CHAPTER 1
INTRODUCTION

1.1 OVERVIEW

The used car market shows great potential in the global world. The price of a new car 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 inability of customers to buy new cars due to the lack of funds, used car sales are on a global increase. The focus of this project is developing machine learning models that can accurately predict the price of a used car based on its features, in order to make informed purchases.

MACHINE LEARNING

Machine Learning is a field of technology developing with immense abilities and applications in automating tasks, where neither human intervention is needed nor explicit programming. The power of ML is so great that we can see its applications trending almost everywhere in our day-to-day lives. ML has solved many problems that existed earlier and have made businesses in the world progress to a great extent. To develop an efficient and effective model which predicts the price of a used car according to the user's inputs.

➢ To achieve good accuracy.

➢ To develop a User Interface(UI)

➢ It is user-friendly

➢ It takes input from the user and predicts the price.

1.2 PURPOSE

There is a need for a used car price prediction system to effectively determine the worthiness of the car using a variety of features. Even though there are websites that offer this service, their prediction method may not be the best. Besides, different

models and systems may contribute to predicting power for a used car in actual market value. It is important to know their actual market value while both buying and selling. By Machine learning concept , to find the best solution for car price prediction is possible.

1.3 OBJECTIVE

Car Price Prediction project is the ability to predict the price of a used car given various attributes (data) of that car. There is a saying that a car loses 10% of its value the moment the user drives it off a lot. Given that the user would expect that one of the main predictors is the amount of miles driven in the car, since more driving wears down the car. Additionally, the user would expect the brand (make) of the car to also be a factor in the price of a used car, since some brands of cars cost more and may be better made. The user expects to encounter some issues with multidisciplinary since some aspects of cars may be highly correlated. For example, larger cars will probably have larger engines and more doors. Larger engines are correlated with more cylinders.

CHAPTER 2
LITERATURE SURVEY

Author: Kiran

Description: This paper deals with the expected estimate for resale value of a car is most significant in the field of present research and technology. Most significant attributes are considered for predicting the resale value of the car. The significant relationships among various attributes are found by establishing the correlations. In this research the price of the car is considered as a dependent variable for target prediction. The data used for prediction was taken from the web. The suitability of random forest regression algorithm is identified and implemented in this research work for accurately predicting the resale value of the vehicle based on most significant attributes that have been selected on the basis of highest correlation. The outcome of the research shows that the accuracy of the model built is up to 90 percent and error obtained is 10 percent.

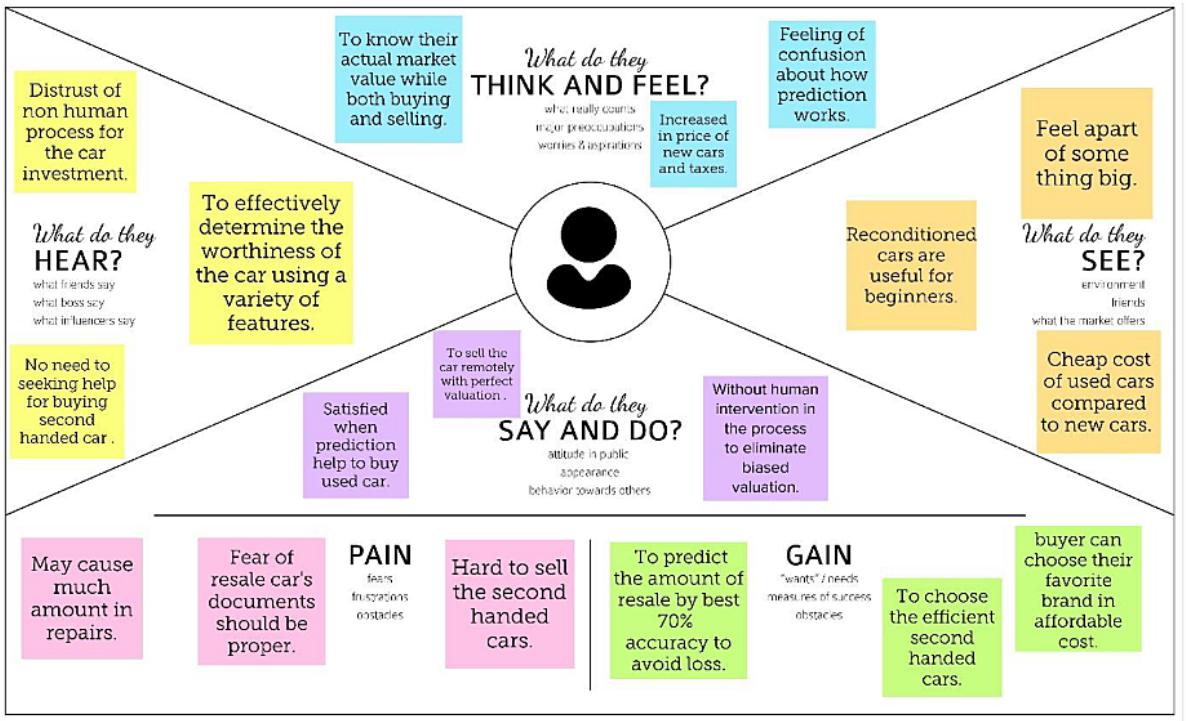
Author: Prashant Gajera, Akshay Gondaliya, Jewish Kathiawar Description :This paper deals with car price prediction with a platform that helps the people. The upcoming data with that platform which is made using machine learning technology. Using supervised machine learning algorithms such as linear regression , random forest regression . It helps to build a statistical model which will be able to predict the price of a used car . For that, previous consumer data and a given set of features will help us. It will also be comparing the prediction accuracy of these models to determine the optimal one.

