Transaction 1

Enter the number of iterations and the learning rate

10 0.04

Accuracy before removing the stopwords

The accuracy over spam files is: 60.000004

The accuracy over ham files is: 93.39081

Accuracy after removing the stopwords

The accuracy over spam files is: 66.92307

The accuracy over ham files is: 93.39081

Transaction 2

Enter the number of iterations and the learning rate

10 0.04

Accuracy before removing the stopwords

The accuracy over spam files is: 60.000004

The accuracy over ham files is: 93.39081

Accuracy after removing the stopwords

The accuracy over spam files is: 66.92307

The accuracy over ham files is: 93.39081

Transaction 3

Enter the number of iterations and the learning rate

15 0.05

Accuracy before removing the stopwords

The accuracy over spam files is: 70.0

The accuracy over ham files is: 95.68965

Accuracy after removing the stopwords

The accuracy over spam files is: 69.230774

The accuracy over ham files is: 94.25287

Transaction 4

Enter the number of iterations and the learning rate

15 0.09

Accuracy before removing the stopwords

The accuracy over spam files is: 69.230774

The accuracy over ham files is: 95.97701

Accuracy after removing the stopwords

The accuracy over spam files is: 67.69231

The accuracy over ham files is: 95.68965

Transaction 5

Enter the number of iterations and the learning rate

20 0.03

Accuracy before removing the stopwords

The accuracy over spam files is: 66.15385

The accuracy over ham files is: 93.67816

Accuracy after removing the stopwords

The accuracy over spam files is: 73.84615

The accuracy over ham files is: 93.965515

Transaction 6

Enter the number of iterations and the learning rate

20 0.09

Accuracy before removing the stopwords

The accuracy over spam files is: 73.84615

The accuracy over ham files is: 95.4023

Accuracy after removing the stopwords

The accuracy over spam files is: 69.230774

The accuracy over ham files is: 95.11494

Transaction 7

Enter the number of iterations and the learning rate

30 0.09

Accuracy before removing the stopwords

The accuracy over spam files is: 70.76923

The accuracy over ham files is: 96.264366

Accuracy after removing the stopwords

The accuracy over spam files is: 72.30769

The accuracy over ham files is: 95.4023

Transaction 8

Enter the number of iterations and the learning rate

35 0.01

Accuracy before removing the stopwords

The accuracy over spam files is: 57.692307

The accuracy over ham files is: 93.10345

Accuracy after removing the stopwords

The accuracy over spam files is: 71.53846

The accuracy over ham files is: 91.954025

Transaction 9

Enter the number of iterations and the learning rate

35 0.05

Accuracy before removing the stopwords

The accuracy over spam files is: 69.230774

The accuracy over ham files is: 95.11494

Accuracy after removing the stopwords

The accuracy over spam files is: 71.53846

The accuracy over ham files is: 94.82758

Transaction 10

Enter the number of iterations and the learning rate

35 0.09

Accuracy before removing the stopwords

The accuracy over spam files is: 70.76923

The accuracy over ham files is: 95.11494

Accuracy after removing the stopwords

The accuracy over spam files is: 70.76923

The accuracy over ham files is: 95.68965

Transaction 11

Enter the number of iterations and the learning rate

50 0.09

Accuracy before removing the stopwords

The accuracy over spam files is: 70.0

The accuracy over ham files is: 96.55172

Accuracy after removing the stopwords

The accuracy over spam files is: 66.92307

The accuracy over ham files is: 95.68965

Transaction 12

Enter the number of iterations and the learning rate

100 0.09

Accuracy before removing the stopwords

The accuracy over spam files is: 72.30769

The accuracy over ham files is: 95.4023

Accuracy after removing the stopwords

The accuracy over spam files is: 69.230774

The accuracy over ham files is: 94.54023

Transaction 13

Enter the number of iterations and the learning rate

