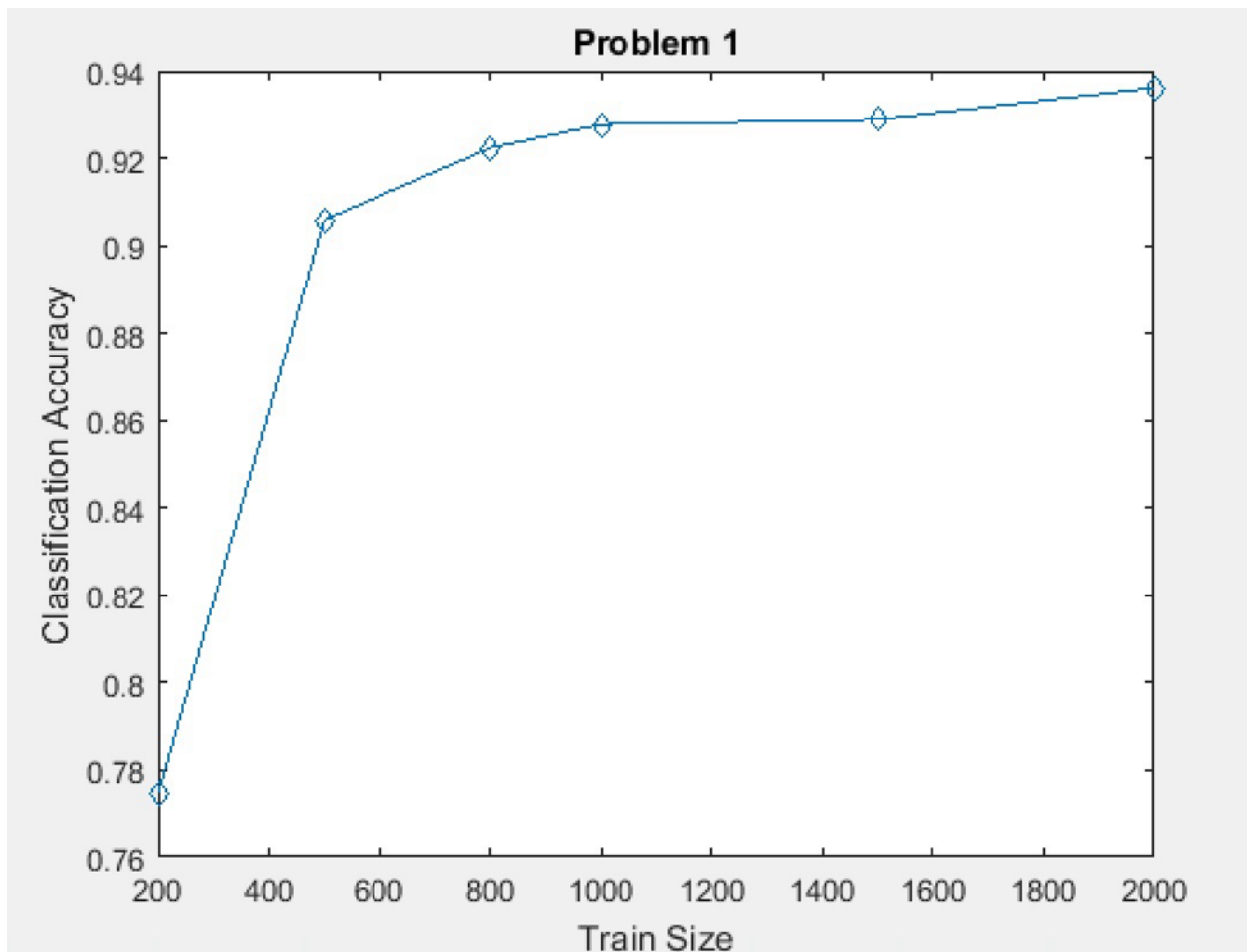


HW4 Zhiyu Quan

1 Logistic Regression: Experiment

MATLAB function called `logistic_train.m` that takes an input data set, a set of binary training labels, and an optional argument that specifies the convergence criterion, and returns a set of logistic weights.

