# Car Price Predictor Platform

## MINI PROJECT – I SYNOPSIS



Department of Computer Science & Application

## Institute of Engineering & Technology

SUBMITTED TO: - SUBMITTED BY: -

Mr. Mandeep Singh Srasthi Shukla (201500706) (Technical Trainer) Harsh Mehrotra (201500270)

# Acknowledgement

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Srasthi Shukla (201500706)

Harsh Mehrotra (201500270)

## 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

# Contents

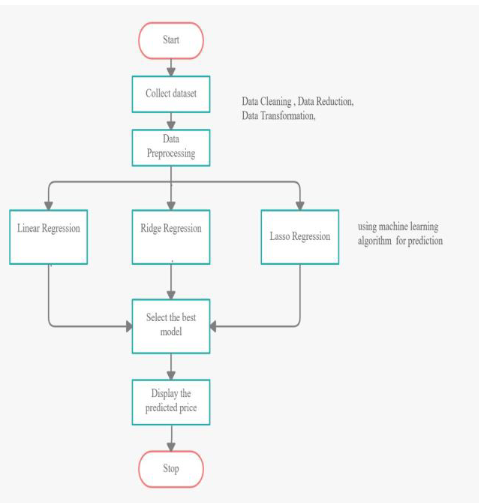
Abstract Declaration Acknowledgement

1. Introduction
   1. Objective
   2. Motivation
   3. Problem Statement
2. Requirement
   1. Hardware Requirements
   2. Software Requirements
3. Project Description
   1. Future Work
4. Working
5. Implementation
6. References

# 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



**OBJECTIVE**

To develop an efficient and effective model which predicts the price of a used car according to 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.

**MOTIVATION**

Deciding whether a used car is worth the posted price when you see listings online can be difficult. Several factors, including mileage, make, model, year, etc. can influence the actual worth of a car. From the perspective of a seller, it is also a dilemma to price a used car appropriately[2-3]. Based on existing data, the aim is to use machine learning algorithms to develop models for predicting used car prices.

## SOFTWARE AND HARDWARE 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
* PIP 2.7
* Jupyter Notebook
* Chrome

**PROJECT DESCRIPTION**

To develop an efficient and effective model which predicts the price of a used car according to 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.

**FUTURE SCOPE**

In future this machine learning model may bind with various website which can provide real time data for price prediction. Also we may add large historical data of car price which can help to improve accuracy of the machine learning model. We can build an android app as user interface for interacting with user. For better performance, we plan to judiciously design deep learning network structures, use adaptive learning rates and train on clusters of data rather than the whole dataset.

**WORKING & IMPLEMTATION**

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.

The next step is to do Data Preprocessing which includes Data cleaning, Data reduction, Data Transformation. Then, using various machine learning algorithms we will predict the price. The algorithms involve Linear Regression, Ridge Regression and Lasso Regression. The best model which predicts the most accurate price is selected. After selection of the best model the predicted price is displayed tothe user according to user’s inputs. User can give inputthrough website to for used car price prediction to machinelearning model.

**Linear Regression**

Linear Regression attempt to model the relationship between two variables by fitting a linear equation to observed data. The other is considered to be dependent variable. For Example: A modeler might want to relate weights of individuals to their heights using a linear regression model

Linear regression is useful for finding relationship between multiple continuous variables

There are multiple independent variables and single independent variable

y = m1X1+m2X2+......+b

m1, m2, m3 ....  slope

b  y intercept

X1, X2, X3 ......  independent variables

y  dependent variables

**Random Forest**

Random Forest is an ensemble learning based regression model. It uses a model called decision tree, specifically as the name suggests, multiple decision trees to generate the ensemble model which collectively produces a prediction. The benefit of this model is that the trees are produced in parallel and are relatively uncorrelated, thus producing good results as each tree is not prone to individual errors of other trees. This uncorrelated behavior is partly ensured by the use of Bootstrap Aggregation or bagging providing the randomness required to produce robust and uncorrelated trees. This model was hence chosen to account for the large number of features in the dataset and compare a bagging technique with the following gradient boosting methods. Random forests are based on a simple idea: ‘the wisdom of the crowd’. Aggregate of the results of multiple predictors gives a better prediction than the best individual predictor. A group of predictors is called an ensemble. Thus, this technique is called Ensemble Learning.

In earlier tutorial, you learned how to use Decision trees to make a binary prediction. To improve our technique, we can train a group of Decision Tree classifiers, each on a different random subset of the train set. To make a prediction, we just obtain the predictions of all individuals trees, then predict the class that gets the most votes. This technique is called Random Forest.

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## Websites:

* [www.google.com](http://www.google.com/)
* [www.youtube.com](http://www.javawrench.com/)
* [www.Kaggle.com](http://www.Kaggle.com)
* [www.openml.](http://www.openml.)org
* [www.quora.com](http://www.quora.com)
* [www.github.com](http://www.github.com)
* [www.stackoverflow.com](http://www.stackoverflow.com)

## Faculty Guidelines:

Mr. Mandeep Singh (Technical Trainer in GLA University)

http://github.com/Mandeep-Singh7696

## GitHub Repository link:

<https://github.com/Mehrotra01/Mini-Project1>

## Project Documentation:

<https://github.com/Mehrotra01/Mini-Project1/blob/main/Car_price_predictor_platform_synopsis.docx>

## Collaborator:

https://github.com/srashti333