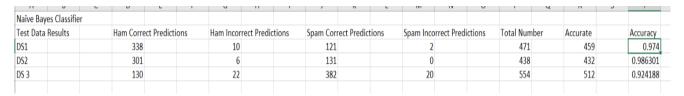
Homework 2 Report

To see how two run the two projects, read the readme file presented.

Naïve Bayes Classifier

For the three given data sets(hw2_train/test, enron1_train/test, enron4_train/test), an accuracy displayed in the following picture was obtained.



The program is a straightforward Python implementation of the Multinomial Naïve Bayes classifier from the given link in the HW description.

Logistic Regression

Since Logistic Regression Algorithm takes a high amount of time to learn, it was tested on different parameters for low number of iterations and the results are presented in the Excel sheet available in the project folder. Accuracy on the test data that was obtained is presented below.

Test Set								
DS1	1	0.01	0.01	198	140	121	1	0.6934
DS2	1	0.01	0.01	209	107	129	2	0.75615
DS3	1	0.01	0.01	14	119	394	0	0.774194
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Perceptron Algorithm

For Perceptron algorithm, it was found that for approximately 750 iterations, the accuracy on the validation set is maximized. Results for all the 3 datasets are available in the Excel sheet in the Java Project folder and one can observe that the accuracy on the validation set tends to maximize around 750 iterations.

Perceptror	n:	
DS 1		
For Validat	tion Set:	
For Validation Set: No Of Iterations 1 50 100 250 500 750 1000 DS2 For Validation Set: No Of Iterations		Accuracy
1		0.79
50		0.84
100		0.85
250		0.86
500		0.86
750		0.87
1000		0.85
DS2		
For Validat	tion Set:	
No Of Iterations		Accuracy
1		0.8222
50		0.814814
100		0.837
250		0.8444
500		0.866667
750		0.84444
1000		0.82962

DS3		
For Validation Se	t	
No Of Iterations	Accuracy	
1	0.7826	
50	0.9192	
100	0.8944	
250	0.92	
500	0.88	
750	0.937	
1000	0.826	
For Test Set		
DS1		
No Of Iterations	Accuracy of Ham	Accuracy of Spam
750	0.91954023	0.9
DS2		
750	0.912052117	0.88590604
DS3		
750	0.881578947	0.938618926

Validation was performed by training the Perceptron only on Training data and testing was performed by training the perceptron on both training and validation data.