RSIP Career Basic ML 126

Resale value prediction Using Watson Auto AI

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Contents

A. Source code

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1.

INTRODUCTION

1.1 Overview

In this competitive and busy world there is great opportunities for the advancement of technology. One such case is the problem statement assigned to me.With difficult economic conditions, it is likely that sales of second-hand imported cars and used cars will increase. 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. To calculate the value/price an Application is been built using various services.

1.2 Purpose

The main purpose of the task is making the process of prediction easy and more accurate. Considering the main factors which would affect the resale value of a vehicle a regression model is built that would give the nearest resale value/price of the vehicle. The main factors are the time in which vehicle got registered, numberof kms it drove, power, type of gear box, model of the car, any damage orrepair, fuel type etc. and the model processing is been done in Auto AI services in IBM cloud and then the deployment is been done in Watson studio and application is built using Nodered service.

2.

LITERATURE SURVEY

2.1 Existing Problem

We see that there is a large amount of data in the world. These can be maintained in different ways. Some of them can be stored as databases which are used in many companies. This also has a major problem in predicting, querying, analyzing and choosing.

Similarly the given test case deals with prediction of the resale price value. There are various factors which are given to predict the resale value. Using this we have to develop an efficient model.

2.2 Proposed Solution

The solution to the problem can be developing a machine learning model using IBM cloud. The technology of Artificial Intelligence these days solve most of the problems nowadays. It gives more accurate results. The various IBM services which can be used are IBM Watson studio, IBM machine learning service, IBM auto AI feature. Cloudant is used as database. I have used Nodered for the front end for the web application.

3.

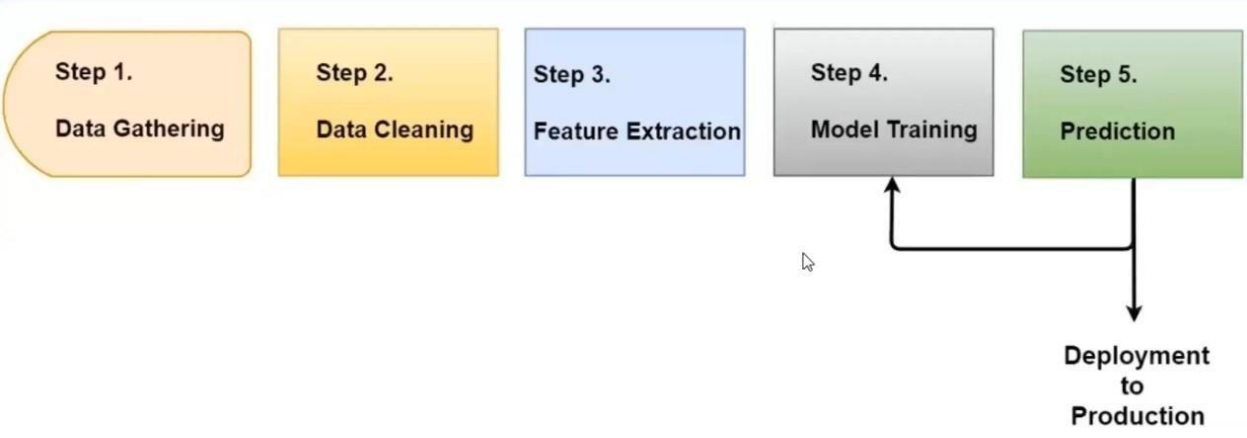
THEORETICAL ANALYSIS

3.1 Block diagram

The various steps involved for building a machine learning models are:

- Data gathering
- Data cleaning
- Feature extraction
- Model Training
- Prediction

These can be represented in the form of block diagram as shown below



3.2 Hardware / Software Designing

4.

The project is implemented in IBM cloud platform which can be opened in any browser in your PC. It provides various services such as IBM Watson studio, IBM machine learning service, IBM auto AI feature and Node-red. It also provides virtual systems to run our model. The auto AI feature develops the model by itself involving all machine learning steps.

EXPERIMENTAL INVESTIGATION

Here we investigate statistical models for prediction of the resale prices of used cars. An empirical study is performed to explore the contributions of different degrees of freedom in the modeling process to the forecast accuracy. First, a comparative analysis of alternative prediction methods provides evidence that random forest regression is particularly effective for resale price forecasting. It is also shown that the use of linear regression, the prevailing method in previous work, should be avoided. Second, the empirical results demonstrate the presence of heterogeneity in resale price forecasting and identify methods that can automatically overcome its detrimental effect on the forecast accuracy. Finally, the study confirms that the sellers of used cars possess informational advantages over market research agencies, which enable them to forecast resale prices more accurately. This implies that sellers have an incentive to invest in inhouse forecasting solutions, instead of basing their pricing decisions on externally generated residual value estimates.

The factors which are dependent in the project are:

