

Machine learning worksheet

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

Subjective question-

13. Explain the term regularization?

Answer – Regularization is technique used for tuning the function by adding an additional penalty term in the error function.

Regularization helps sort this overfitting problem by restricting the degrees of freedom of a given equation that is simply reducing the number of degree of polynomial by reducing there corresponding weights.

14. Which particular algorithms are used for regularization?

Answer-->

L1 – Lasso regularization

Lasso regression penalizes the model based on the sum of magnitude of coefficients.

The regularization term is given by regularization= $\lambda * \sum |\beta_j|$

Where, λ is the shrinkage factor.

With lasso regression penalty, the majority of the coefficient are exactly zero, with the fundamental behavior being modeled by a small subset of the available basis functions.

L2 – Ridge regularization

Ridge regularization is also called as Tikhonov regularization.

This proceeds by penalizing the sum of squares (2-norms) of the magnitude of the coefficient.

The regularization term is given by regularization = $\lambda * \sum |\beta|$

Where, λ is the shrinkage factor.

In ridge regularization, the alpha parameter tunes the strength of the penalty, and should be determined via, for example cross validation (hyperparameter and model validation).

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

Answer -

The simple linear regression model is represented by:

$$y = \beta_0 + \beta_1 x + e$$

The linear regression model contains an error term that is represented by e . The error term is used to **account for the variability in y that cannot be explained by the linear relationship between x and y** . If e were not present, that would mean that knowing x would provide enough information to determine the value of y .