contact</a>
      </div>
      <p class="col m gradient" style="font-size: 40px;text-align: center;width: 44%;"><strong>  EVALUATE YOUR OLD &ems
    </div>

```

```
</div>
<!-- Header -->
<header class="display-container content" style="max-width:1600px;min-width:500px" id="home">
<!--<img src="file.jpg" alt="I10" width="1520" height="350">-->
  <img class="round shadow " src="static\css\assets\head.jpg" alt="Admin" style="opacity: 0.92; display: block;
  margin-left: auto;
  margin-right: auto;
  width: 1220px;
  height: 100%;">
</header>
<!-- Page content -->
<div class="content" style="max-width:1100px">

  <!-- About Section -->
  <p class="large" align="justify">  The Indian automobile industry had its highestever
    annual domestic passenger vehicle sales last year. A total
    of 3.793 million or 37.93 lakh units were sold in the country
    in 2022, which is 23.1 percent higher than the preceding year.
    Similarly, the used car sale is also be increased day by day.
    The actual and reasonable rates of used cars are important
    to sale and purchase so that, buyers and sellers will be get
    benefited.</p>
  <div class="row padding-64" id="about">
    <div class="col l padding-large">
      <img src="static\css\assets\people.jpg" class="round opacity-75 shadow" alt="Main Gate" width="650" height="300">
      <br><br>
      <img src="static\css\assets\trust.jpg" class="round shadow" alt="Main Gate" width="650" height="300">
    </div>
```

```
<div class="col m padding-large">
    <p class="large" align="justify">  The disparity in prices due to various characteristics
      or features consistently making prediction of price a difficult
      job. In the matter of used car price prediction, it has been
      equally tough. It is challenging to determine if the advertised
      price is indeed legitimate. Used car prices are highly affected by
      features like new car price, engine power (cc), maximum power
      (bhp).</p>
    <br>
    <p class="large" align="justify">  Indian used-car market that is today valued at $23 billion
      in Financial Year 2021-2022, is projected to grow at double
      the rate at a compound annual growth rate of 19.5 per cent
      till FY 2026-2027. The rise in India's young and middle class
      population will lead to enormous growth in next five years.
      The fact that India has seen a steady growth in disposable
      incomes over the years will also power this prediction. The main aim of this tool is to predict the price of used cars

  </div>
</div>

<hr>
<div align="center" id="evaluator" style="font-family: 'Arial',sans-serif;">
  <p class="heading gradient"><b>Please Give Required Information to Calculate Car Price</b></p>
  <form action="{{ url_for('predict')}}" method="POST">
    <div class="b"><b>Ex-Showroom Price(in Lakhs)</b><br>
      <input type="Number" name="new_price" required="required" class="a">
    </div>
```

```
    <div class="b"><b>Model Year</b><br>
      <!--<input class="a" type="Number" name ="year" required="required">-->
     <select name="year" class="a">
      <option value=" 1990 "> 1990 </option>
      <option value=" 1991 "> 1991 </option>
      <option value=" 1992 "> 1992 </option>
      <option value=" 1993 "> 1993 </option>
      <option value=" 1994 "> 1994 </option>
      <option value=" 1995 "> 1995 </option>
      <option value=" 1996 "> 1996 </option>
      <option value=" 1997 "> 1997 </option>
      <option value=" 1998 "> 1998 </option>
      <option value=" 1999 "> 1999 </option>
      <option value=" 2000 "> 2000 </option>
      <option value=" 2001 "> 2001 </option>
      <option value=" 2002 "> 2002 </option>
      <option value=" 2003 "> 2003 </option>
      <option value=" 2004 "> 2004 </option>
      <option value=" 2005 "> 2005 </option>
      <option value=" 2006 "> 2006 </option>
      <option value=" 2007 "> 2007 </option>
      <option value=" 2008 "> 2008 </option>
      <option value=" 2009 "> 2009 </option>
      <option value=" 2010 "> 2010 </option>
      <option value=" 2011 "> 2011 </option>
      <option value=" 2012 "> 2012 </option>
      <option value=" 2013 "> 2013 </option>
      <option value=" 2014 "> 2014 </option>
```

