Car Resale Value Prediction

Introduction:

Predicting the price of used cars is both an important and interesting problem.With difficult economic conditions, it is likely that sales of second-hand imported (reconditioned) cars and used cars will increase. In many developed countries, it is common to lease a car rather than buying it outright. After the lease period is over, the buyer has the possibility to buy the car at its residual value, i.e. its expected resale value. Thus, it is of commercial interest to sellers/financers to be able to predict the salvage value (residual value) of cars with accuracy.

If the residual value is under-estimated by the seller/financer at the beginning, the installments will be higher for the clients who will certainly then opt for another seller/financer. If the residual value is over-estimated, the installments will be lower for the clients but then the seller/financer may have much difficulty at selling these high-priced used cars at this over-estimated residual value. Thus, we can see that estimating the price of used cars is of very high commercial importance as well.

Overview:

Predicting the resale value of a car is not a simple task. It is trite knowledge that the value of used cars depends on a number of factors. The most important ones are usually the age of the car, its make (and model), the origin of the car (the original country of the manufacturer), its mileage (the number of kilometers it has run) and its horsepower. Due to rising fuel prices, fuel economy is also of prime importance. Some special factors such as whether the car had been involved in serious accidents might play a major role in estimating the price. The look and feel of the car certainly contributes a lot to the price. As we can see, the price depends on a large number of factors. Unfortunately, information about all these factors are not always available and the buyer must make the decision to purchase at a certain price based on few factors only.

Purpose:

In order to predict the resale value of the car, we proposed an intelligent, flexible, and effective system that is based on using regression algorithms. Considering the main factors which would affect the resale value of a vehicle a regression model is to be built that would give the nearest resale value of the vehicle. We will be using various regression algorithms and algorithm with the best accuracy will be taken as a solution, then it will be integrated to the web-based application where the user is notified with the status of his product and the predicted resale value will be displayed.

Proposed Solution:

Pre-Process the Data -

Preprocessing includes:

1. Handling the null values.
2. Handling the categorical values if any.
3. Normalize the data if required.
4. Identify the dependent and independent variables.
5. Split the dataset into train and test sets.

Model Building -

There are several Machine learning algorithms to be used depending on the data such as images, sound, text, and numerical values. The algorithms can be chosen according to the objective. As the dataset which we are using is a Regression dataset so you can use the following algorithms

- Multi Linear Regression
- Random Forest Regression / Classification
- Decision Tree Regression / Classification
- K-Nearest Neighbors
- Support Vector Machine

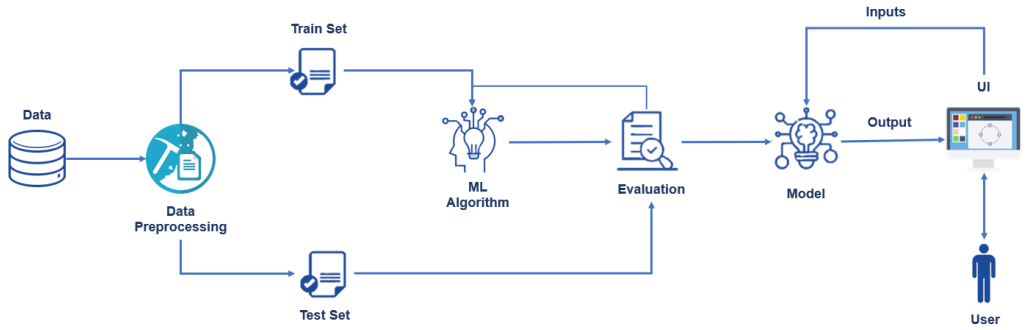
Then train the datasets to run smoothly and see an incremental improvement in the prediction rate.

The Appropriate Model

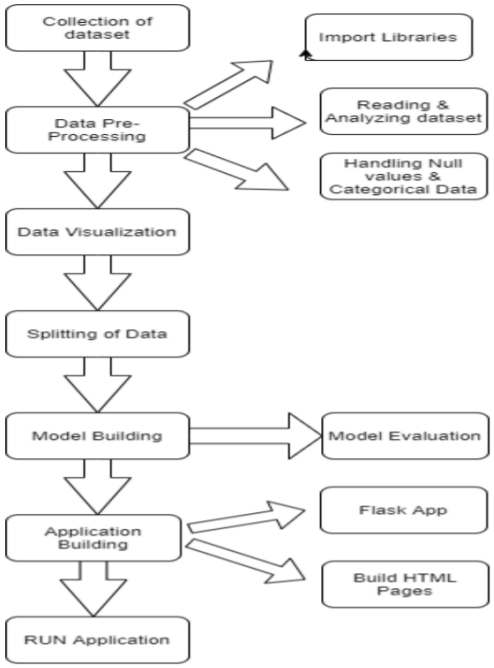
Considering the accuracy, Random Forest Regression is the appropriate model. A Random Forest is an ensemble technique capable of performing both regression and classification tasks with the use of multiple decision trees and a technique called Bootstrap and Aggregation, commonly known as bagging.