Author: Pattabiraman Venkatasubbu, Mukkesh Ganesh

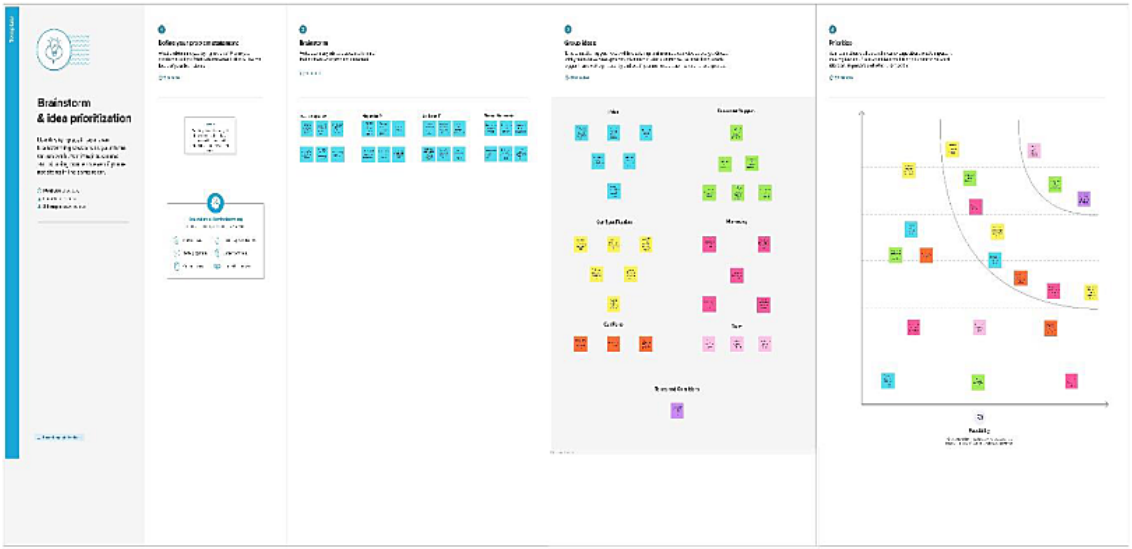
Description :This paper deals with the fact that the production of cars has been steadily increasing in the past decade, with over 70 million passenger cars being produced in the year 2016. This has given rise to the used car market, which on its own has become a booming industry. The recent advent of online portals has facilitated the need for both the customer and the seller to be better informed about the trends and patterns that determine the value of a used car in the market. Using Machine Learning Algorithms such as Lasso Regression, Multiple Regression and Regression trees, we will try to develop a statistical model which will be able to predict the price of a used car, based on previous consumer data and a given set of features. We will also be comparing the prediction accuracy of these models to determine the optimal one.

CHAPTER 3
IDEATION AND PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS



3.2 IDEATION AND BRAINSTROMING

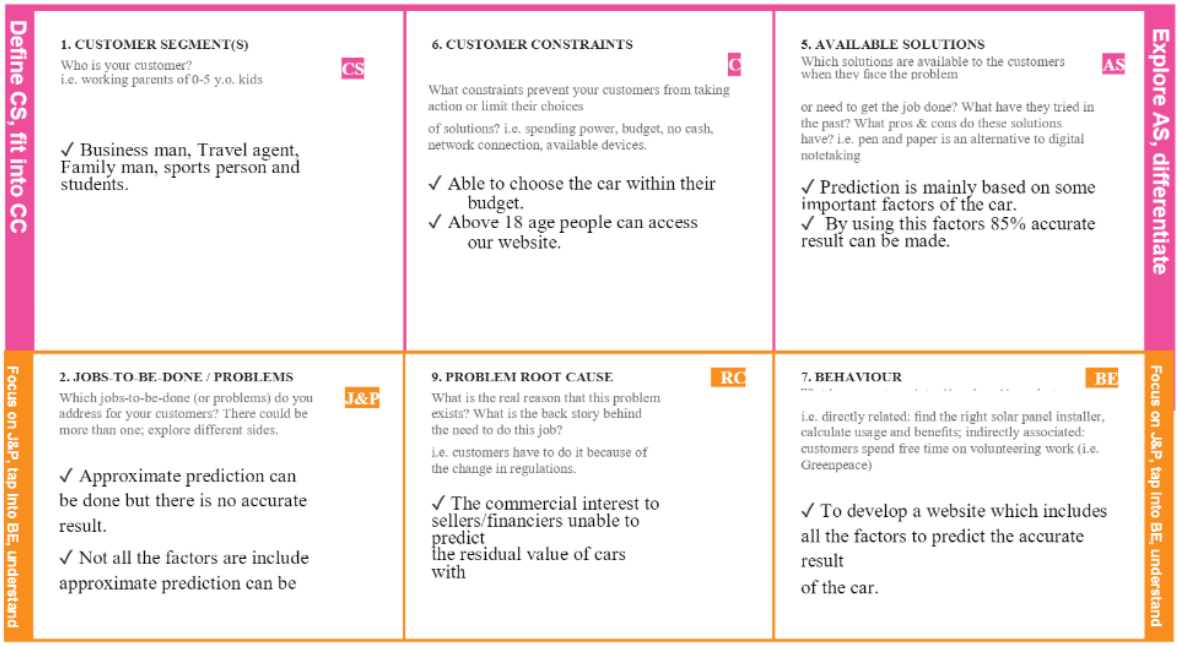


3.3 PROPOSED SOLUTION

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To predict the value of the used cars by developing a webpage.
2.	Idea / Solution description	There are more pre-owned cars in our country people who like to buy the cars were in confuse about buying so, by used our webpage to get a clear idea. (Analysis data using various machine learning Algorithm)
3.	Novelty / Uniqueness	By detecting a miles covered, chase number, availability of body parts, to predict the value in less amount of time.
4.	Social Impact / Customer Satisfaction	By using this application customer can also know the price of the car in a market and to have a idea whether to sale their vehicle based on the predicted value.
5.	Business Model (Revenue Model)	By using regression model to establish the prediction value of the car
6.	Scalability of the Solution	The solution for the predicted price of the car is nearly accurate and most efficient

3.4 PROPOSED SOLUTION FIT



CHAPTER 4

REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENTS:

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Home page	Login to Home page and see website details
FR-2	Car's Data	Entering the required Data
FR-3	Prediction	Analysing the car price
FR-4	Predicted value	Displaying the predicted value (car price)

