# Homework 2

# CS 57300

(Using two extension days)

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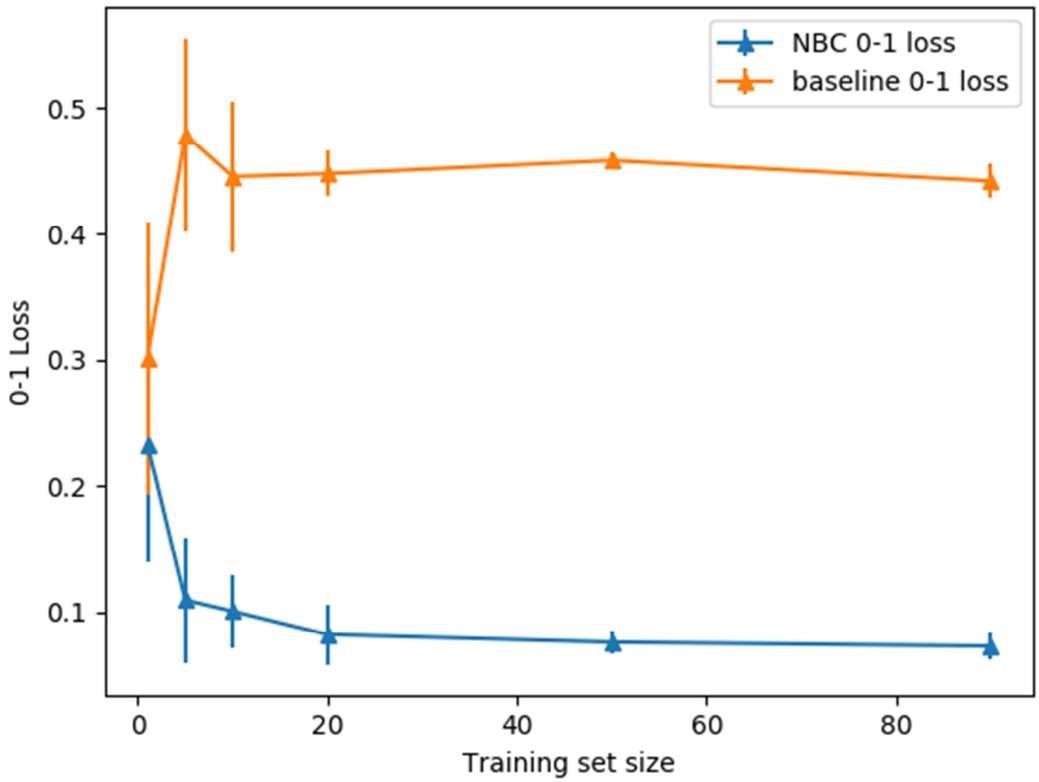
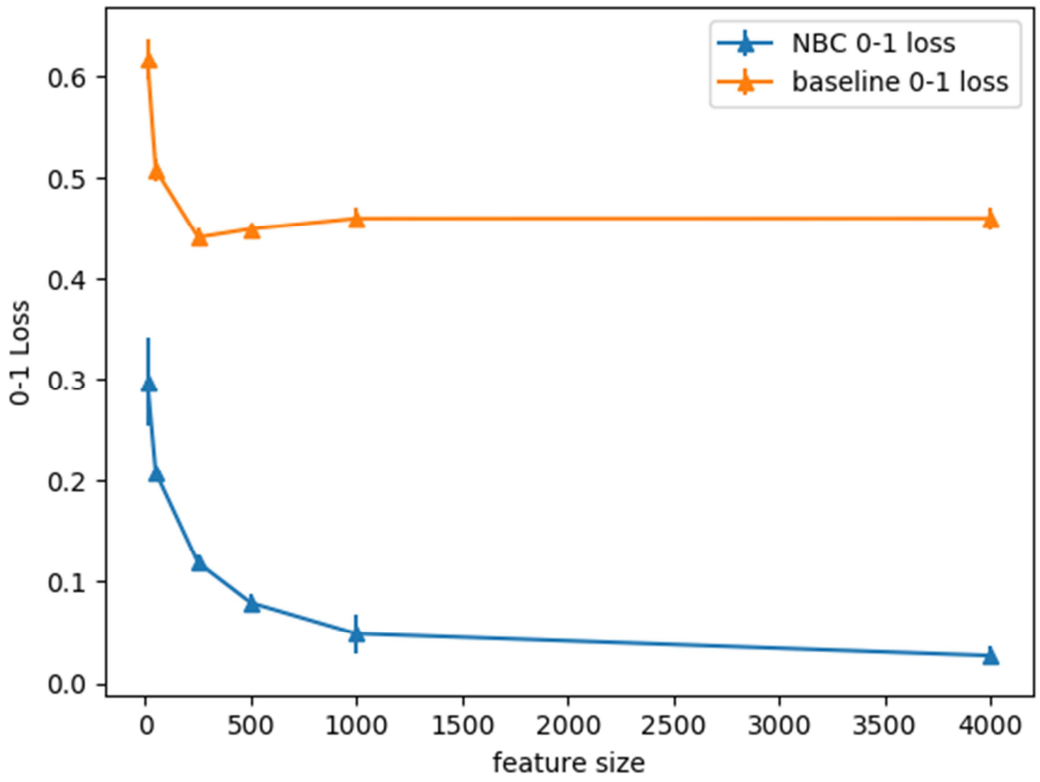
Solution 3)




We can observe from the graph that as we increase the training set size, the zero-one loss decreases initially and then remains constant. This suggests that when we are increasing the training set size, we are providing more data to the model to learn from and it is then performing better subsequently (i.e zero-one loss is reducing by increasing the training size) and hence the prediction of class for a training example is becoming more correct. It becomes constant after a certain period (training size=20) because the size of features is constant, hence the model is not learning any new or unrecognized feature.

When we compare this loss to the baseline zero-one loss, it can be seen that baseline zero-one loss is always greater than the zero-one loss. Baseline zero-one loss is almost constant line because it just predicts the most frequent class label and it is not learning anything from the model based on the size of the training data. So, it remains constant for the varying size of training data.

Solution 4)




It can be observed from the graph that as the size of features increases; the zero-one loss reduces and then becomes constant

after a certain period (feature size=1000). Zero-one loss reduces initially, because we are increasing more features into the model, so it is recognizing new features in every iteration and hence learning more from the training data. After certain iterations, increasing feature size doesn’t help because it is not learning further from the fixed size of training data.

Baseline zero-one loss is always greater than the zero-one loss because baseline error method doesn’t consider the size of training data, neither does it consider the features, hence it doesn’t learn from the model. So baseline default error is viewed as a constant line with respect to varying feature size.