```
114             <option value=" 2015 " selected> 2015 </option>
115             <option value=" 2016 "> 2016 </option>
116             <option value=" 2017 "> 2017 </option>
117             <option value=" 2018 "> 2018 </option>
118             <option value=" 2019 "> 2019 </option>
119             <option value=" 2020 "> 2020 </option>
120             <option value=" 2021 "> 2021 </option>
121             <option value=" 2022 "> 2022 </option>
122             <option value=" 2023 "> 2023 </option>
123           </select>
124         </div>
125
126         <div class="b"><b>Fuel Type</b><br>
127           <select name="fuel" class="a">
128             <option value="Petrol">Petrol</option>
129             <option value="Diesel">Diesel</option>
130             <option value="CNG">CNG</option>
131           </select>
132         </div>
133
134         <div class="b"><b>Transmission Type</b><br>
135           <select name="transmissiontype" class="a">
136             <option value="Manual">Manual</option>
137             <option value="Automatic">Automatic</option>
138           </select>
139         </div>
140
141         <div class="b"><b>Approximate Mileage (Kilometer/liter)</b><br>
```

```
141         <div class="b"><b>Approximate Mileage (Kilometer/liter)</b><br>
142           <input class="a" type="Number" name ="mileage" required="required">
143         </div>
144
145         <div class="b"><b>Engine Power (CC)</b><br>
146           <input type="Number" name="enginecc" required="required" class="a">
147         </div>
148
149         <div class="b"><b>Kilometers Driven</b><br>
150           <input type="Number" name="kmdriven" required="required" class="a">
151         </div>
152
153
154         <div class="c" align="center"><button type="submit" value="Predict" class="d">Calculate Current Value of Car</button>
155         </div>
156       </form>
157       <p align="center" class="heading">{{ prediction_text }}</p>
158     </div>
159
160     <!-- Menu Section -->
161     <hr>
162     <div class="row padding-64" id="facilities">
163       <div class="col l padding-large">
164         <h4><strong>Why buying used vehicles is the way to go green</strong></h4>
165         <p class="text-grey" align="justify">Manufacturers are ramping up efforts to make vehicles more eco-friendly. Most of them
166
167         <p class="text-grey" align="justify">less carbon dioxide a vehicle emits per km, the better it is for the environment. Newe
168
```

```
      <p class="text-grey" align="justify">Now, if you were to do a carbon lifecycle assessment, EVs would emerge as the clear wi
    </div>
    <div class="col l padding-large">
      <img src="static\css\assets\cars.webp" class="round opacity-75" alt="Mess" width="550" height="300">
      <br><br>
      <img src="static\css\assets\pollution.jpg" class="round" alt="Mess" width="550" height="300">
    </div>
  </div>
  <h4><strong>Reuse vehicles, bring down climate footprint</strong></h4>
    <p class="text-grey" align="justify">Will extending the life of older vehicles lead to a drop in the carbon footprint? Resear

  <hr>

  <!-- Contact Section -->
  <div class="container center padding-64" id="contact">
    <h1><strong>Contact</strong></h1><br>
    <h4><strong>Developers</strong></h4>
    <p>Jayant Singh Jhala<br>
      LinkedIn:
      <a href="https://www.linkedin.com/in/jayantsinghjhala/" target="_blank" class="hover-text-green">Jayant Singh Jhala</a><br>
      E-mail:
      <a href="https://mail.google.com/mail/u/2/#inbox?compose=GTvVlcRzCbfPgDsDhQhXnbqRcBvXflZhJQsGdWrVNBXqnrhVfXXWXLFzhRXCzfVmpm
    </p>

    <p>Jhalak Soni <br>
      LinkedIn:
      <a href="https://www.linkedin.com/in/jhalak-soni-412498241/" target="_blank" class="hover-text-green">Jhalak Soni</a><br>
      E-mail:
```

```
      LinkedIn:
      <a href="https://www.linkedin.com/in/jhalak-soni-412498241/" target="_blank" class="hover-text-green">Jhalak Soni</a><br>
      E-mail:
      <a href="https://mail.google.com/mail/u/0/#inbox?compose=GTvVlcRwQnjlQTmQxWkhJqGzLGrTQSqbFgvCzwslgrdmsNhxlQtJqcndjjvwLvHgjb
    </p>

