Ideation Phase

Literature Survey On The Selected Project & Information Gathering

Date	29 September 2022
Team ID	PNT2022TMID21102
Project Name	Car Resale Value Prediction
Maximum Marks	-

Literature Survey

- The first paper is Predicting the price of Used Car Using Machine Learning Techniques.In this paper, they investigate the application of supervised machine learning techniques to predict the price of used cars in Mauritius. The predictions are based on historical data collected from daily newspapers. Different techniques like multiple linear regression analysis, k-nearest neighbours, naïve bayes and decision trees have been used to make the predictions.
- The Second paper is Car Price Prediction Using Machine Learning Techniques. Considerable number of distinct attributes are examined for the reliable and accurate prediction. To build a model for predicting the price of used cars in Bosnia and Herzegovina, they have applied three machine learning techniques (Artificial Neural Network, Support Vector Machine and Random Forest).
- The Third paper is Price Evaluation model in second hand car system based on BP neural networks. In this paper, the price evaluation model based on big data analysis is proposed, which takes advantage of widely circulated vehicle data and a large number of vehicle transaction data to analyze the price data for each type of vehicles by using the optimized BP neural network algorithm. It aims to establish a second-hand car price evaluation model to get the price that best matches the car.

Information Gathering

1.1 Abstract

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. So, customers buying a new car can be assured of the money they invest to be worthy. But, due to 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. Existing System includes a process where a seller decides a price randomly and buyer has no idea about the car and it's value in the present day scenario. In fact, seller also has no idea about the car's existing value or the price he should be selling the car at. To overcome this problem we have developed a model which will be highly effective. Regression Algorithms are used because they provide us with continuous value as an output and not a categorized value. Because of which it will be possible to predict the actual price a car rather than the price range of a car. User Interface has also been developed which acquires input from any user and displays the Price of a car according to user's inputs.

1.2 Introduction

Determining whether the listed price of a used car is a challenging task, due to the many factors that drive a used vehicle's price on the market. 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. We implement and evaluate various learning methods on a dataset consisting of the sale prices of different makes and models . We will compare the performance of various machine learning algorithms like Linear Regression, Ridge Regression, Lasso Regression, Elastic Net, Decision Tree Regressor and choose the best out of it. Depending on various parameters we will determine the price of the car. Regression Algorithms are used because they provide us with continuous value as an output and not a categorized value because of which it will be possible to predict the actual price a car rather than the price range of a car. User Interface has also been developed which acquires input from any user and displays the Price of a car according to user's inputs.

1.3 Requirements

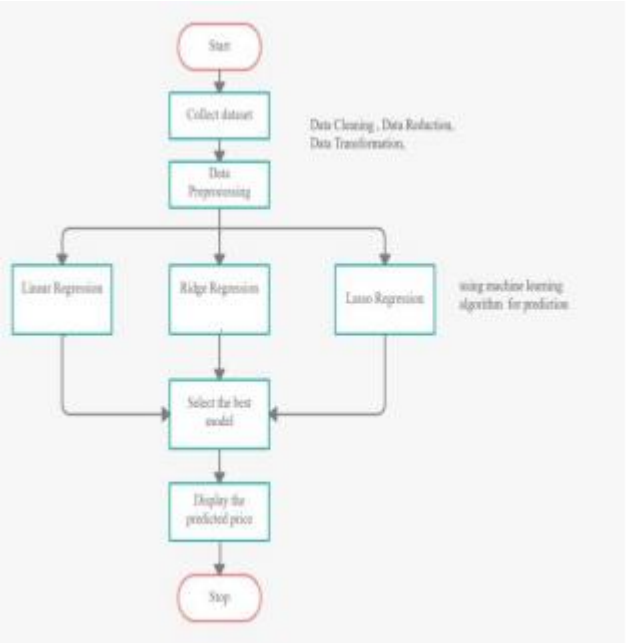
Hardware requirements

- Operating system- Windows 7,8,10
- Processor- dual core 2.4 GHz (i5 or i7 series Intel processor or equivalent AMD)
- RAM-4GB

Software Requirements

- Python
- Pycharm
- Jupyter Notebook
- Chrome

1.4 Flowchart



Flowchart for Car Resale Value Prediction

1.5 Existing Solution

The most necessity ingredient for prediction is brand and model, period usage of vehicle, mileage of vehicle. The fuel type used in the vehicle as well as fuel consumption per mile highly affect price of a vehicle due to a frequent changes in the price of a fuel. Different features like exterior color, door number, type of transmission, dimensions, safety, air condition, interior, whether it has navigation or not will also influence the vehicle price. In this paper, we applied different methods and techniques in order to achieve higher precision of the used vehicle price prediction.

2. Methodolgy

There are two primary phases in the system: 1. 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. 2. 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 price of used car and hence appropriate algorithms must be used to do the two different tasks. Before the algorithms are selected for further use, different algorithms were compared for its accuracy. The well-suited one for the task was chosen.

3.1 Technical Papers

- **Used Cars Price Prediction using Supervised Learning Techniques**, December 2019

  International Journal of Engineering and Advanced Technology 9(1S3):216-223

  DOI:10.35940/ijeat.A1042.1291S319

- **Price Prediction of Used Cars Using Machine Learning,** November 2021

  2021 IEEE International Conference on Emergency Science and Information Technology (ICESIT)

  DOI: 10.1109/ICESIT53460.2021.9696839

3.2 Research Publications

[1] Doan Van Thai, “Prediction car prices using quantify qualitative data and knowledge- based system.”

[2] Pattabiraman Venkatasubbu, “Used Cars Price Prediction using Supervised Learning Techniques.”

[3] Nitis Monburinon, “Prediction of Prices for Used Car by Using Regression Models”

[4]https://www.semanticscholar.org/paper/vehiclePrice-Prediction-System-using-Machine-NoorJan/fc87ead6754b188b1b8629db77badf361fd24 a22

[5] Comparative Analysis of Used Car Price Evaluation Models, Tongji University, Shanghai 200000, China.

[6] Nitis Monburinon, “Prediction of Prices for Used Car by Using Regression Models”, 5th International Conference on Business and Industrial Research, (ICBIR), Bangkok, Thailand, 2018

[7] Jaideep A Muley, “Prediction of Used Cars’ Prices by Using SAS EM”, Oklahoma State University

[8] Nabarun Pal, “A methodology for predicting used cars prices using Random Forest”, Future of Information and Communications Conference.