4.2 NON-FUNCTIONAL REQUIREMENTS:

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

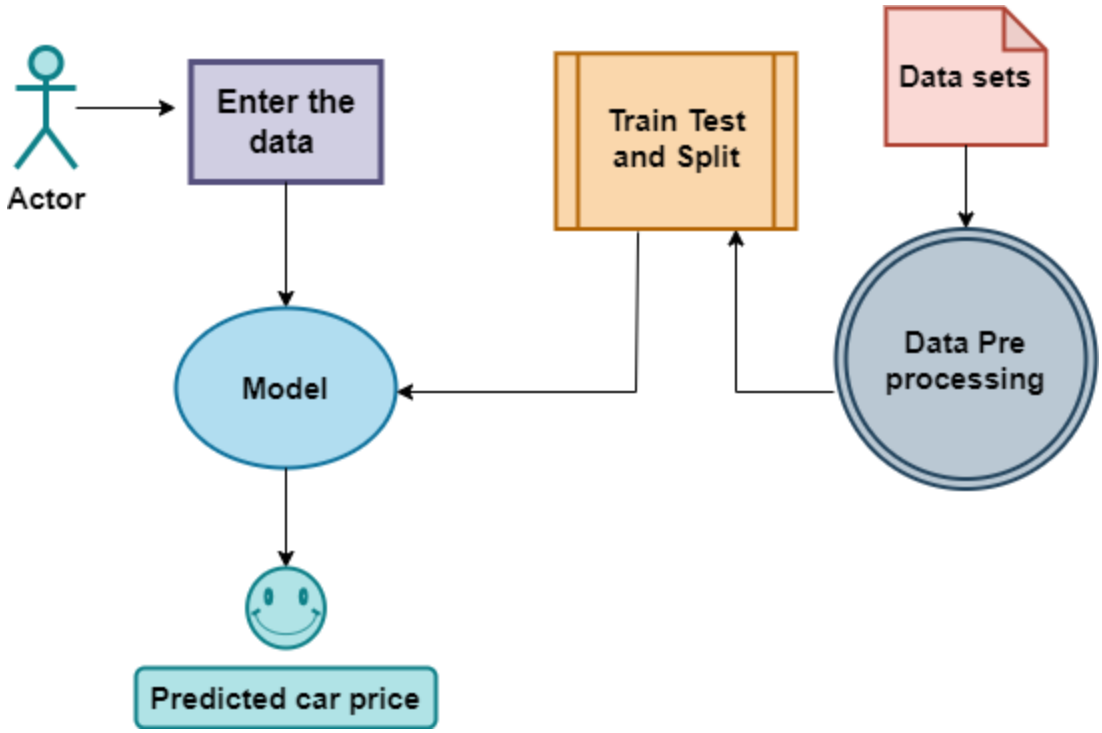
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Used to predict the used car price
NFR-2	**Security**	Secured connection
NFR-3	**Reliability**	Prediction of accurate Price
NFR-4	**Performance**	High performance due to model
NFR-5	**Availability**	Available for all internet users
NFR-6	**Scalability**	High scalability , Multiple users can access at same time

CHAPTER 5

PROJECT DESIGN

5.1 DATA FLOW DIAGRAMS:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system.This diagram shows the flow of our project here the actor is the user who needs their resale car price .



5.2 SOLUTION AND TECHNICAL ARCHITECTURE:

Technical Arichitecture:

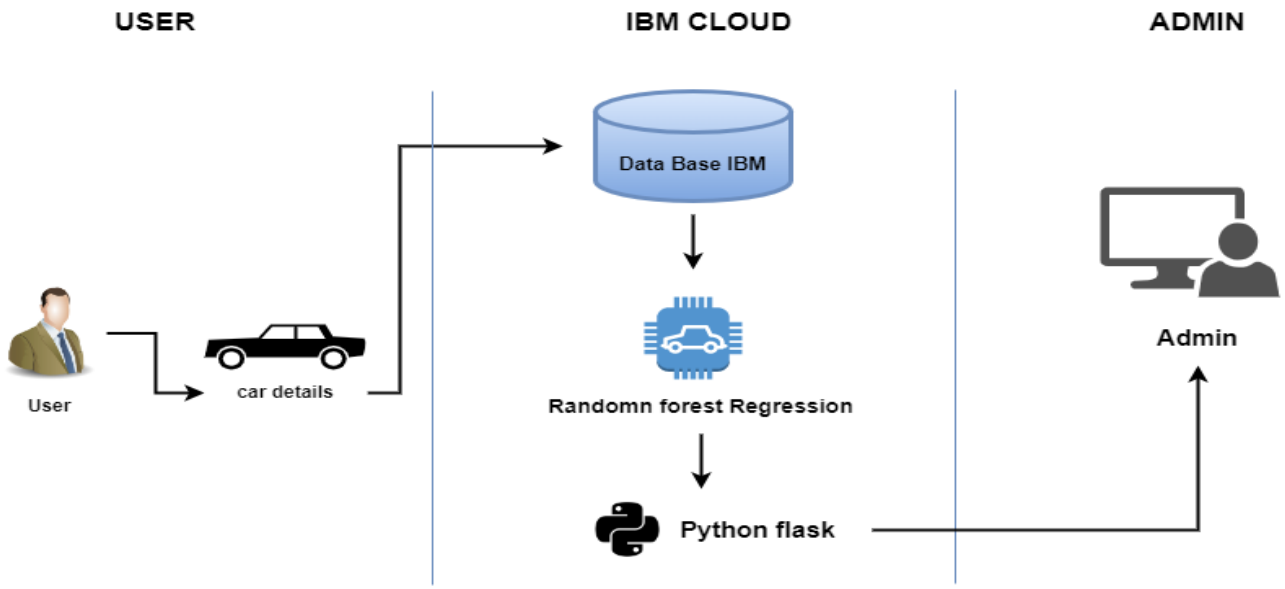


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	The user interacts with application using Web UI.	HTML, CSS, JavaScript , ReactJS etc.
2.	Database	The dataset containing car details is used for training the model to predict the rate.	Python libraries like numpy, pandas etc.
3.	Cloud Database	The dataset is stored in the IBM cloud	IBM Cloud

4.	Machine Learning algorithms	The machine learning algorithms are used to predict the used cars rate.	Random forest Regression algorithm

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Open-source frameworks used	Python Flask, Python, IBM Cloud
2.	Scalable Architecture	Scalability of architecture consists of 3 tiers	Web server-HTML, CSS, Java script Application server-Python Flask Database server-IBM Cloud
3.	Availability	The user can access through cloud	IBM Cloud hosting
4.	Performance	Multiple users can access the web application	IBM Load Balance

5.3 USER STORIES:

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release

customer (web user)	Dashboard	USN-1	User can visit the Home page	I can access website Details	Medium	Sprint-1
	Car Details	USN-2	Users should give their requirements like model , year , fuel type , owner etc..	I should give the car details	High	Sprint-2
	Car Price	USN-3	User can see the current price of the car	I can see the car price	High	Sprint-4
Admin	Model Building	USN-4	Admin should train and test the data set given	I can build train and test the model	High	Sprint-3
	Predict chart	USN-5	Admin should get the data set and predicted value of the car	I can predict the car price	High	Sprint-3
	Predict	USN-6	Admin should display the predicted price	I can display the car price	High	Sprint-4

