# LITERATURE SURVEY CAR RESALE VALUE PREDICTION

The various methodologies that are all used are discussed as follows:

## 1. Car's Selling Price Prediction using Random Forest Machine Learning Algorithm

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India has one of the biggest automobile markets all over the globe every day many buyers usually sell their cars after using for the time to another buyer, we call them as 2nd /3rd owner etc. Many platforms such as cars24.com, cardekho.com and OLX.com provides these buyers with a platform where they can sell their used cars, but what should be the price of the car, this is the toughest question ever. Machine Learning algorithms can bring a solution to this problem. Using a history of previously used cars selling data and using machine learning techniques such as Supervised Learning can predict a fair price of the car, here I also used machine learning algorithms such as Random Forest and Extra Tree Regression along with powerful python library Scikit-Learn to predict the selling price of the used car. The result has shown that these both algorithms are highly accurate in prediction even the dataset is large or small, irrespective of the size of the dataset they give a precise result.

## 2. Prediction of Resale Value of the Car Using Linear Regression Algorithm

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In this research the price of the car is considered as dependent variable for target prediction .The data used for prediction was taken from web. The suitability of linear 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 are been selected on the basis of highest correlation.The Linear Regression model for prediction of resale value of the car is providing an accuracy of 90% and an error of 10%. Linear Regression model is better suited for prediction of target attribute that is msrp (car price). Further this work can be implemented using different machine learning algorithms and approaches in order to get higher accuracy rate and lower error percentage.

## 3. PREDICTIVE ANALYSIS OF USED CAR PRICES USING MACHINE LEARNING

Ashutosh Datt Sharma, Vibhor Sharma, Sahil Mittal, Gautam Jain, Sudha Narang

In this swiftly-moving world, managing our professional as well as personal lives have become quite hectic and if we don't have our own personal vehicle for transportation, life is a lot more hectic. To be on the safe side, one should have a more reliable and easy mode for transportation and a personal vehicle is always the best option. Having a car is very important for people these days as it gives a certain social status and also gives a certain extent of personal control to individual owning it. In some areas with low population, having a car becomes essential as it provides the only option for covering long distances in case of an absence of public transport. Old aged people, who have difficulties in walking or cycling to places, have driving the sole option for moving without being dependent. And for those that don't have enough resources to purchase a brand-new car, buying an old vehicle becomes a necessity and that too at a reasonable

price. The car manufacturing has been increasing swiftly over the years during past decade, with about 92 million cars that were manufactured in 2019. This provides a big boost for the market of old and used cars which is now coming up as a progressively growing industry. The recent entries of various websites and web-portals have fulfilled the requirements of customers up to some extent as they now know the present trends and scenario to get the market value of any old vehicle present in the market. Machine Learning has a lot of applications in real world scenario but one of the most known application is the use of Machine Learning in resolving the prediction problems. The project being discussed here is very much based upon one among such applications. Employing various Machine Learning Algorithms, we will try and build a statistical model based upon given data and features set to estimate the prices of used cars.

### 4. Used Car Price Prediction using Machine Learning: A Case Study

Mustapha Hankar; Marouane Birjali; Abderrahim Beni-Hssane Published in 2022 11th International Symposium on Signal, Image, Video and Communications (ISIVC)

Several regression techniques were used based on supervised machine learning to predict the resale price of used cars given many factors such as mileage, fuel type, fiscal power , mark , model, and the production year of the car. In all tested models, gradient boosting regressor showed a high R-squared score and low root mean square error. The results showed that gradient boosting regressor outperformed all tested models with a highest R2 score and a minimized root mean squared error. As a future work, it is intended to increase the performance of the model by scaling the training data and adding more other variables to the feature set.

### 5. Car Price Prediction using Machine Learning Techniques

Enis Gegic, Becir Isakovic, Dino Keco, Zerina Masetic, Jasmin Kevric

A car price prediction has been a high interest research area, as it requires noticeable effort and knowledge of the field expert. 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, we applied three machine learning techniques (Artificial Neural Network, Support Vector Machine and Random Forest). However, the mentioned techniques were applied to work as an ensemble. The data used for the prediction was collected from the web portal autopijaca.ba using web scraper that was written in PHP programming language. Respective performances of different algorithms were then compared to find one that best suits the available data set. The final prediction model was integrated into Java application. Furthermore, the model was evaluated using test data and the accuracy of 87.38% was obtained.

6. **An Automated Car Price Prediction System Using Effective Machine Learning Techniques**

Santosh Kumar Satapathy,Rutvikraj Vala,Shiv Virpariya ICT, Pandit Deendayal Energy University, Gandhinagar, INDIA

This research focuses on Building a mathematical model that could predict the price of a second-hand car based on its current features. Determining the price of a used automobile is a difficult task because several factors like Current Mileage, Current Condition, Make, Year, etc.,can influence the prediction prices of an automobile. And, from the perspective of a person who sells, it becomes a dilemma to predict the price of a second-hand car accurately. Thus, the point of interest of this challenge is in growing gadgets, studying models that can correctly expect the price of a used car primarily based on its capabilities. Due to this, in turn, a consumer can make a much more informed purchase. Therefore, implementing and examining various Machine Learning Techniques with Data Analysis will be useful to Provide an Accurate and Easy to use solution.

7. **Used Cars Price Prediction and Valuation using Data Mining Techniques**

AlShared, Abdulla, "Used Cars Price Prediction and Valuation using Data Mining Techniques" (2021). Thesis. Rochester Institute of Technology. Accessed from https://scholarworks.rit.edu/theses/11086

A primary objective of this project is to estimate used car prices by using attributes that are highly correlated with a label (Price). To accomplish this, data mining technology has been employed. Null, redundant, and missing values were removed from the dataset during pre-processing. In this supervised learning study, three regressors (Random Forest Regressor, Linear Regression, and Bagging Regressor) have been trained, tested, and compared against a benchmark dataset. The researchers of this project anticipate that in the near future, the most sophisticated algorithm is used for making predictions, and then the model will be integrated into a mobile app or web page for the general public to use.

8. **Used Cars Price Prediction using Supervised Learning Techniques**

P Venkatasubbu, M Ganesh - Int. J. Eng. Adv. Technol.(IJEAT), 2019 - researchgate.net

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, they 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 and also comparing the prediction accuracy of these models to determine the optimal one. To get even more accurate models, we can also choose 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.

**9. Predicting the Price of Pre-Owned Cars Using Machine Learning and Data Science**

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This model reduces time and cost and is also more user friendly as a result of which there is improvement in business by selling more cars. Here we are also conducting a comparative study on performance of regression based on supervised machine learning models. Each model is trained using data of used car market collected from e-commerce website. As a result, Linear regression gives the best performance with Root mean square error (RMSE) =8902.410 . Followed by ridge, random forest regression algorithms respectively. We can also extend this project by considering more attributes like Resale history, Lic , Accidents history, image etc to the data set for getting clear and accurate analysis.

**10. Value Based Pricing meets Data Science: A Concept for Automated Spare Part Valuation**

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An early-stage concept for automated spare part valuation which classifies pricing data before applying appropriate valuation methods is presented and hereby combines methods from multiple disciplines. Information from heterogeneous sources is aggregated, transformed and then supports machine learning methods to automatically determine a Fair Market Value for surplus spare parts. The concept for automated spare part valuation is a promising alternative for value determination and pricing in secondary markets and thus may serve as a foundation for building a generic surplus part trading platform to overcome market transparency issues if the obstacles of validation are overcome. Handling incomplete historical data sets as well as validating the calculated Fair Market Value are some of the challenges which become visible.