

REPORT

Write A Brief Note About LinearRegression.fit()

The `LinearRegression.fit()` function is a method in the `sci-kit-learn` library used to train a linear regression model on a given dataset. This function takes in the input feature matrix X and the target variable vector y as inputs and fits a linear regression model to the data. During the training process, the function calculates the coefficients of the linear equation using the least-squares method. Once the model is trained, the coefficients can be accessed using the `coef_` attribute, while the intercept can be accessed using the `intercept_` attribute. The trained model can then be used to make predictions on new data using the `predict()` function. The `LinearRegression.fit()` function is an essential tool for building and training linear regression models in `sci-kit-learn`.

Write About How Gradient Descent Works, in a Linear Regression Problem?

The process of gradient descent is an iterative algorithm used to optimize parameters in a linear regression model by minimizing the cost function associated with the model. The algorithm begins with an initial set of coefficients and iteratively updates them until the cost function is minimized. At each iteration, the algorithm calculates the gradient of the cost function with respect to the coefficients. By moving in the opposite direction of the gradient, the algorithm approaches the minimum value of the cost function. The learning rate parameter controls the step size in each iteration. If the learning rate is too small, the algorithm may converge slowly, while if it is too large, the algorithm may overshoot the minimum and diverge.

How Does The Irreducible Error get Affected as You Change your class function?

The irreducible error in linear regression is the error that cannot be reduced by any model, regardless of its quality. It is caused by external factors such as measurement noise or unmeasured variables that affect the outcome. The bias-variance tradeoff does not affect the irreducible error as it is inherent in the data and cannot be eliminated by modeling. However, the bias-variance tradeoff does affect the total error of a model, which comprises the irreducible error, the bias error, and the variance error. The irreducible error is influenced by the model used for training the data, as it is the difference between the Total Error, which exists in a tradeoff with the Bias and Variance errors, and has little effect on the irreducible error.