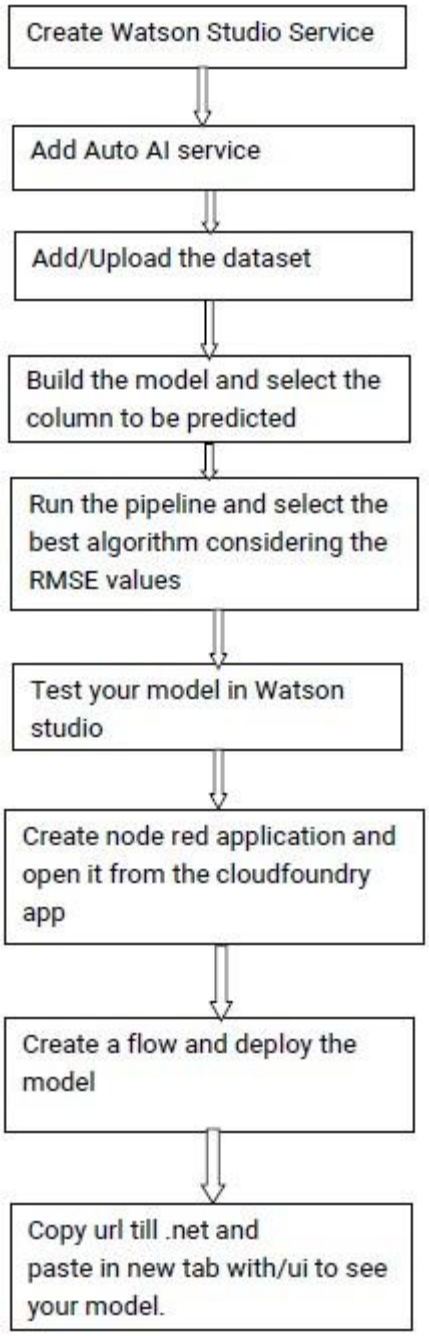
- dateCrawled : when this ad was first crawled, all field-values are taken from this date
- name : "name" of the car
- seller : private or dealer
- offerType
- price : the price on the ad to sell the car
- abtest
- vehicleType
- yearOfRegistration : at which year the car was first registered
- gearbox
- powerPS : power of the car in PS
- model

5.

- kilometer : how many kilometers the car has driven
- monthOfRegistration : at which month the car was first registered
- fuelType
- brand
- notRepairedDamage : if the car has a damage which is not repaired yet
- dateCreated : the date for which the ad at ebay was created
- nrOfPictures : number of pictures in the ad (unfortunately this field contains everywhere a 0 and is thus useless (bug in crawler!))
- postalCode

lastSeenOnline : when the crawler saw this ad last online

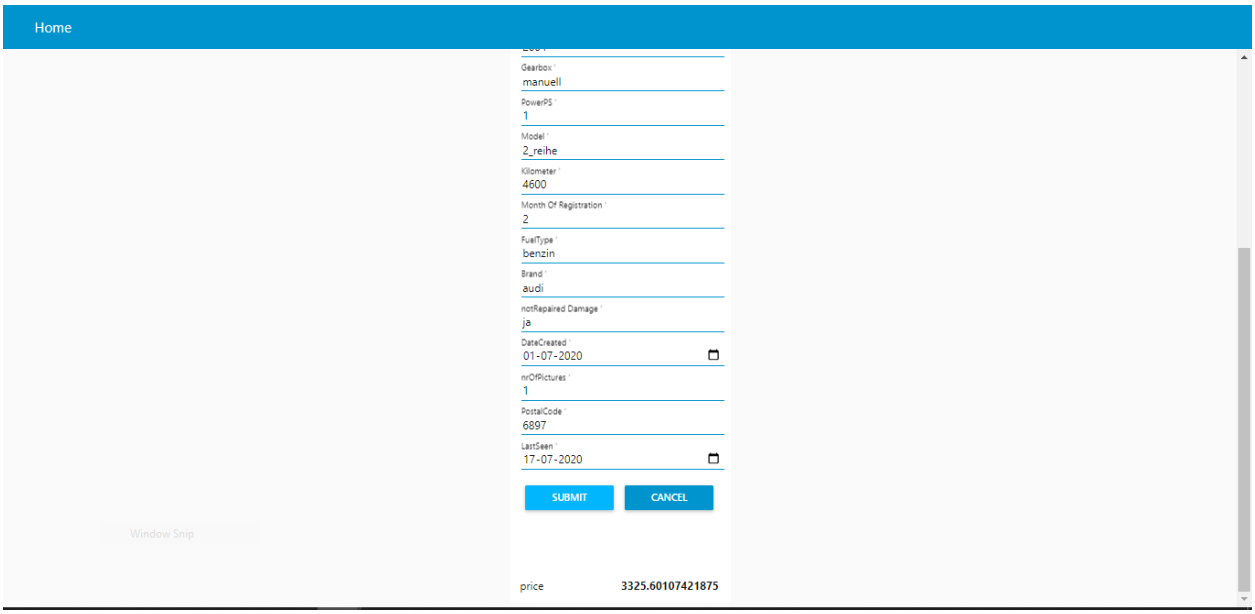
5. **FLOW CHART**



6. RESULT

After the implementation, deployment of project the result i.e. predicted price of vehicle can be seen in Node Red UI. This value depends on different parameters. The Node Red UI provide us simple way to get the result of Auto AI Experiment.

Here is the Node Red UI which predicts the price of the vehicle:



7. ADVANTAGES & DISADVANTAGES

Advantages

- Data storage can be accessed through different platforms and locations
- Allows businesses to emerge
- Strengthens business systems
- Easily integrate daily processes
- Easily manage connections amongst partners and customers
- Sustain competitive advantage
- Elastic resource, pay for use, self-service
- Supports technological innovation

Disadvantages

- Lack of security
- Potential privacy breach
- Dependence of network/providers
- Loss of control on data

8. APPLICATION

Using the Auto AI Experiment, you can build and deploy a machine learning model with sophisticated training features and no coding. The tool does most of the work for you. In this project, the UI model building can help people a lot.

Using machine learning we can predict the value of old cars even after years.If it accessible for common people the marketing with get improved and advertising is not necessary.

9. CONCLUSION

In this project by using IBM Cloud the model processing is been done in Auto AI services in IBM cloud and then the deployment is been done in Watson studio and application is build using Node red service which has been successful as we are able to get the desired output.

10. FUTURE SCOPE

- A mobile application can be built using this model as it is convenient to many.
- Large dataset can be used to train as we get more accurate result.
- Applying to buy the necessary vehicle if all the features and prices match the customers intrest.

11. BIBLIOGRAPHY

APPENDIX

A. Source Code

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