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EDA132- Spring 2016

Assignment 3b: Logistic Regression

Introduction

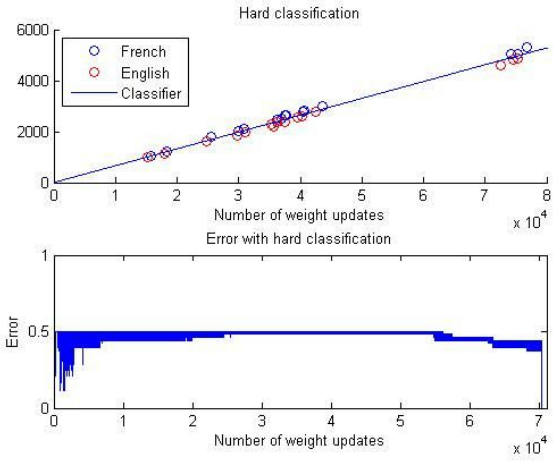
Héctor and chose to do the Logistic Regression project as it is a topic he is somewhat familiar with. He had not used Python before and I had not used MATLAB but we decided to do use MATLAB because it has some helpful built-in features. We began with linear regression in order to fit the *Salammbô* data with an appropriate line. This mainly involved implementing the method explained in the book and adjusting the x and y values, as well as finding an appropriate learning rate for our function. From this foundation we built on and added perceptron and regression following the material in the textbook. Our program estimates whether the current value is 0 or 1, checks whether the goals are achieved and updates our vectors **W** and **b** appropriately.

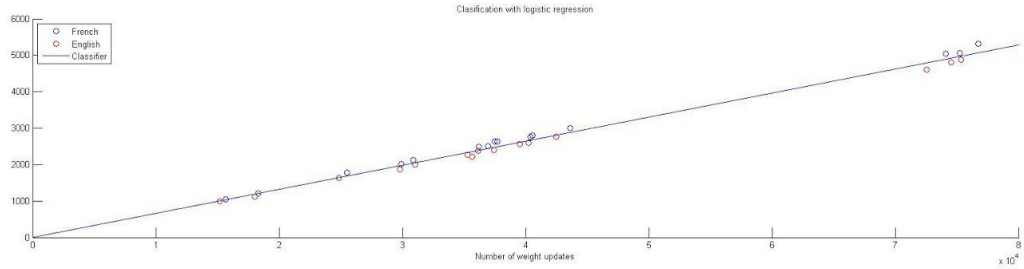
Implementation

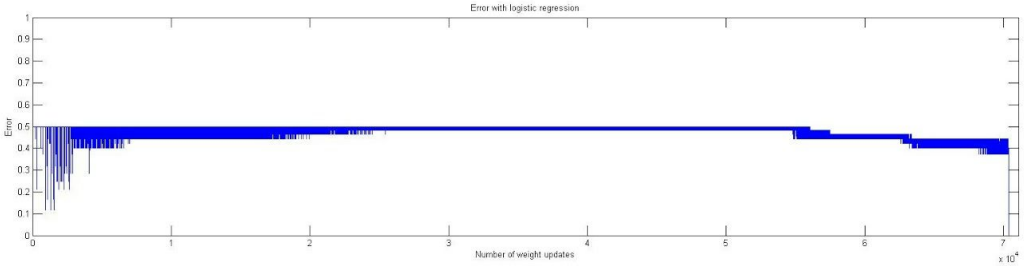
Our code is stored on my student computer account under *eda132/assignment3*, or more specifically */h/d9/r/mi6034fe-s/eda132/assignment3*. The code is a MATLAB program in the linearRegression.m script file.

Result

A sample of our sets is as following:







With the corresponding weights seen below

	W	b	
Starting values	0.8147, 0.9058	0.1270	repetitions
Final values	1.0e+07* -0.5624, 8.5212	-7.0579e+03	70374
	W1	b1	
W*P+b	0.9134, 0.6324	0.0975	repetitions
1/(1+e^-(Wl*P+bl))	1.0e+07* -0.5624, 8.5212	-7.0579e+03	70374

If we were to continue with this project there are a couple things I would like to change in order to improve the accuracy of our algorithm. It would have been interesting to implement both the stochastic and the batch version of the algorithm. I am not too certain what the outcome would be but it would be an interesting learning experience. It would have also been good to experiment further with the parameters like the learning rate.