CHAPTER 6

PROJECT PLANNING AND SCHEDULING

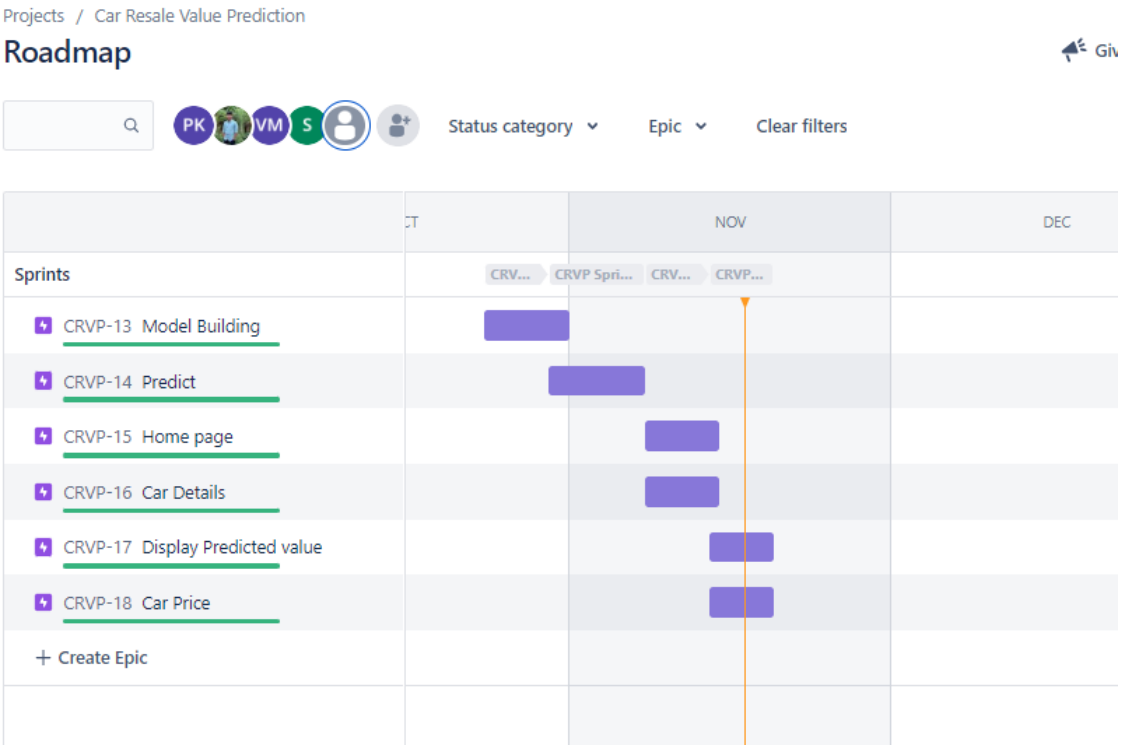
6.1 SPRINT PLANNING AND ESTIMATION:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Model Building	USN-3	Admin should train and test the data set given and build the model	20	High	Pranitha K
Sprint-2	Predict	USN-4	predicted value of the car	20	High	Pranitha K
Sprint-3	Home Page	USN-1	User can visit the Home page	7	Medium	Nitheesh Kumar C
Sprint-3	Car Details	USN-2	Users should give their requirements like model, year , fuel type , owner etc..	13	High	Sabarina S
Sprint-4	Display Predicted value	USN-5	Admin should display the predicted price	12	High	Vijay M
Sprint-4	Car Price	USN-6	User can see the current price of the car	8	High	Nitheesh Kumar C

6.2 SPRINT DELEIVERABLE SCHEDULE:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	30 Oct 2022	20	30 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	11 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	15 Nov 2022

6.3 REPORTS FROM JIRA:



CHAPTER 7

CODING AND SOLUTIONS

```
from django.shortcuts import render
import requests
import pickle
import numpy as np
import sklearn
model = pickle.load(open('./models/random_forest_regression_model.pkl', 'rb'))
def index(request):
return render(request,"index.html")
def Prediction_admin(request):
return render(request,"Prediction_admin.html")
def prediction(request):
if request.method== 'POST':
Year=int(request.POST['Year'])
```

```
Year = 2022 - Year
Present_Price=float(request.POST['Present_Price'])
Kms_Driven=int(request.POST['Kms_Driven'])
Kms_Driven2 = np.log(Kms_Driven)
Owner=int(request.POST['Owner'])
 Fuel_Type_Petrol=request.POST['Fuel_Type_Petrol']
if (Fuel_Type_Petrol == 'Petrol'):
Fuel_Type_Petrol = 1
 Fuel_Type_Diesel = 0
      else:
         Fuel_Type_Petrol = 0
         Fuel_Type_Diesel = 1

      Seller_Type_Individual=request.POST['Seller_Type_Individual']
      if (Seller_Type_Individual == 'Individual'):
         Seller_Type_Individual = 1
      else:
         Seller_Type_Individual = 0
      Transmission_Mannual=request.POST['Transmission_Mannual']
      if (Transmission_Mannual == 'Mannual'):
         Transmission_Mannual = 1
      else:
         Transmission_Mannual = 0
      prediction = model.predict([[Present_Price, Kms_Driven2, Owner, Year,
Fuel_Type_Diesel, Fuel_Type_Petrol,
                              Seller_Type_Individual, Transmission_Mannual]])
      output = round(prediction[0], 2)
      if output < 0:
         return render(request,'Prediction_admin.html',{'prediction_texts':"Sorry you cannot
```

```
sell this car"})
    else:
        contex={"output":output}
        return render(request,'Prediction.html',contex)
```

CHAPTER 8

HOME PAGE Test Case:

Test Case ID	Test Scenario	Test Case Description	Test Inputs	Expected Output	Positive Result	Negative Result
CRVP_TC_01	Site link	To check whether the site link is open or not	Tap the site link	Visiblity of the website	When the website was opened after tap the site means the result as home page	When the website was not opened or error acquiring like 402,505,etc..,
CRVP_TC_02	Prediction button in home page	To check whether the prediction is working or not	Tap the button to open the prediction page	Move to the prediction form	Successfully open the prediction form	When the button was tapped by user error acquiring the frontend code connectivity code or button was not enabling , **Your file couldn't be accessed**

