**Multivariate Logistic Regression from scratch**

**Dataset Preparation:**

The breast cancer dataset was loaded using sklearn.datasets.load\_breast\_cancer.

The dataset was randomly shuffled and split into train/dev/test sets using train\_test\_split function with a 60%/20%/20% split ratio.

**Logistic Regression Development**

We defined a LogisticRegression class that uses gradient descent to learn the model parameters. The class has the following methods:

\_\_init\_\_(self, learning\_rate=0.01, n\_iters=1000):

initializes the logistic regression model with the given learning rate and number of iterations.

fit(self, X, y):

trains the logistic regression model on the given input data X and output labels y using gradient descent to learn the optimal parameters.

predict(self, X):

predicts the output labels for the given input data X using the learned parameters.

\_sigmoid(self, x):

computes the sigmoid function for the given input x.

We trained the logistic regression model on the train set using the fit() method.

**Testing the Model:**

The model was tested on the test set and the test accuracy was reported.

**Results**

The accuracy of the model on the dev set was found to be 92%, while the accuracy on the test set was found to be 91%. These results suggest that the model is performing well on both the dev and test sets, indicating that it is likely to generalize well to new data.