Theoretical Analysis:

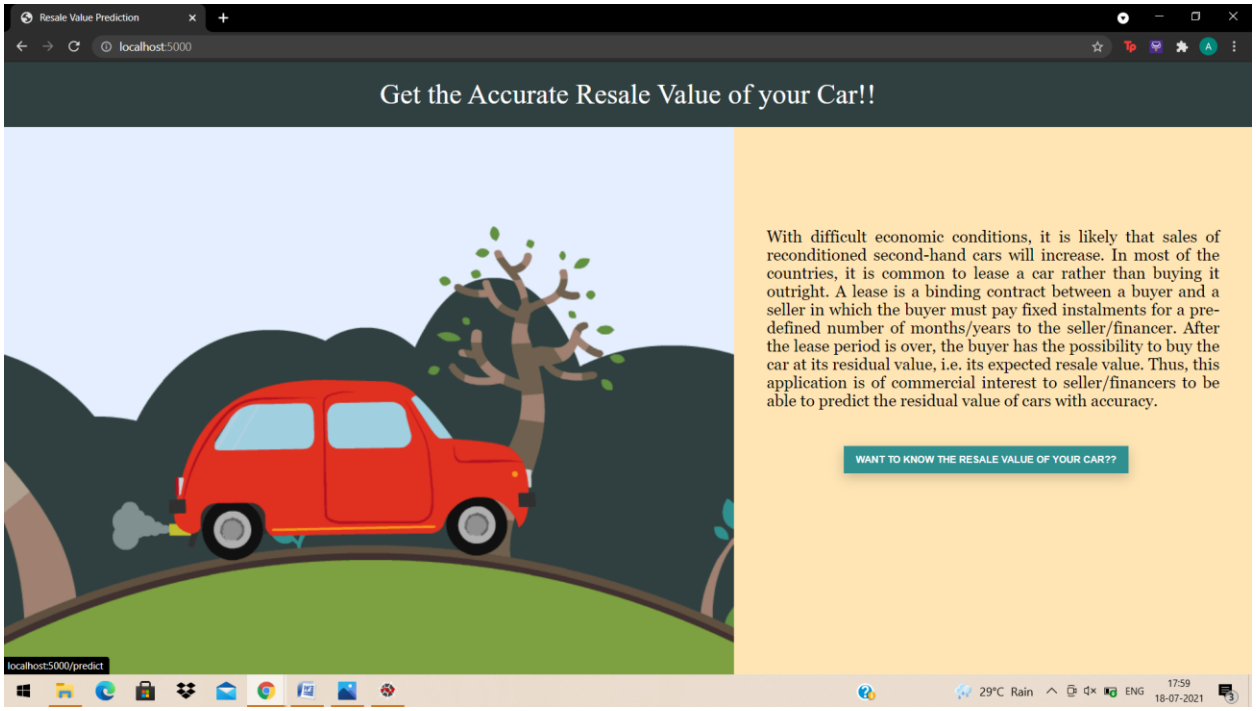
Block Diagram –