PREDICTION FORM Test case:

Test Case ID	Test Scenario	Test Case Description	Test Inputs	Expected Output	Results
CRVP_TC_01	Show room released year	To check whether the year was in the given limit	Input type Limited range of year	Prediction credational is valid / Not valid	Test case will be pass / fail
CRVP_TC_02	What is the Showroom Price?(In lakhs)	To check whether the Showroom Price? Is (In lakhs)	Car rate in lakh	Prediction credational is valid / Not valid	Test case will be pass / fail
CRVP_TC_03	How Many Kilometers Drived?	To check whether the kilometers were in given input input format	Limited Kilometer as a input	Prediction credational is valid / Not valid	Test case will be pass / fail
CRVP_TC_04	How much owners previously	To check whether the owner	Input type as number in given range	Prediction credational is valid / Not	Test case will be pass / fail

	had the car(0 or 1 or 2) ?	limit is in range		valid	
CRVP_TC_05	What Is the Fuel type?	To check whether the given type of fuel is in scroll box option	To check whether the input is enable or not	Prediction credational is valid / Not valid	Test case will be pass / fail
CRVP_TC_06	Are you A Dealer or Individual	To check whether the option are utilized or not	Check the avaible option is visible or not	Prediction credational is valid / Not valid	Test case will be pass / fail
CRVP_TC_07	Transmission type	To verify the transmission type of the car	Check the both transmission is available or not	Prediction credational is valid / Not valid	Test case will be pass / fail
CRVP_TC_08	Calculate price button	Tap the button to predicted button	_	_	When the button was tapped by user error acquiring the frontend code connectivity code or button was not enabling , **Your file couldn't be**

					accessed

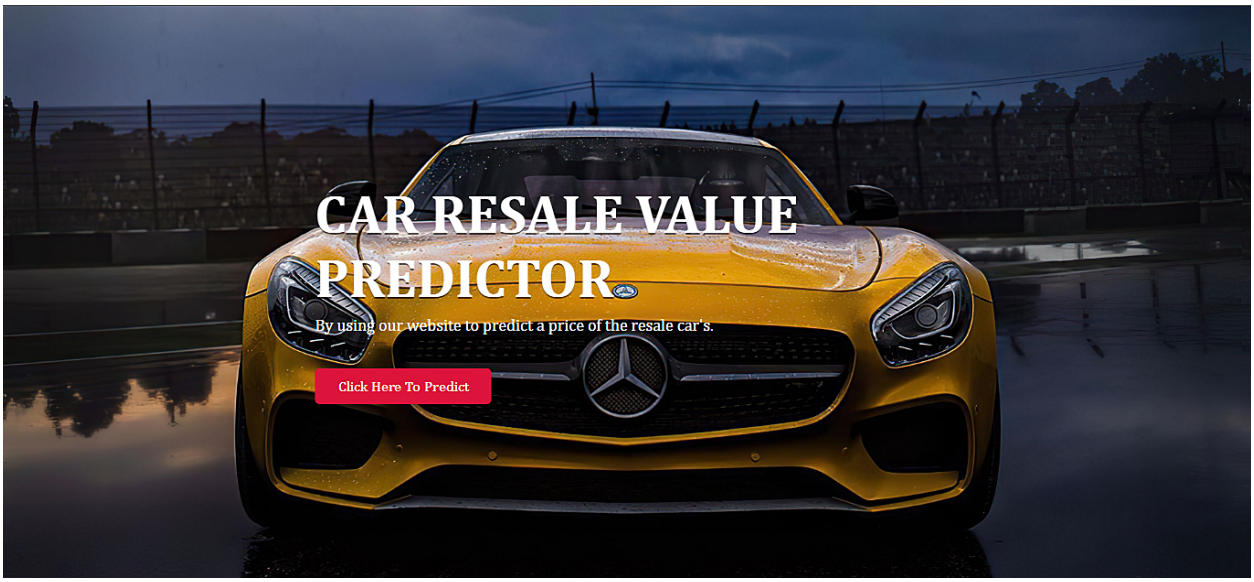
OUTPUT Test case:

Test Case ID	Test Scenario	Test Case Description	Test Inputs	Expected Output	Actual Output	Results
CRVP_TC_ 03	Fianl output	To check whether the output of predicted value	_	Predicted value	Reviewed succesfully	Test case will be pass / fail