    <p>Nitesh Agrawal <br>
      LinkedIn:
      <a href="https://www.linkedin.com/in/nitesh-agrawal-37ba57237/" target="_blank" class="hover-text-green">Nitesh Agrawal</a>
      E-mail:
      <a href="https://mail.google.com/mail/u/0/#inbox?compose=CllgCJNqKgXCzrNmWFVzwNjvxLzPQwpkqMmDfsgCwmkRDltTvxsVmnmwsJkSNGqBjs
    </p>
  </div>
  <hr>

<!-- End page content -->
</div>

<!-- Footer -->
<footer class="center light-grey padding-32">
  <p>Designed By <br>
    <a href="https://www.youtube.com/@JayantSJ" title="@JayantSJ" target="_blank" class="hover-text-green">Jayant Singh Jhala</a>
    <a href="https://www.youtube.com/@JayantSJ" title="@JayantSJ" target="_blank" class="hover-text-green">Nitesh Agrawal</a><br>
    <a href="https://www.youtube.com/@JayantSJ" title="@JayantSJ" target="_blank" class="hover-text-green">Jhalak Soni</a><br>
  </p>
</footer>
</body>
</html>
```

B. Source Code For Random Forest Prediction Model

```
[235]
import pandas as pd
from sklearn import metrics
import matplotlib.pyplot as plt
from sklearn.ensemble import RandomForestClassifier
from sklearn.ensemble import RandomForestRegressor
```
Python

```
[236]
df=pd.read_csv("cardekho_r.csv")
```
Python

```
[237]
df.dropna(inplace=True)
df.drop_duplicates(inplace=True)
duplicate_rows_df = df[df.duplicated()]
df.reset_index(drop=True,inplace=True)
```
Python

```
c=[]
test=df['new_price']
for i in test:
    m=i.split("-")
    a=float(m[0])
    if len(m)==1 :
```

```
[238]
c=[]
test=df['new_price']
for i in test:
    m=i.split("-")
    a=float(m[0])
    if len(m)==1 :
        c.append(a)
        continue
    b=float(m[1])
    sum=((a+b)/2)*100000
    c.append(sum)
df['new_price']=pd.Series(c)
```
Python

```
[239]
s=pd.factorize(df['fullname'])[0]
df['fullname']=s
```
Python

```
[240]
s=pd.factorize(df['sellertype'])[0]
df['sellertype']=s
```
Python

```
s=pd.factorize(df['fueltype'])[0]
df['fueltype']=s
```
[242] Python

```
s=pd.factorize(df['transmissiontype'])[0]
df['transmissiontype']=s
```
[243] Python

```
df.head()
```
[244] Python

```
   fullname   price  new_price  year  sellertype  kmdriven    ownertype  \
0         0  550000   729500.0  2016           0     20000  First Owner
1         1  570000  1196500.0  2015           1     30000  First Owner
2         2  350000   605000.0  2013           0     35000  First Owner
3         3  315000   658500.0  2013           1     40000  First Owner
4         4  410000   613500.0  2018           1     17512  First Owner

   fueltype  transmissiontype  mileage  enginecc  maxpowerbhp  seats  \
0         0                 0    18.90    1197.0        82.00    5.0
1         1                 0    22.77    1498.0        98.59    5.0
2         0                 0    18.90     998.0        67.10    5.0
3         0                 0    20.36    1197.0        78.90    5.0
```

```
X=df[['new_price','year','fueltype','transmissiontype','mileage','enginecc','kmdriven']] #,'sellertype','seats'
Y=df.iloc[:,1]
```
[245] Python

```
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, Y, test_size = 0.20,random_state=112)
```
[246] Python

```
hyp = RandomForestRegressor(n_estimators = 150)
hyp.fit(X_train, y_train)
```
[247] Python

```
RandomForestRegressor(n_estimators=150)
```

```
y_pred = hyp.predict(X_test)
```
[248] Python

```
print('\nAccuracy: \n', hyp.score(X_test,y_test)*100,"%")
```
[249] Python

```
Accuracy:
 93.70041303498546 %
```

```
print('\nMAE \n', metrics.mean_absolute_error(y_test, y_pred))
```
[68] Python

```
MAE
 102222.22521792699
```

```
mse=metrics.mean_squared_error(y_test, y_pred)
rmse = mse**0.5
rmse
```
[69] Python