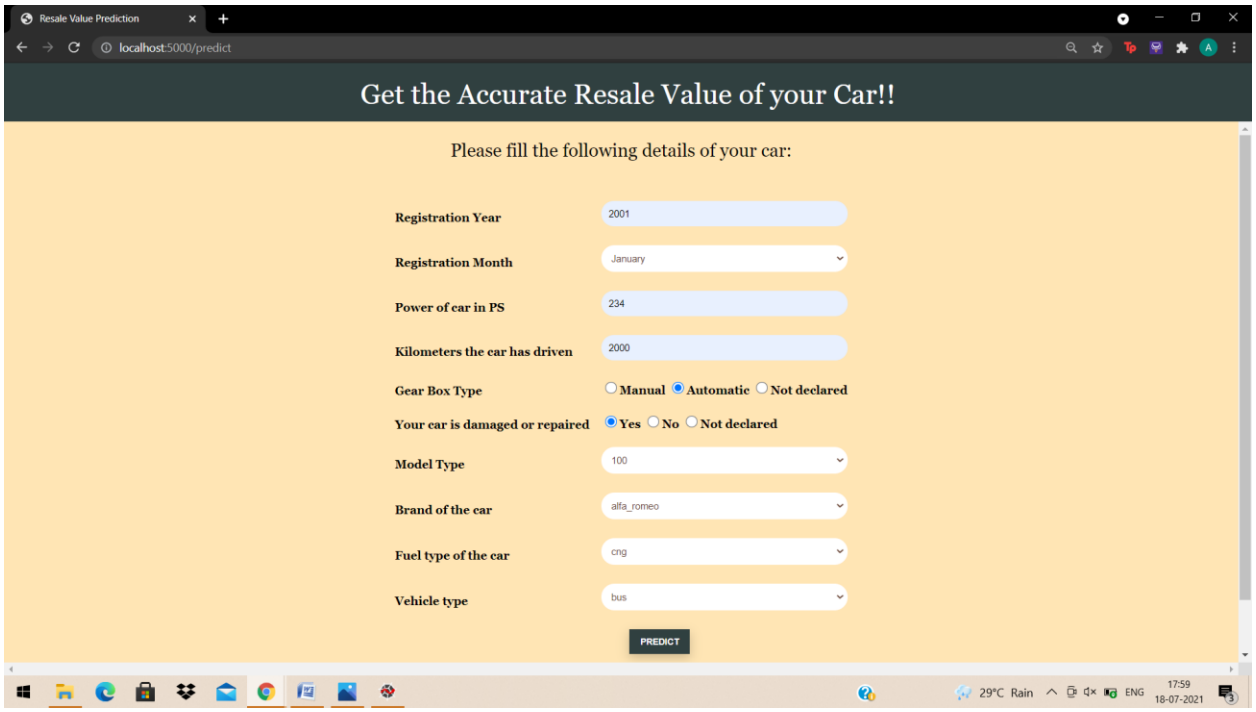


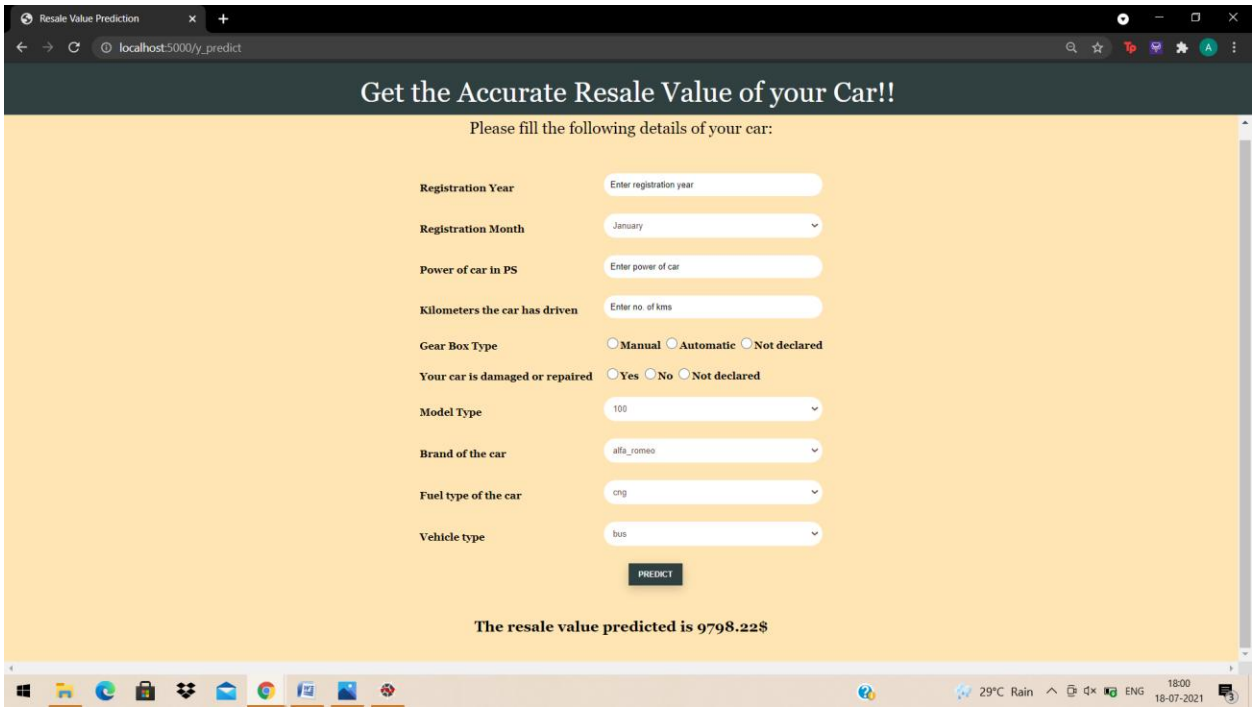
Flowchart:

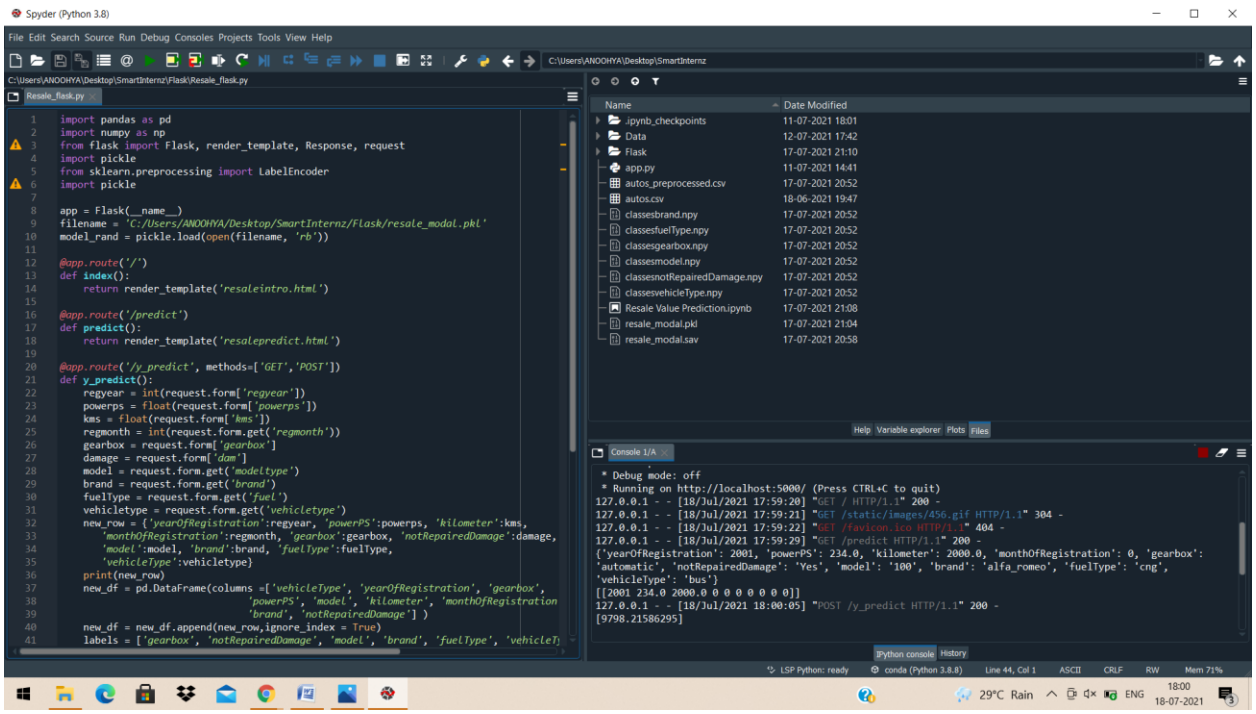


Result:


Resale Value Prediction
localhost:5000
Get the Accurate Resale Value of your Car!!
With difficult economic conditions, it is likely that sales of reconditioned second-hand cars will increase. In most of the countries, it is common to lease a car rather than buying it outright. A lease is a binding contract between a buyer and a seller in which the buyer must pay fixed instalments for a pre-defined number of months/years to the seller/financer. After the lease period is over, the buyer has the possibility to buy the car at its residual value, i.e. its expected resale value. Thus, this application is of commercial interest to seller/financers to be able to predict the residual value of cars with accuracy.
WANT TO KNOW THE RESALE VALUE OF YOUR CAR??
localhost:5000/predict


Resale Value Prediction
localhost:5000/predict
Get the Accurate Resale Value of your Car!!
Please fill the following details of your car:
Registration Year
2001
Registration Month
January
Power of car in PS
234
Kilometers the car has driven
2000
Gear Box Type
Manual
Automatic
Not declared
Your car is damaged or repaired
Yes
No
Not declared
Model Type
100
Brand of the car
alfa_romeo
Fuel type of the car
cng
Vehicle type
bus
PREDICT





For the dataset, using Random Forest Regression model has given an accuracy of 83% for the prediction.