Train logistic regression classifier on the first n rows of the training data, $n = 200; 500; 800, 1000; 1500, 2000$ and report the accuracy on the test data as a function of n .

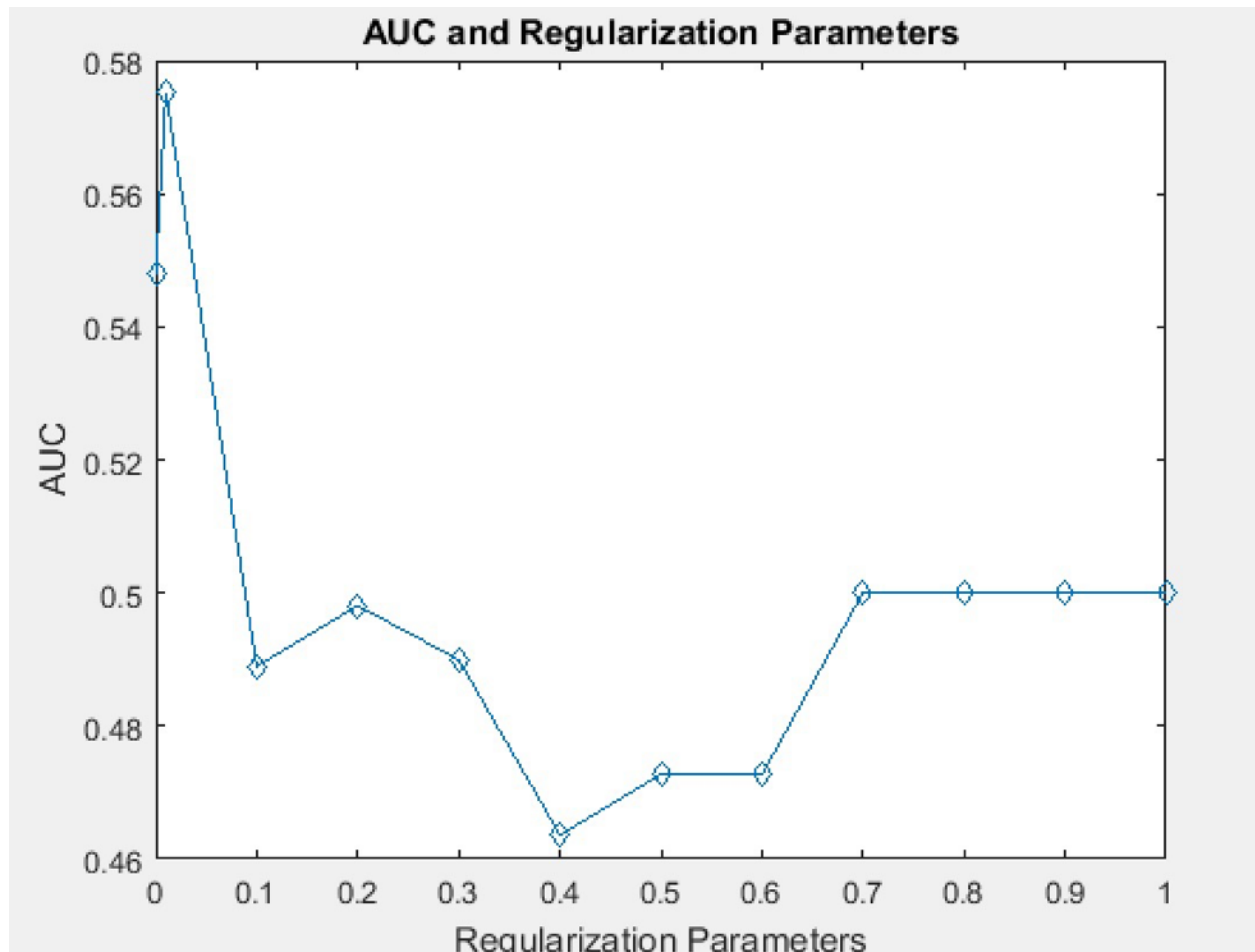


As the plot shows, the more training data, the prediction is more accurate.