```
262146.59605614305
```

```
print('\nR2 Score\n', metrics.r2_score(y_test, y_pred))
```
[70] Python

```
R2 Score
 0.9370041303498545
```

+ Code + Markdown

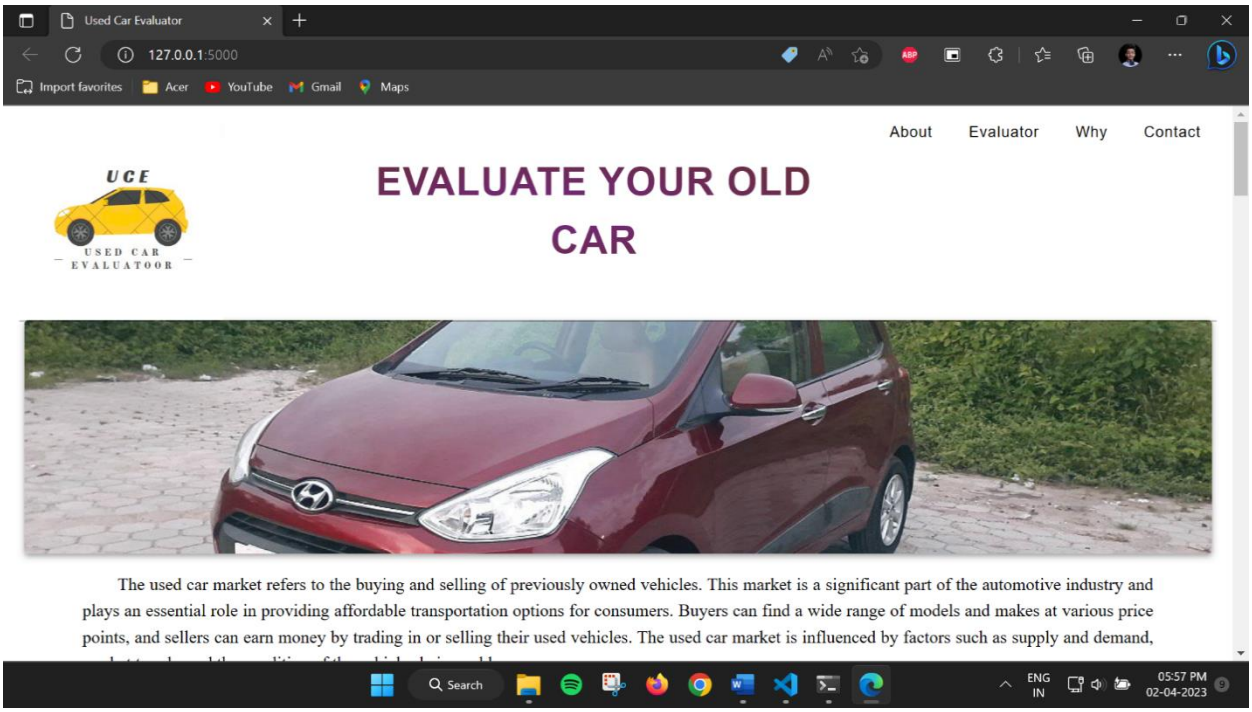
```
hyp.predict([[760000,2010,0,0,12,1199,20000]])
```
[71] Python

```
C:\ProgramData\Anaconda3\lib\site-packages\sklearn\base.py:450: UserWarning: X does not have valid feature names, but RandomForestRegressor w
  warnings.warn(
```

