

Resale Value Prediction Using Watson Studio

RSIP Career Basic ML 179

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INTRODUCTION

OVERVIEW:

Considering the main factors which would affect the resale value of a vehicle a regression model is to be built that would give the nearest resale value of the vehicle. The main factors are the time in which vehicle got registered, number of kms it drove, power, type of gear box, model of the car, any damage or repair, 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.

PURPOSE:

- Build a prediction model that is designed for predictive analysis using IBM Watson studio
- This model helps various dealers to predict the resale value of a car that comes to them.
- This is a benefit for both the buyer and the seller as it predicts the resale value of a car based on certain factors and information.

LITERATURE SURVEY

EXISTING PROBLEM:

It is common that there is a scope of various conflicts when it comes to buying and selling the second hand cars to determine the resale value. With the developing world a wide range of data is been collected. Such a large increase of data has a lot of impact on every one's life. It is so difficult for human to understand, analyse and choose the best of all the data available. At this point of time the buyers and sellers need a machine learning trained model that predicts the salvage value

PROPOSED SOLUTION:

The aim of this project is to provide a machine learning model that is developed on IBM Watson AutoAI Machine Learning Service that can predict the resale value of the car based on the factors such as name and brand of the car, who is the seller, vehicle type, year of registration, gearbox type, how many kilometres did it travel etc. The model is deployed on IBM cloud to get resale value of a vehicle which can be used as API web application building and the web application is developed by using node red service.

THEORETICAL ANALYSIS

BLOCK DIAGRAM



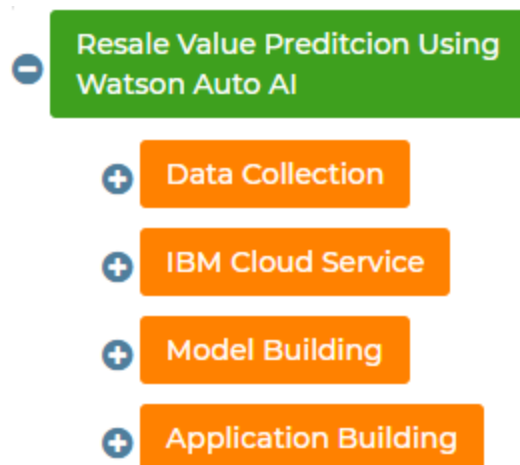
HARDWARE/SOFTWARE DESIGNING

- Machine Learning
- IBM Cloud
- IBM Watson

EXPERIMENTAL INVESTIGATIONS

- Collect the required dataset
- Create IBM Cloud Account
- Watson Machine Learning Service
- IBM Cloudant
- Node Red

FLOWCHART



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 based on the factors like purchased year, number of kilometres travelled, repairs, gear type, brand, etc..

ADVANTAGES & DISADVANTAGES

ADVANTAGES

The advantages are as follows:

- We can improve results by training data to our choice of parameters.
- Easy to use and has a friendly user interface to work with.
- Reduces man power, Can be used even in areas of less connectivity.
- Cost efficient
- We can handle multi-dimensional and multi-variety data.
- The database maintained can allow companies, to easily monitor the access/users.

DISADVANTAGES

The disadvantages are as follows:

- The model may not always be accurate and various factors may have different kind of influence on the result.
- Lack of security

APPLICATION

Using The Auto AI Experiment, one can build and deploy a machine learning model with training features . This model predicts the salvage value based on the factors so that both the buyer and seller will be benefited equally