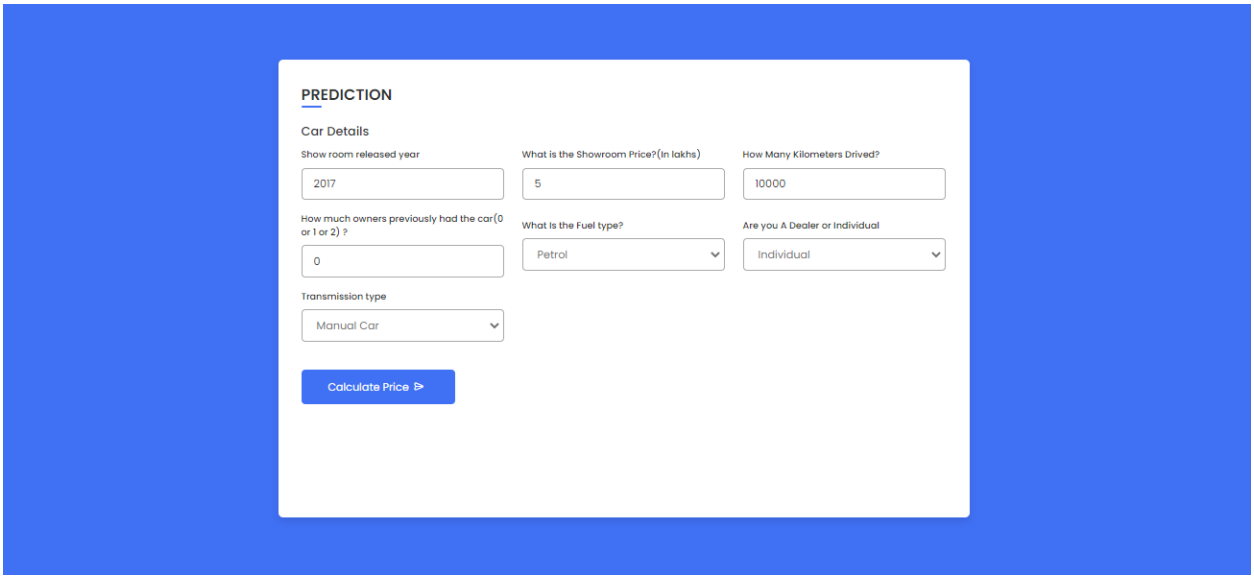
CHAPTER 9

RESULTS

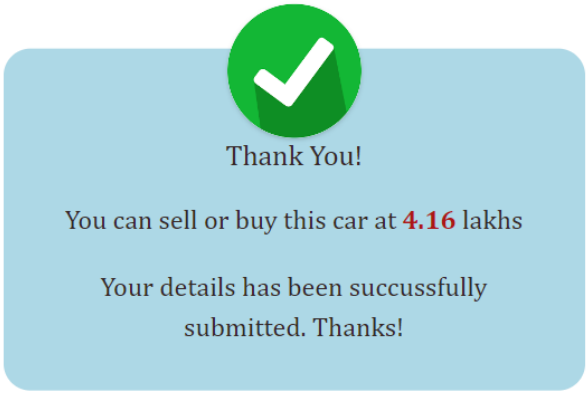
Home page:



PREDICTION FORM:



OUTPUT:



CHAPTER 10
ADVANTAGES AND DISADVANTAGES

10.1 DEMERITS OF THE EXISTING SYSTEM:

The data needed for the price estimation of the used cars is less in the existing system. Only variant , model, brand and the model year of the car and the estimated price of the car given by the seller are the only information given in most of the existing systems. In the existing systems, the owners of the cars code the selling price of the cars which is favorable to the owner's hand. The satisfaction of the buyer and the seller is less and the estimated price isn't reasonable. And the brokerage and brokers are involved in the existing systems. In the existing system, mechanics are needed to give the final estimate of the cars after the inspection. Mileage and horsepower are neglected in the price estimation data.

10.2 MERITS OF THE NEWLY PROPOSED SYSTEM:

The data needed for the price estimation of the used cars is more Compared to the existing system. Other than the variant , model and brand of the car , the mileage and Service records of the car is also needed for estimating price for greater accuracy . In the older or existing systems, the owners of the cars code the selling price of the cars which is favorable to the owner's hand. The satisfaction of the both seller and buyer are more and there is no brokerage and brokers involved as an external mediator. User friendly, more reliable ,easily understandable , high accuracy in estimation of the price of used cars. There is less need for a mechanic to give a price estimate of the car after inspection. The more reasonable and best resale price is estimated through the newly proposed system which fulfills both the seller's and buyer's satisfaction.

10.3 FEASIBILITY STUDY FOR USED CAR PRICE PREDICTION

Data Science team and the development of a model that will provide the best results in revealing and preventing fraudulent transactions. This is achieved through bringing together all meaningful features of card users' transactions, such as Date, User Zone, Product Category, Amount, Provider, Client's Behavioral Patterns, etc. The information is then run through a trained model that finds patterns and rules so that it can classify whether a transaction is fraudulent or is legitimate.

Creating idea of flow chart:

Create ideas on how to model the project, how to design our project, where the selection will be placed and how it works. Draw the flow chart for making the implementation of our project.

Implementation of idea:

Implementing the idea of flow charts to make the project well. By searching

some references in google we make this project as well as.

Documentation:

The documentation is completed after getting approval from the guide.

10.4 PROJECT METHODOLOGY

There are two primary phases in the system:

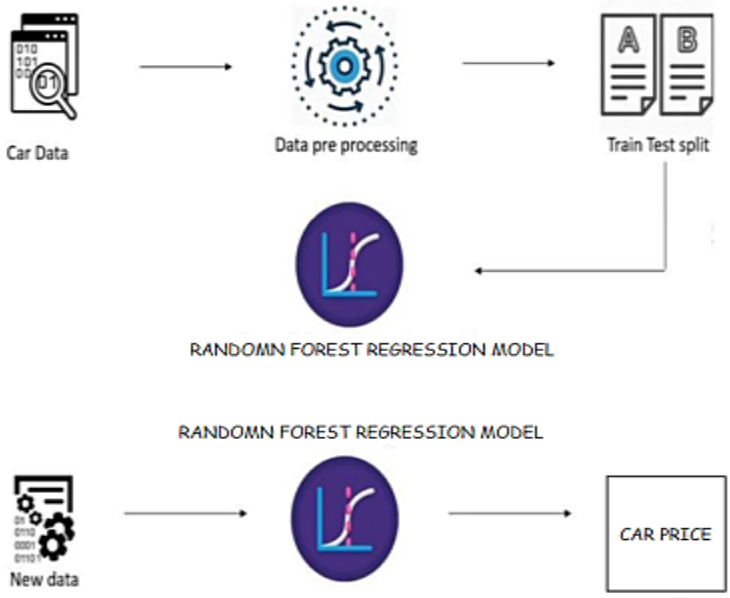
1. Training Phase
2. Testing Phase

Training Phase:

The system is trained by using the data in the data set and fits a model (line/curve) based on the algorithm chosen accordingly.

Testing phase:

The system is provided with the inputs and is tested for its working. The accuracy is checked. And therefore, the data that is used to train the model or test it, has to be appropriate. The system is designed to detect and predict the price of used cars and hence appropriate algorithms must be used to do the two different tasks. Before the algorithms were selected for further use, different algorithms were compared for its accuracy. The well-suited one for the task was chosen.



10.5 MODULE DESCRIPTION

Data Pre-Processing:

Data preprocessing is a process of preparing the raw data and making it suitable for a machine learning model. It is the first and crucial step while creating a machine learning model. When creating a machine learning project, it is not always a case that we come across clean and formatted data. And while doing any operation with data, it is mandatory to clean it and put it in a formatted way. So for this, the user can use data pre-processing task

Training:

A training model is a dataset that is used to train an ML algorithm. It consists of the sample output data and the corresponding sets of input data that have an influence on the output. The training model is used to run the input data through the algorithm to correlate the processed output against the sample output. The result from this correlation is used to modify the model.

Testing:

In machine learning, model testing is referred to as the process where the performance of a fully trained model is evaluated on a testing set. This kind of ML testing is more similar to traditional testing. Users can write and run tests checking the performance of the program. Applying the tests, users catch bugs in different components of the ML program. For example, users can test that the hidden layers in a neural network are configured correctly.

