

MACHINE LEARNING

1. B
2. A
3. B
4. B
5. C
6. B
7. D
8. D
9. A
10. –
11. B
12. A, B

Ans 13. Regularization-

- (a) Regularization indicates to the methods or techniques which are called to be used to compute machine learning models in order to minimize the adjusted loss function and prevent overfitting or underfitting.
- (b) It is used to prevent the model by adding extra information into it.
- (c) It gave the accuracy and generalization to the model.

It is said by Albert Einstein-

“Everything must be made as simple as possible, but no simpler.”

There are two different types of Regularization-

- (i) Ridge Regression
- (ii) Lasso Regression

Ridge Regression is called to reduce or to decrease the complexity of the model. By adding a small amount of bias to get the better long-term predictions.

Lasso Regression is also used to decrease the complexity of the model. It also helps us to gain the feature selection.

Ans 14. Regularization means to stop a model by avoiding overfitting by shrinking the coefficient that estimates to be zero.

$\text{Reg} = \text{Loss function} + \text{Penalty}$

The three commonly used algorithm techniques that are used to control the complexity of the models in machine learning are-

- (a) Ridge Regression
- (b) Lasso Regression
- (c) Elastic Net

RIDGE REGRESSION –

- (i) Ridge regression is also known as a linear regression that uses the L2 Regularization technique.
- (ii) This technology helps in keeping the model's weight near to zero, but not totally zero, that means each feature should have a low impact on the output while the model's accuracy must be as high as possible.

LASSO REGRESSION-

- (i) LASSO – Least Absolute Shrinkage & Selection Operator
- (ii) It is also known as a linear regression that uses the L1 regularization technique.
- (iii) This technique is also an alternative to ridge for regularization linear regression.
- (iv) This technology helps in making some coefficients zero, meaning the model will ignore those features. It performs by automatically feature selecting by eliminating the least important features.

ELASTIC NET-

- (i) The elastic net is a regression technology that combines both ridge and lasso's regularization terms.
- (ii) The combination of the penalties of lasso and ridge works more better than only using one of the regularization techniques.

Ans 15. ERROR-

- (a) The error term present in linear regression equation in statistics is a value that shows how the observed data differs from the actual data.
- (b) It is also like a variable that represents how a given model differs from reality.
- (c) The error term is a crucial component of regression analysis and it reflects the presence of unobserved or random changes that affect the defendant variables.
- (d) $\text{Error} = |\text{model estimate} - \text{true value}|$
- (e) The error term can also be indicated as residual, disturbance or remainder.
- (f) It can be represented by letters like e, u
- (g) Error term basically shows the uncertainty in the model. It shows the lack of perfect goodness of fit in the model.