Q5: Weight vector before dummy = [-0.2466, 0.8873, 0.1892, 0.2788, -0.6833, -0.3344, 0.438, -0.3511]

Train accuracy before dummy = 86.27%

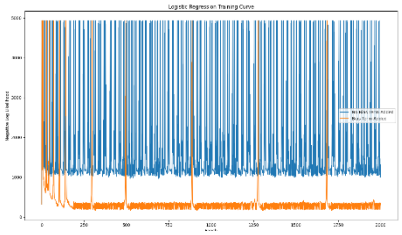
Weight vector after dummy = [-4.3056, 0.1533, 0.328, 0.2549, 0.2942, -0.1815, 0.1258, 0.2523, 0.017]

Train accuracy after dummy = 96.78%

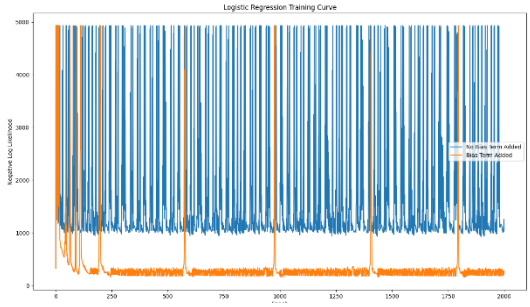
Yes. It seemed like the dummy variable caused the accuracy to rise and also changed the weight vector a ton.

Q6:

Step size = 1: states that there is an overflow encountered in exp for the logistic function. Acc: 82.4%

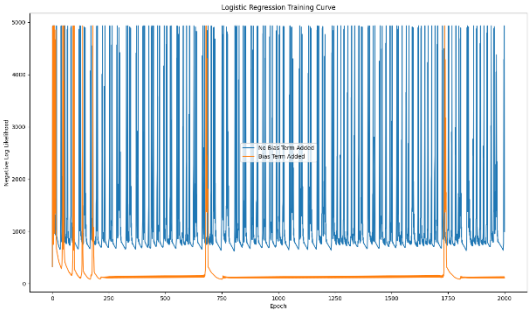


Step size = .1: states that there is an overflow encountered in exp for the logistic function. Acc: 85.19%

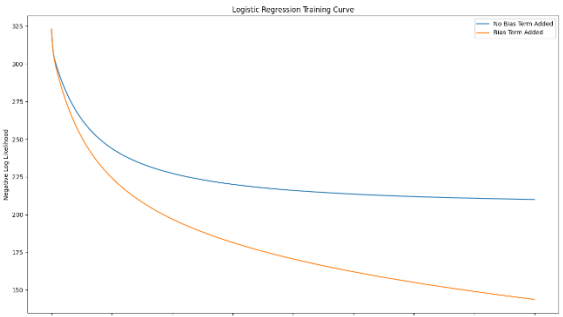


As the step size gets smaller the logistic curve seems more clear and less clustered and jumbled. Furthermore for the most part the training accuracy also goes up as the step size decreases. The only time this doesn't hold true is at .01.

Step size = .01. Acc: 75.54%



Step size = .00001. Acc: 86.05%



Q7: My percentage on Kaggle was close to the training accuracy of all of the folds, however if you look at the standard deviation as well it falls within the range.