```
array([306180.])
```

```
import pickle
file = open('file.pkl','wb')
pickle.dump(hyp,file)
```
[257] Python

6. Output


Used Car Evaluator
127.0.0.1:5000
Import favorites
Acer
YouTube
Gmail
Maps
About
Evaluator
Why
Contact
UCE
USED CAR EVALUATOOR
EVALUATE YOUR OLD CAR
The used car market refers to the buying and selling of previously owned vehicles. This market is a significant part of the automotive industry and plays an essential role in providing affordable transportation options for consumers. Buyers can find a wide range of models and makes at various price points, and sellers can earn money by trading in or selling their used vehicles. The used car market is influenced by factors such as supply and demand,
Search
ENG
IN
05:57 PM
02-04-2023


Used Car Evaluator
127.0.0.1:5000
Import favorites
Acer
YouTube
Gmail
Maps
A used car price prediction model is a statistical tool that uses data analysis techniques to forecast the future value of a pre-owned vehicle. This type of model can help buyers and sellers make informed decisions by providing an estimate of a used car's worth based on its features, condition, and other relevant factors. The accuracy of the predictions can depend on the quality and quantity of the data used to train the model, as well as the sophistication of the algorithms employed.
The used car market in India has experienced significant growth in recent years due to factors such as increasing disposable income, changing consumer preferences, and the growing availability of financing options. With a large population and an expanding middle class, India is now one of the world's largest markets for used cars. Buyers can choose from a wide range of models and makes, including both domestic and imported vehicles.
Search
ENG
IN
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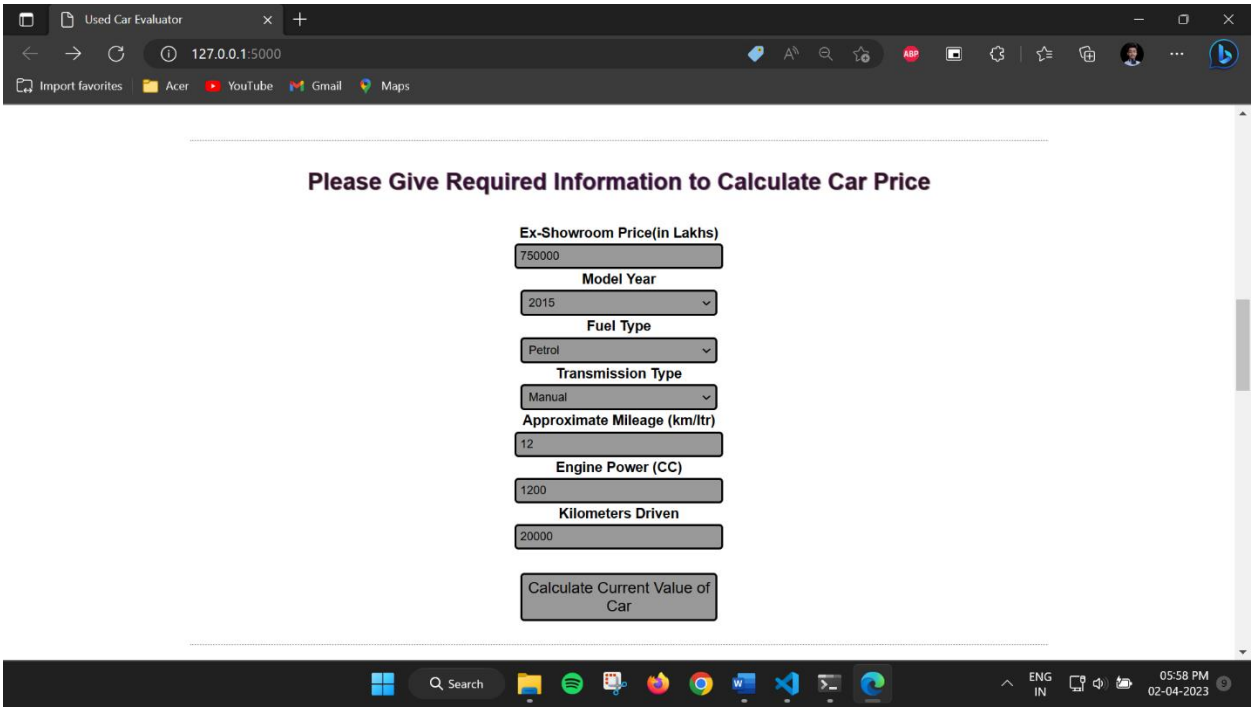
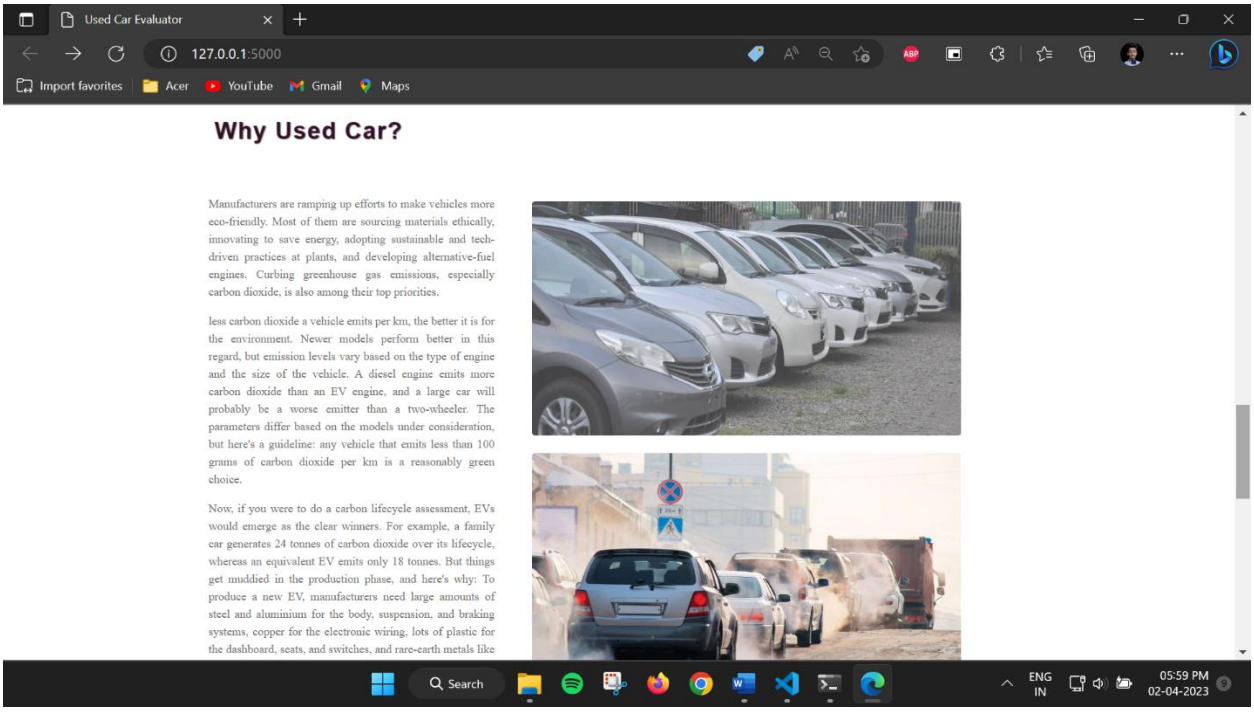

Used Car Evaluator
