Machine Learning Assignment

Ans1 : A) Least Square Error

Ans2 : A) Linear regression is sensitive to outliers

Ans3 : B) Negative

Ans4 : B) Correlation

Ans5 : A) High bias and high variance

Ans6 : B) Predictive modal

Ans7 : D) Regularization

Ans8 : A) Cross validation

Ans9 : A) TPR and FPR

Ans10 : B) False

Ans11: B) Apply PCA to project high dimensional data

Ans12 : A) We don't have to choose the learning rate. B) It becomes slow when number of features is very large. C) We need to iterate.

Ans13 : **Regularization** : While training a Machine Learning model, the model can easily be overfitted or underfitted. To avoid this, we use regularization technique to properly fit the model. It helps reduce the chance of overfitting and underfitting Regularization refers to techniques that are used to calibrate machine learning models in order to minimize the adjusted loss function and prevent overfitting or underfitting. There are two main types of regularization techniques: Ridge Regularization and Lasso Regularization.

Ans14: **Algorithms used for Regularization:**

There are two main types of regularization techniques: Ridge Regularization and Lasso Regularization.

1. **Lasso Regression:** It modifies the over-fitted or under-fitted models by adding the penalty equivalent to the sum of the absolute values of coefficients. Lasso regression also performs coefficient minimization, but instead of squaring the magnitudes of the coefficients, it takes the true values of coefficients. This means that the coefficient sum can also be 0, because of the presence of negative coefficients.

2. **Ridge Regression:** it modifies the over-fitted or under fitted models by adding the penalty equivalent to the sum of the squares of the magnitude of coefficients. This means that the mathematical function representing our machine learning model is minimized and coefficients are calculated. The magnitude of coefficients is squared and added. Ridge Regression performs regularization by shrinking the coefficients present.

Ans 15: The standard error of the regression provides the absolute measure of the typical distance that the data points fall from the regression line. This statistic indicates how far the data points are from the regression line on average. The errors are calculated in below

Mean absolute error
Mean squared error
Root mean squared error