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Training Day-12 Report:

fit(), transform() and fit_transform() Methods in Python:-

It's safe to say that scikit-learn, sometimes known as sklearn, is one of Python's mostinfluential and popular Machine Learning packages. It includes a complete collection of algorithms and modeling techniques that are ready to be trained, including utilities for pre-processing, training, and grading models.

One of the most elementary classes in Sklearn is the transformer, which implementsthree different methods: fit(), transform(),and fit transform().

- **fit() Method:-**
  In the fit() method, we apply the necessary formula to the feature of the input data we want to change and compute the result before fitting the resultto the transformer. We must use the .fit() method after the transformer
  object.
  If the StandardScaler object sc is created, then applying the .fit() method willcalculate the mean (μ) and the standard deviation (σ) of the particular feature
  F. We can use these parameters later for analysis.
  Let's use the pre-processing transformer known as StandardScaler as an
  example and assume that we have to scale the features of self-created data. The example dataset in the code below is created using the arrange method and then divided into the training and testing datasets. After that, we create aStandardScaler instance and fit the feature of the training data to it to
  determine the mean and standard deviation to be utilized for scaling in thefuture.
  The significance of separating the dataset into the train and test datasetsbefore using any pre-processing process, such as scaling, must be
  emphasized. Test data points represent real-world data. Therefore, we mustonly execute fit() to the training feature to prevent future data to our model.

- **transform() Method:-**
  To change the data, we most likely use the transform() function, where weperform the calculations from fit() to each value in feature F. We transform

the fit computations. Hence we must use .transform() after we have appliedthe fit object.
When we make an object using the fit method, we utilize the example fromthe section above and place the object in front of the.
The scale of the data points is transformed using the transform and fit transform method, and the output we receive is always a sparse matrix orarray.

- **fit_transform() Method:-**
  The training data is scaled, and its scaling parameters are determined by applying a fit_transform() to the training data. The model we created, in thiscase, will discover the mean and variance of the characteristics in the training set.
  The mean and variance of every feature reported in our data are calculatedusing the fit approach. The transform method transforms all features usingthe corresponding means and variances.
  We wish scaling to be implemented in our testing data, but we also don'twant our model to be biased. We expect our test set of data to be entirely fresh and unexpected for our model. In this situation, the convert approach isuseful.