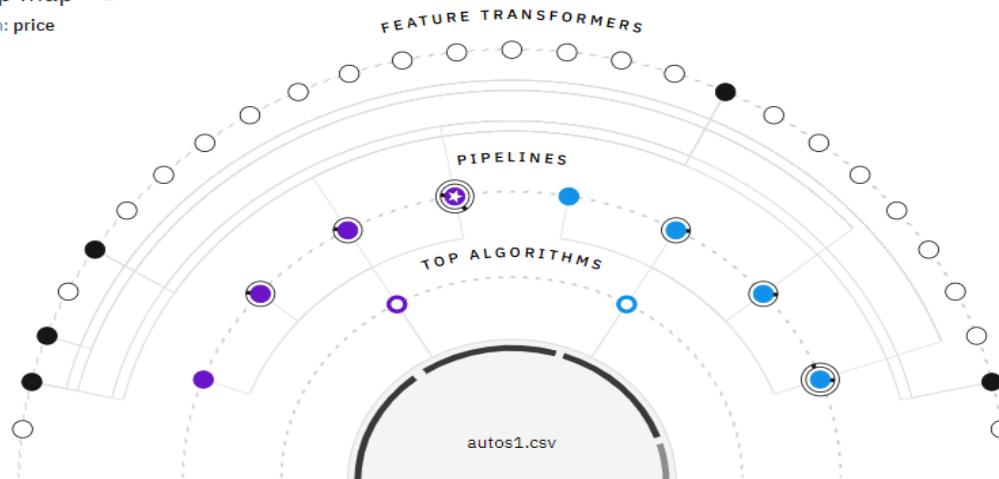
APPENDIX

Deploying the ML Model:

Here we took the Price as the parameter for training the ML model. After the experiment you need to select the best pipeline (out of 8). Save the best pipeline as a M.L. model.

Relationship map

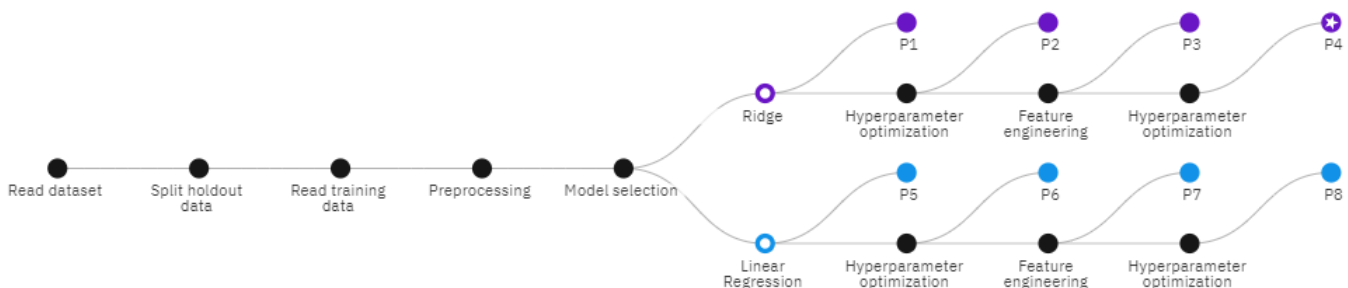
Prediction column: price



Experiment summary		Pipeline comparison		Rank by: Root mean squared err...		Score: Cross validation	Hold
Rank	ID	Name	Algorithm	RMSE (Optimized)	Enhancements		Build time
★ 1		Pipeline 4	Ridge	214020.845	HPO-1	FE HPO-2	00:01:15 Save as
2		Pipeline 3	Ridge	214021.532	HPO-1	FE	00:03:21
3		Pipeline 8	Linear Regression	214162.666	HPO-1	FE HPO-2	00:01:05
4		Pipeline 7	Linear Regression	214163.859	HPO-1	FE	00:02:42
5		Pipeline 2	Ridge	214207.191	HPO-1		00:02:36
6		Pipeline 1	Ridge	214296.365	None		00:00:52
7		Pipeline 5	Linear Regression	214296.369	None		00:00:49
8		Pipeline 6	Linear Regression	214296.369	HPO-1		00:00:52