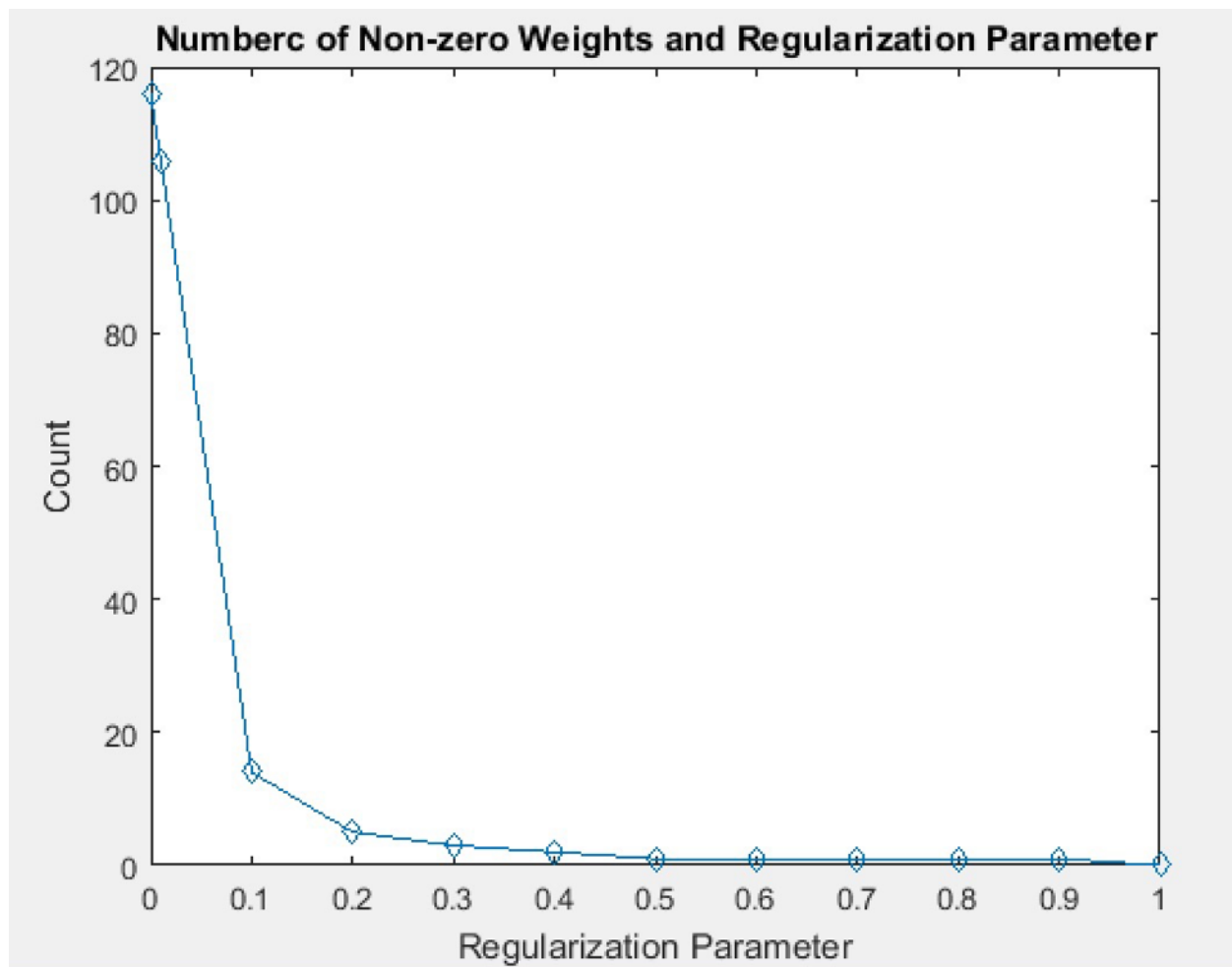
2 Sparse Logistic Regression: Experiment

Try different values of regularization parameter and report the accuracy and the number of features selected (number of non-zero entries in w).

List of parameters is $[0, 0.01, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1]$



when the parameter equal to about 0.01, the accuracy of the model is the largest.



Also number of features is decreasing when the parameter is becoming larger