127.0.0.1:5000
Import favorites
Acer
YouTube
Gmail
Maps
Please Give Required Information to Calculate Car Price
Ex-Showroom Price(in Lakhs)
750000
Model Year
2015
Fuel Type
Petrol
Transmission Type
Manual
Approximate Mileage (km/ltr)
12
Engine Power (CC)
1200
Kilometers Driven
20000
Calculate Current Value of Car
Search
ENG
IN
05:58 PM
02-04-2023


Used Car Evaluator
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Import favorites
Acer
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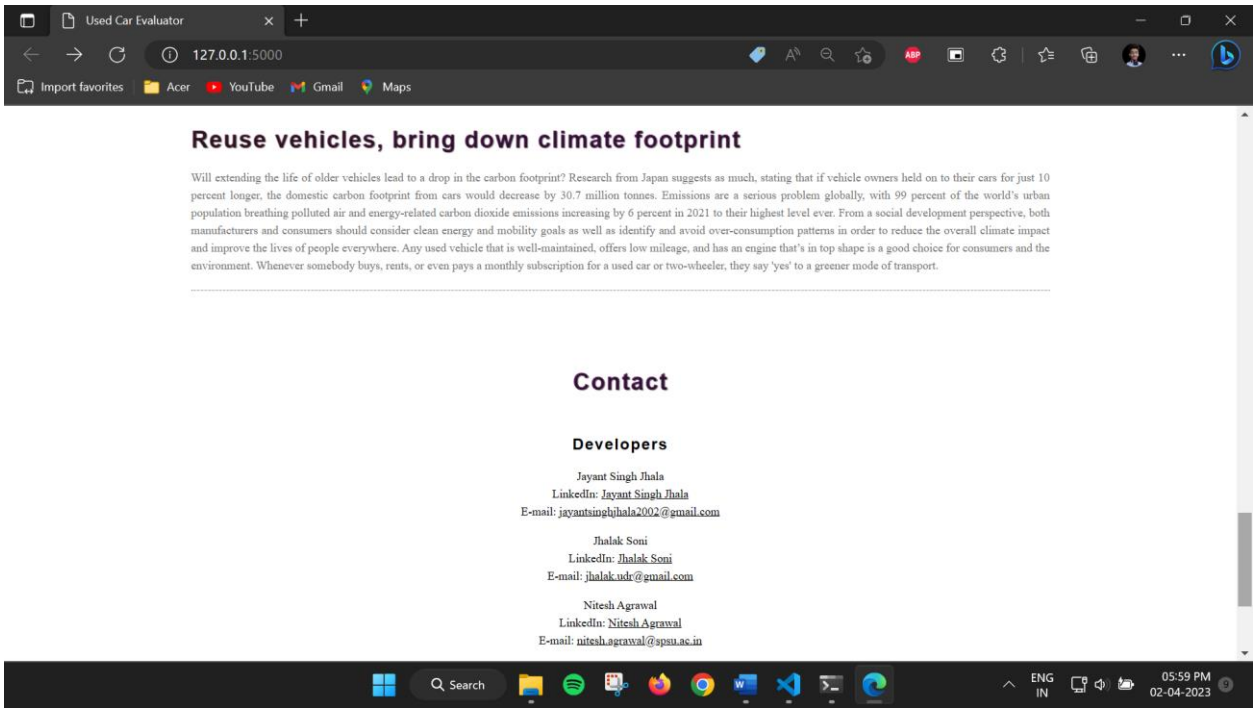
Why Used Car?
Manufacturers are ramping up efforts to make vehicles more eco-friendly. Most of them are sourcing materials ethically, innovating to save energy, adopting sustainable and tech-driven practices at plants, and developing alternative-fuel engines. Curbing greenhouse gas emissions, especially carbon dioxide, is also among their top priorities.
less carbon dioxide a vehicle emits per km, the better it is for the environment. Newer models perform better in this regard, but emission levels vary based on the type of engine and the size of the vehicle. A diesel engine emits more carbon dioxide than an EV engine, and a large car will probably be a worse emitter than a two-wheeler. The parameters differ based on the models under consideration, but here's a guideline: any vehicle that emits less than 100 grams of carbon dioxide per km is a reasonably green choice.
Now, if you were to do a carbon lifecycle assessment, EVs would emerge as the clear winners. For example, a family car generates 24 tonnes of carbon dioxide over its lifecycle, whereas an equivalent EV emits only 18 tonnes. But things get muddied in the production phase, and here's why: To produce a new EV, manufacturers need large amounts of steel and aluminium for the body, suspension, and braking systems, copper for the electronic wiring, lots of plastic for the dashboard, seats, and switches, and rare-earth metals like