Progress map

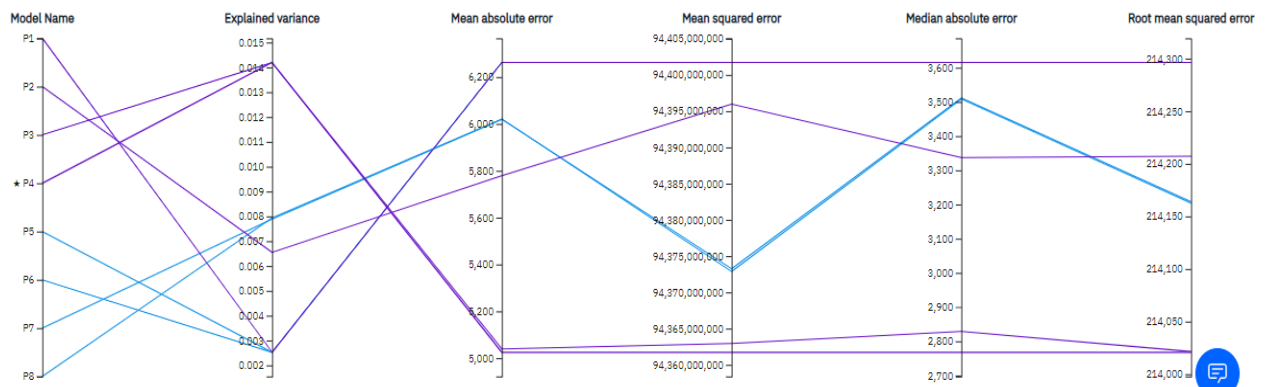
Prediction column: price



Metric chart Prediction column: Price

Metric chart ⓘ

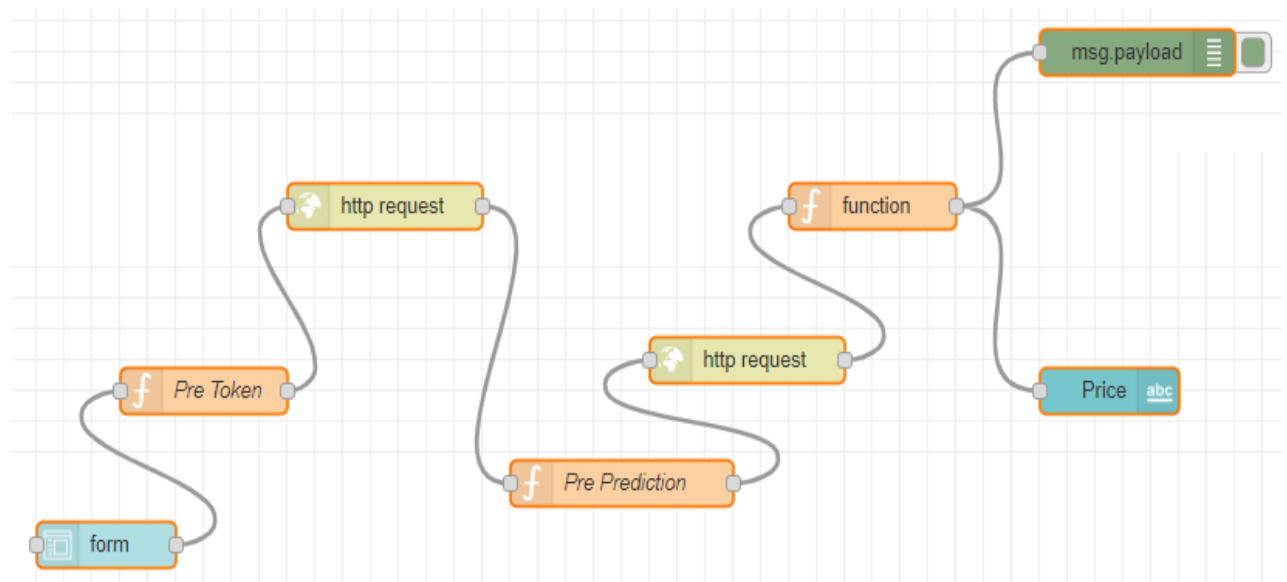
Prediction column: price



Setting Up The Scoring Endpoint:

Set up the scoring endpoint for your model, from the deployments section which will assist in linking the M.L. model to the front end and the back end. Also, API Key and Instance Id are taken from Watson Machine Learning Credentials.

Designing the Node-RED Flow:



The final deployed flow looks like this:

Resale Price Prediction

Name *
Volkswagen_Golf

Abtest *
test

Vehicle Type *
limousine

Year Of Registration *
2010

Gearbox *
manuell

Power *
100

Model *
golf

Kilometer *
80000

Month Of Registration *
5

Fuel Type *
benzin

Brand *
volkswagen

Not Repaired Damage *
nein

Price **9461.5625**

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. The model that we created would be very useful to predicting the resale value easily by making the work of the buyers and sellers easier.

FUTURE SCOPE

This model can be future improvised by adding some more deciding factors and also can be made more efficient by improving the performance and accuracy .

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