

Machine learning Model for second hand Car price Prediction

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Abstract

The price of second hand cars is determined by various factors, however that of a new car is determined by the manufacturer with some additional costs incurred by the Government in the form of taxes. Due to the high prices of new cars and the financial stringents, used Car markets has increased in recent years, hence a need for a Used Car Price Prediction system which effectively determines the value of the car using different features. Due to the continuous nature of data, Regression Algorithms are highly favorable. The main aim of this project is to develop machine learning models that can accurately predict the price of a used car based on various features in order to make informed decisions in the valuation process. I have initially decided to use a regression model for my analysis with a view to implement other algorithms for future study.

1. INTRODUCTION

Determining whether the price of a used car is a challenging task, due to many factors that drive a used vehicle's price on the market. The focus of this project is to develop a machine learning model that can accurately predict the price of a used car based on its features and improve the research by incorporating and testing other models in order to make informed price decisions..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 of a car rather than the price range of a car.

2. METHODOLOGY

2.1 Objective

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) which is user-friendly and takes input from the user and predicts the price.

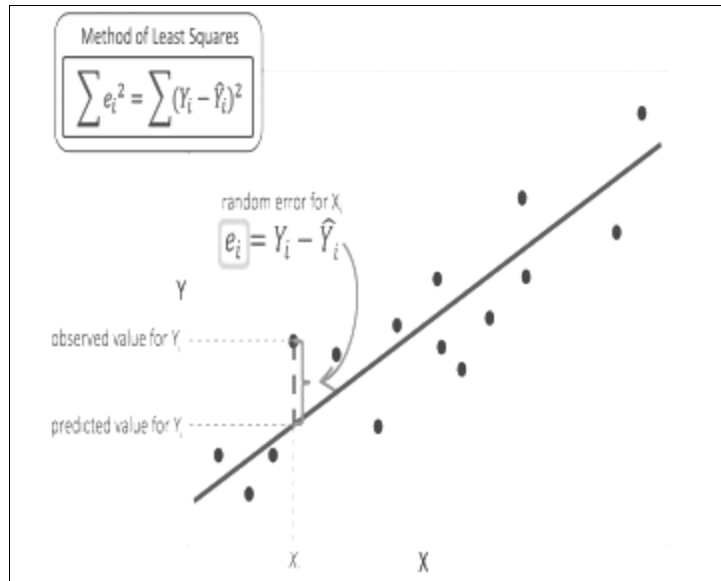
There are two primary phases in the system:

2.1.1 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.

2.1.2 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 the price of used cars and hence appropriate algorithms must be used to do the two different tasks. I have chosen a Linear Regression model due to its simplicity and comparatively small training time.

2.2. Proposed Approach

Linear Regression attempts to model the relationship between two variables by fitting a linear equation to observed data.



Linear regression is useful for finding relationship between multiple continuous variables. There are multiple independent variables and single dependent variable $y = m_1X_1 + m_2X_2 + \dots + b$, where m_1, m_2, m_3, \dots are slopes, b is the y-intercept, X_1, X_2, X_3, \dots are independent variables, and y is the dependent variable.

3. FUTURE SCOPE

In the future, this machine learning model may be integrated with various websites which can provide real-time data for price prediction. I will also add large historical data of car prices which can help to improve the accuracy of the machine learning model. I will also consider the following models and make some comparisons and select the best:

- .Random Forest
- . Gradient Boost
- . XGBoost
- .LightGBM
- .KMeans + Linear Regression
- .Deep Neural Network (MLP Regressor)

4. CONCLUSION

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. This paper compares 3 different algorithms for machine learning: Linear Regression, Lasso Regression and Ridge Regression.

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