Random forest Regression :

Random Forest Regression is a supervised learning algorithm that uses ensemble learning methods for regression. Ensemble learning method is a technique that combines predictions from multiple machine learning algorithms to make a more accurate prediction than a single model.

Prediction:

"Prediction" refers to the output of an algorithm .It has been trained on a historical dataset and applied to new data when forecasting the likelihood of a particular outcome. Just like a hypothesis, a prediction is a type of guess. However, a prediction is an estimation made from observations.

CHAPTER 11

11.1 CONCLUSION AND SCOPE FOR FUTURE WORK

The increased prices of new cars and the financial incapability of the customers to buy them, Used Car sales are on a global increase. Therefore, there is an urgent need for a Used Car Price Prediction system which effectively determines the worthiness of the car using a variety of features. The proposed system will help to determine the accurate price of used car price prediction . Car Price Prediction was aimed to get different perspectives and eventually compared their performance with different models. Car price prediction can be a challenging task due to the high number of attributes that should be considered for the accurate prediction. The major step in the prediction process is collection and preprocessing of the data. In this research, linear regression and lasso regression , Random forest regression were built to normalize, standardize and clean data to avoid unnecessary noise for machine learning algorithms. Data cleaning is one of the processes that increases prediction performance.

APPENDIX

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

```
    <link rel="shortcut icon" href="https://o.remove.bg/downloads/800d01a1-66c8-4dbe-acec-716e22bc988c/images-removebg-preview.png" type="image/x-icon">


    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <!----======== CSS ======== -->
    <!-- <link rel="stylesheet" href="index.css"> -->

    <!----===== Iconscout CSS ===== -->
    <link rel="stylesheet" href="https://unicons.iconscout.com/release/v4.0.0/css/line.css">

    <!--<title>Responsive Regisration Form </title>-->
    <script
    async
    src="https://www.googletagmanager.com/gtag/js?id=UA-173973815-2"
  ></script>
  <script>
    window.dataLayer = window.dataLayer || [];
    function gtag() {
      dataLayer.push(arguments);
    }
    gtag("js", new Date());

    gtag("config", "UA-173973815-2");
  </script>
</head>
<body>
    <div class="container">
        <header>PREDICTION</header>

<form action="prediction" method="post">
    {%csrf_token%}
```

```
<div class="form first">
  <div class="details personal">
    <span class="title">Car Details</span>

    <div class="fields">
      <div class="input-field">
        <label>Show room released year</label>
        <input type="number" name="Year" placeholder="Enter the YEAR" required>
      </div>

      <div class="input-field">
        <label>What is the Showroom Price?(In lakhs)</label>
        <input type="number" name="Present_Price" placeholder="Enter the PRICE" required>
      </div>
      <div class="input-field">
        <label>How Many Kilometers Drived?</label>
        <input type="number" name="Kms_Driven" placeholder="Enter your Kilometers Driven"
required>
      </div>
      <div class="input-field">
        <label>How much owners previously had the car(0 or 1 or 2) ?</label>
        <input type="number" name="Owner" placeholder="Enter your OWNER" required>
      </div>

      <div class="input-field">
        <label>What Is the Fuel type?</label>
        <select name="Fuel_Type_Petrol" id="fuel" required="required">
          <option value="Petrol">Petrol</option>
          <option value="Diesel">Diesel</option>
          <option value="Diesel">CNG</option>
          </select>
      </div>

      <div class="input-field">
        <label> Are you A Dealer or Individual</label>
```

```
            <select name="Seller_Type_Individual" required="required">
            <option value="Dealer">Dealer</option>
            <option value="Individual">Individual</option>
            </select>

          </div>

          <div class="input-field">
            <label>Transmission type</label>
            <select  name="Transmission_Mannual" id="research" required="required">
            <option value="Mannual">Manual Car</option>
            <option value="Automatic">Automatic Car</option>
            </select>
          </div>
        </div>
    </div>
<button class="sumbit" type="submit">
    <span class="btnText">Calculate Price</span>
    <i class="uil uil-navigator"></i>
</button>
</div>
    </div>
</div>
</form>
    </div>
</body>
<style>
    /* ===== Google Font Import - Poppins ===== */
@import
url('https://fonts.googleapis.com/css2?family=Poppins:wght@200;300;400;500;600&display=s
wap');
*{
    margin: 0;
    padding: 0;
```

```
    box-sizing: border-box;
    font-family: 'Poppins', sans-serif;
}
body{
    min-height: 100vh;
    display: flex;
    align-items: center;
    justify-content: center;
    background: #4070f4;
}
.container{
    position: relative;
    max-width: 900px;
    width: 100%;
    border-radius: 6px;
    padding: 30px;
    margin: 0 15px;
    background-color: #fff;
    box-shadow: 0 5px 10px rgba(0,0,0,0.1);
}
.container header{
    position: relative;
    font-size: 20px;
    font-weight: 600;
    color: #333;
}
.container header::before{
    content: "";
    position: absolute;
    left: 0;
    bottom: -2px;
    height: 3px;
    width: 27px;
    border-radius: 8px;
```

```
    background-color: #4070f4;
}
.container form{
    position: relative;
    margin-top: 16px;
    min-height: 490px;
    background-color: #fff;
    overflow: hidden;
}
.container form .form{
    position: absolute;
    background-color: #fff;
    transition: 0.3s ease;
}
.container form .form.second{
    opacity: 0;
    pointer-events: none;
    transform: translateX(100%);
}
form.secActive .form.second{
    opacity: 1;
    pointer-events: auto;
    transform: translateX(0);
}
form.secActive .form.first{
    opacity: 0;
    pointer-events: none;
    transform: translateX(-100%);
}
.container form .title{
    display: block;
    margin-bottom: 8px;
    font-size: 16px;
    font-weight: 500;
```

```
    margin: 6px 0;
    color: #333;
}
.container form .fields{
    display: flex;
    align-items: center;
    justify-content: space-between;
    flex-wrap: wrap;
}
form .fields .input-field{
    display: flex;
    width: calc(100% / 3 - 15px);
    flex-direction: column;
    margin: 4px 0;
}
.input-field label{
    font-size: 12px;
    font-weight: 500;
    color: #2e2e2e;
}
.input-field input, select{
    outline: none;
    font-size: 14px;
    font-weight: 400;
    color: #333;
    border-radius: 5px;
    border: 1px solid #aaa;
    padding: 0 15px;
    height: 42px;
    margin: 8px 0;
}
.input-field input :focus,
.input-field select:focus{
    box-shadow: 0 3px 6px rgba(0,0,0,0.13);
```

```
}
.input-field select,
.input-field input[type="date"]{
    color: #707070;
}
.input-field input[type="date"]:valid{
    color: #333;
}
.container form button, .backBtn{
    display: flex;
    align-items: center;
    justify-content: center;
    height: 45px;
    max-width: 200px;
    width: 100%;
    border: none;
    outline: none;
    color: #fff;
    border-radius: 5px;
    margin: 25px 0;
    background-color: #4070f4;
    transition: all 0.3s linear;
    cursor: pointer;
}
.container form .btnText{
    font-size: 14px;
    font-weight: 400;
}
form button:hover{
    background-color: #265df2;
}
form button i,
form .backBtn i{
    margin: 0 6px;
```

```
}
form .backBtn i{
   transform: rotate(180deg);
}
form .buttons{
   display: flex;
   align-items: center;
}
form .buttons button , .backBtn{
   margin-right: 14px;
}

@media (max-width: 750px) {
   .container form{
      overflow-y: scroll;
   }
   .container form::-webkit-scrollbar{
     display: none;
   }
   form .fields .input-field{
      width: calc(100% / 2 - 15px);
   }
}

@media (max-width: 550px) {
   form .fields .input-field{
      width: 100%;
   }
}

</style>
</html>
```

