MACHINE LEARNING

In Q1 to Q11, only one option is correct, choose the correct option:

1. Which of the following methods do we use to find the best fit line for data in Linear Regression?

Ans – (A) Least Square Error

2. Which of the following statement is true about outliers in linear regression?

Ans- (A) Linear regression is sensitive to outlier

3. A line falls from left to right if a slope is _____?

Ans – (B) Negative

4. Which of the following will have symmetric relation between dependent variable and independent variable?

Ans – (C) Both of them

5. Which of the following is the reason for over fitting condition?

Ans – (C) Low bias and high variance

6. If output involves label then that model is called as:

Ans- (B) Predictive modal

7. Lasso and Ridge regression techniques belong to _____?

Ans – (D) Regularization

8. To overcome with imbalance dataset which technique can be used?

Ans – (D) SMOTE

9. The AUC Receiver Operator Characteristic (AUCROC) curve is an evaluation metric for binary classification problems. It uses _____ to make graph?

Ans – (A) TPR and FPR

10. In AUC Receiver Operator Characteristic (AUCROC) curve for the better model area under the curve should be less.

Ans – (B) False

11. Pick the feature extraction from below:

Ans – (B) Apply PCA to project high dimensional data

In Q12, more than one options are correct, choose all the correct options:

12. Which of the following is true about Normal Equation used to compute the coefficient of the Linear Regression?

Ans – (B) It becomes slow when number of features is very large.

Q13 and Q15 are subjective answer type questions, Answer them briefly

13. Explain the term regularization?

Ans - If our model ,if we think that our model is overfitted that we are going to regularize it will try to restrict our model to avoid that overfitting.

--> When we use regression models to train some data , there is a good chance that the model will overfit the given training dataset , regularization helps sort this overfitting problem by restricting the degrees of freedom of a five equation .simply reducing the numbers of degree of polynomial function by reducing their corresponding weight .

--> In linear equation, we do not want huge weight / coefficient as a small change in weight can make a large difference for the dependent variables (y) . so regularization

Lets Understand in Pure Laymon Term.

Zero error is not possible every human ,every model will make mistake nobody is 100% perfect no model in 100% perfect , but we try to achieve .. We dont know how far reach during this course of action what happens here we are trying to understand this data . so quickly that i want to reach global minima as quick as possible.

i dont want my model to learn so fast we are not in a hurry learn as slow as possiblle so that you reach as close as to global minima .

Contraints the weight of such feature to avoid overfitting

To regularize the model a shrinkage penalty is added to the cost fucntion let see different types of regularization in regression.

- LASSO
- Ridge
- Elestic Net

LASSO - Least absolute shrinkage and selection operator

--> LASSO we also called L1

If we use a LASSO or L1 Form , so this will internally try to understand relatioship between feature and labels . it come out with a relationship which feature have realationship with target , if any of the feature does not have any kind of relationship it will make it as if there is are do not exist . it will neglect the unwanted feature . means it will give zero importance .

LASSO - it acts like feature selection

Ridge –

It is also called (L2) -

This also similer to L1 form but what is ridge regression or L1 form does it will give importance but very very samll , very litter importance suppose say all important feature give 100% importance and unwanted feature only give 0.01% importance it will give very little importance if they dont have any relatioship.

Thats is major difference between LASSO and Ridge . it does not act like a feature selection tools.

Why we use Regularization --

If our model is learning too fast we have to basically pull it we have to penalise , we have to make it learn as slow as possible so that it achieve the better result thats why we need regularization.

14. Which particular algorithms are used for regularization?

Ans - > For regularization . We use LASSO ,RIDGE and Elestic Net.

So , Basically we don’t use Elestic Net . Now of the days.

Lets Understadn **LASSO** - Least absolute shrinkage and selection operator

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15. Explain the term error present in linear regression equation?

Ans - So , error present in linear regression equation.

Before that we have to know about .what is error.

So Basically error . is nothing but the difference between actual and predicted data . that called Residual ..

We also called as error.,loss and etc.

#In pure laymon term . we called wrong prediction is error.

So Now lets understand .Which which type of error present in the Linear Regression.

There are 3 types of error.

Mean absolute error (MAE) : Represent average error(You are going to take error from every single data points , and take average)

Mean Sqaured error (MSE) :Similarly to MAE but noise is exaggerated and larger error are "punished", it is harder to interpret than MAE as it not in base units , however it is generally more popular. (There are some outliers in data . it can ignore all outliers and it will go with majority)

Root Mean Sqaured Error(RMSE) : Most popular metric , similar to MSE , how ever , the result is square rooted to make it more . it interpretable as it's in base units . it is recommended that RMSE be used as primary metric to interpret your model .

Clients ask you hey tell me in a terms of a number , Tell me how much error you model is going to make , i am not aksing one by one , together you have lakhs of records in your test data . i want to know overall how much error your models its going to make .

error = residual * Lesser error make better result *

“ So here we completed all Machine Learning Question”

Internship Batch – 33

Student of DataScience

Student of DataTrained – Saurav

Date – 21-10-22

Time – 17:02