Search
ENG
IN
05:59 PM
02-04-2023


Used Car Evaluator
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Import favorites
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Gmail
Maps
Reuse vehicles, bring down climate footprint
Will extending the life of older vehicles lead to a drop in the carbon footprint? Research from Japan suggests as much, stating that if vehicle owners held on to their cars for just 10 percent longer, the domestic carbon footprint from cars would decrease by 30.7 million tonnes. Emissions are a serious problem globally, with 99 percent of the world's urban population breathing polluted air and energy-related carbon dioxide emissions increasing by 6 percent in 2021 to their highest level ever. From a social development perspective, both manufacturers and consumers should consider clean energy and mobility goals as well as identify and avoid over-consumption patterns in order to reduce the overall climate impact and improve the lives of people everywhere. Any used vehicle that is well-maintained, offers low mileage, and has an engine that's in top shape is a good choice for consumers and the environment. Whenever somebody buys, rents, or even pays a monthly subscription for a used car or two-wheeler, they say 'yes' to a greener mode of transport.
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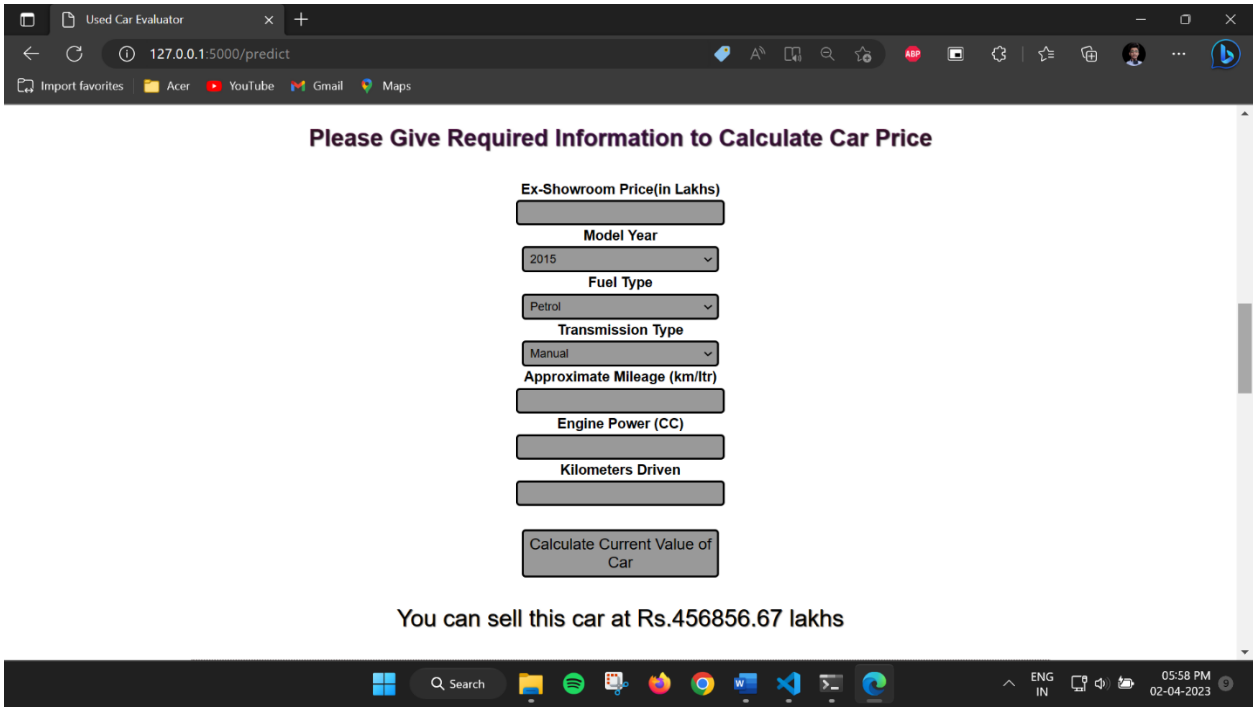
A. Sample Run


Used Car Evaluator
127.0.0.1:5000/predict
Import favorites
Acer
YouTube
Gmail
Maps
Please Give Required Information to Calculate Car Price
Ex-Showroom Price(in Lakhs)
Model Year
2015
Fuel Type
Petrol
Transmission Type
Manual
Approximate Mileage (km/ltr)
Engine Power (CC)
Kilometers Driven
Calculate Current Value of Car
You can sell this car at Rs.456856.67 lakhs
Search
ENG
IN
05:58 PM
02-04-2023

7. Result

