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October 21, 2019

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**Homework 02 Report: Discrimination by Regression**

I’ve separated the train and test value by using array manipulations since randomness was not asked. Since the labels aren’t binary, I needed to apply one hot encoding for labels such that algorithm would be more efficient and easier to implement. In another words, if class label equals to “3” for some data, it means five columns for that data would be “00100”. Since linear classification and discrimination by regression is highly similar with respect to their iterative algorithms, I’ve used the same loop for the Lab 04. I’ve used the sigmoid algorithm, weight function and different error function as they’re described in Chapter 10.8 from the book. In order to minimize the error function, I’ve applied gradient descent. Since the number of iterations have a maximum point determined by the instructor, algorithm couldn’t find the closest global minimum point of loss function, but it got highly closer with 500 iterations. Here are the confusion matrices and objective values (which are same as in the homework description) throughout the iterations:   
  