PREDICTION :

```
<!doctype html>
```

```
<html lang="en">
  <head>
    <link rel="shortcut icon" href="https://o.remove.bg/downloads/6234978b-d191-45d9-ba47-adff84dbee11/606-6069922_mission-driven-results-warranty-icon-vector-free-hd-removebg-preview.png" type="image/x-icon">
    <!-- Required meta tags -->
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">

    <!-- Bootstrap CSS -->
    <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css" integrity="sha384-Vkoo8x4CGsO3+Hhxv8T/Q5PaXtkKtu6ug5TOeNV6gBiFeWPGFN9MuhOf23Q9Ifjh" crossorigin="anonymous">

    <title>Result</title>




    <!-- Global site tag (gtag.js) - Google Analytics -->
<script async src="https://www.googletagmanager.com/gtag/js?id=UA-173973815-2"></script>
<script>
  window.dataLayer = window.dataLayer || [];
  function gtag(){dataLayer.push(arguments);}
  gtag('js', new Date());

  gtag('config', 'UA-173973815-2');
</script>




  </head>
  <body>
```

```
   <div class="popup">
     <img src="https://encrypted-
tbn0.gstatic.com/images?q=tbn:ANd9GcTHwuxXtCVZ5rR6N0zTuAwOxkLvfdQgqRzLtw&usqp=
CAU">
     <h2>Thank You!</h2>
     <p>You can sell or buy this car at <span>{{output}}</span> lakhs</p>
     <p>Your details has been succussfully submitted. Thanks!</p>
   </div>


   {% comment %} <h1>You can sell or buy this car at {{output}} lakhs</h1>
   <p id='my'>This is one of the most accurate real world project created by <b>Anshuman
Gupta</b> </p><br>
   <p>Copywrite @ carpriceprediction2020</p> {% endcomment %}

   <!-- Optional JavaScript -->
   <!-- jQuery first, then Popper.js, then Bootstrap JS -->
   <script src="https://code.jquery.com/jquery-3.4.1.slim.min.js" integrity="sha384-
J6qa4849blE2+poT4WnyKhv5vZF5SrPo0iEjwBvKU7imGFAV0wwj1yYfoRSJoZ+n"
crossorigin="anonymous"></script>
   <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.0/dist/umd/popper.min.js"
integrity="sha384-
Q6E9RHvbIyZFJoft+2mJbHaEWldlvI9IOYy5n3zV9zzTtmI3UksdQRVvoxMfooAo"
crossorigin="anonymous"></script>
   <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/js/bootstrap.min.js"
integrity="sha384-
wfSDF2E50Y2D1uUdj0O3uMBJnjuUD4Ih7YwaYd1iqfktj0Uod8GCExl3Og8ifwB6"
crossorigin="anonymous"></script>
  </body>
  <style>
    .popup
    {
        width: 650px;
        font-family: Cambria, Cochin, Georgia, Times, 'Times New Roman', serif;
        background-color: rgb(173, 216, 230);
```

```
        border-radius: 30px;
        position: absolute;
        top: 50%;
        left: 50%;
        transform: translate(-50%, -50%);
        text-align: center;
        padding: 0 40px 40px;
        color: rgb(53, 40, 40);

    }
    .popup img
    {
        width: 150px;
        margin-top: -50px;
        border-radius: 50%;
        box-shadow: 0 2px 5px rgba(0,0,0,0.2);

    }
    .popup p
    {
        font-size: 30px;
        font-weight: 500;
        margin: 30px 0 10px;
    }
    .popup span
    {
      color: rgb(172, 22, 22);
      font-weight: bold;
    }
</style>
</html>
```

Manage.py

```
#!/usr/bin/env python
"""Django's command-line utility for administrative tasks."""
```

```
import os
import sys


def main():
    os.environ.setdefault('DJANGO_SETTINGS_MODULE', 'price_predictor.settings')
    try:
        from django.core.management import execute_from_command_line
    except ImportError as exc:
        raise ImportError(
            "Couldn't import Django. Are you sure it's installed and "
            "available on your PYTHONPATH environment variable? Did you "
            "forget to activate a virtual environment?"
        ) from exc
    execute_from_command_line(sys.argv)


if __name__ == '__main__':
    main()
```

GITHUB LINK : https://github.com/IBM-EPBL/IBM-Project-50679-1660921278

YOUTUBE LINK:

REFERENCE

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[3] Wu, J. D., Hsu, C. C., & Chen, H. C. (2009). An expert system of price forecasting for used cars using adaptive Neuro-fuzzy inference. Expert Systems with Applications, 36(4), 7809-7817.

[4] Du, J., Xie, L., & Schroeder, S. (2009). Practice Prize Paper—PIN Optimal Distribution of Auction Vehicles System: Applying Price Forecasting,Elasticity Estimation, and Genetic Algorithms to Used-Vehicle Distribution.Marketing Science, 28(4), 637-644.