The primary objective of the project is to deliver the accuracy while building reliable system using machine learning to predict used car prices. The research uses Random Forest Regression for this purpose. The R Squared value of the model is found out to be 0.9370041, the Mean Absolute Error is 102222.22 and RMSE is 262146.59.

8. Conclusion

The proposed system of Used Car Price Evaluator provides better predictions to dealers and individuals seeking to buy or sell their old car in India. The devised model implementation has provided with a reliable performance of Random Forest Regression model to predict used car prices. The car price has a strong dependence on its variety of factors or attributes, and it helps to yield forecast accuracy for used car prices. The results of the previous research study show that the Random Forest Regression method has performed significantly more than the rest of the methods, which makes the model to be employed for price prediction.

9. Future Scope

This web-based system namely "Used Car Price Evaluator" is restricted to the implementation using Random Forest Regression only, therefore allowing the room for improvement that can be achieved by employing ensemble machine learning in future developments of the proposed system .The system provides a static prediction of the price thus it can be extended to details regarding the yearly depreciation in the car price for better understanding of user.

10. Acknowledgement

It gives us immense pleasure in presenting the preliminary project report on 'Used Car Price Evaluator'. We would like to take this opportunity to thank our internal guide Assist. Prof. Dr. Vishan kumar Gupta for giving us all the help and guidance we needed. We are really grateful to her for all kind of support. His valuable suggestions were very helpful. In the end we are also

grateful to Prof. Dr. Darpan Anand, Department of Computer Science Engineering, for his indispensable suggestions.

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