MACHINE LEARNING

QUESTON 1

Answer - A)

QUESTION 2

Answer - A)

QUESTION 3

Answer - B)

QUESTION 4

Answer - B)

QUESTION 5

Answer - C)

QUESTION 6

Answer – B)

QUESTION 7

Answer – D)

QUESTION 8

Answer – D)

QUESTION 9

Answer – A)

QUESTION 10

Answer – B)

QUESTION 11

Answer- A)

QUESTION 12

Answer – A),B),D)

QUESTION 13

Answer- **Regularization –**

Regularization is a technique which is used to overcome the problem of underfitting and overfitting in a model. This is done by adding a penalty or complexity term to the complex model. In other words, these techniques try to keep the model more simple in order to avoid overfitting.

There are basically three algorithms used:

Lasso(L1)

Ridge(L2)

Elastic net(L1+L2)

QUESTION 14

Answer – The techniques which are used for regularization are

1) Lasso(L1)
2) Ridge(L2)
3) Elastic net(L1+L2)

Lasso(L1)-

Lasso regression, or the Least Absolute Shrinkage and Selection Operator, is also a modification of linear regression. In Lasso, the loss function is modified to minimize the complexity of the model by limiting the sum of the absolute values of the model coefficients (also called the l1-norm).

The loss function for Lasso Regression can be expressed as below:

Loss function = OLS + alpha * summation (absolute values of the magnitude of the coefficients)

In the above loss function, alpha is the penalty parameter we need to select. Using an l1 norm constraint forces some weight values to zero to allow other coefficients to take non-zero values.

Basically, we can say that lasso will internally try to omit or remove the features or columns which are not contributable to output y. and these features can be handled by alpha parameter(alpha=0.1,0.001,0.0001,1,10)

Ridge(L2)

Ridge regression is an extension of linear regression where the loss function is modified to minimize the complexity of the model. This modification is done by adding a penalty parameter that is equivalent to the square of the magnitude of the coefficients.

Loss function = OLS + alpha * summation (squared coefficient values)

In the above loss function, alpha is the parameter we need to select. A low alpha value can lead to over-fitting, whereas a high alpha value can lead to under-fitting.

Basically ,it will try to reduce down the coefficient values so that the difference between coefficients will be less. Here alpha parameter is going to control coefficient values internally, alpha(0.1,0.001,0.0001,1,10).

Elastic net(l1+l2)

ElasticNet combines the properties of both Ridge and Lasso regression. It works by penalizing the model using both the l2-norm and the l1-norm. By Elastic Net is a regression method that performs variable selection and regularization both simultaneously.

Here also the alpha can be taken as(0.1,0.001,0.0001,1,10)

QUESTION 15

Answer- The error term is the difference between what the model is predicting and the actual value. This can range from being relatively small to huge, even within one model, across the observed data points.

This error term helps in the calculation of the R-squared value, that is, it tells us how good the model is overall. If the R-squared value of the model is 0.8, then your model explains 80% of the variation in your target variable.