200 0.08

Accuracy before removing the stopwords

The accuracy over spam files is: 66.92307

The accuracy over ham files is: 95.11494

Accuracy after removing the stopwords

The accuracy over spam files is: 71.53846

The accuracy over ham files is: 95.11494

Transaction 14

Enter the number of iterations and the learning rate

500 0.09

Accuracy before removing the stopwords

The accuracy over spam files is: 73.07692

The accuracy over ham files is: 95.97701

Accuracy after removing the stopwords

The accuracy over spam files is: 66.92307

The accuracy over ham files is: 95.11494

Transaction 15

Enter the number of iterations and the learning rate

1000 0.1

Accuracy before removing the stopwords

The accuracy over spam files is: 72.30769

The accuracy over ham files is: 96.264366

Accuracy after removing the stopwords

The accuracy over spam files is: 69.230774

The accuracy over ham files is: 94.82758

Naïve Bayes and Logistical Regression for Comparison

NB

Transaction 1

Enter the digit for Laplace Smoothing:

2

Accuracy before removing stop words

The accuracy over 130.0 spam files is: 99.23076923076923 %

The accuracy over 348.0 ham files is: 95.6896551724138 %

Accuracy after removing the stop words

The accuracy over 130.0 spam files is: 99.23076923076923 %

The accuracy over 348.0 ham files is: 94.82758620689656 %

Transaction 2

Enter the digit for Laplace Smoothing:

4

Accuracy before removing stop words

The accuracy over 130.0 spam files is: 99.23076923076923 %

The accuracy over 348.0 ham files is: 93.10344827586206 %

Accuracy after removing the stop words

The accuracy over 130.0 spam files is: 99.23076923076923 %

The accuracy over 348.0 ham files is: 91.66666666666666 %

Transaction 3

Enter the digit for Laplace Smoothing:

6

Accuracy before removing stop words

The accuracy over 130.0 spam files is: 99.23076923076923 %

The accuracy over 348.0 ham files is: 91.66666666666666 %

Accuracy after removing the stop words

The accuracy over 130.0 spam files is: 99.23076923076923 %

The accuracy over 348.0 ham files is: 89.9425287356322 %

Transaction 4

Enter the digit for Laplace Smoothing:

8

Accuracy before removing stop words

The accuracy over 130.0 spam files is: 99.23076923076923 %

The accuracy over 348.0 ham files is: 89.9425287356322 %

Accuracy after removing the stop words

The accuracy over 130.0 spam files is: 99.23076923076923 %

The accuracy over 348.0 ham files is: 86.7816091954023 %

Transaction 5

Enter the digit for Laplace Smoothing:

10

Accuracy before removing stop words

The accuracy over 130.0 spam files is: 99.23076923076923 %

The accuracy over 348.0 ham files is: 87.93103448275862 %

Accuracy after removing the stop words

The accuracy over 130.0 spam files is: 99.23076923076923 %

The accuracy over 348.0 ham files is: 84.19540229885058 %

Logistic Regression

Transaction 1

Enter the number of iterations, regularization factor and the learning rate

10 19 0.04

Accuracy before removing the stopwords

The accuracy over spam files is: 96.92308

The accuracy over ham files is: 99.425285

Accuracy after removing the stopwords

The accuracy over spam files is: 88.46153

The accuracy over ham files is: 88.21839

Transaction 2

Enter the number of iterations, regularization factor and the learning rate

20 20 0.08

Accuracy before removing the stopwords

The accuracy over spam files is: 96.15385

The accuracy over ham files is: 99.13793

Accuracy after removing the stopwords

The accuracy over spam files is: 73.84615

The accuracy over ham files is: 43.390804

Transaction 3

Enter the number of iterations, regularization factor and the learning rate

15 18 0.04

Accuracy before removing the stopwords

The accuracy over spam files is: 96.92308

The accuracy over ham files is: 99.425285

Accuracy after removing the stopwords

The accuracy over spam files is: 90.0

The accuracy over ham files is: 87.64368

Transaction 4

Enter the number of iterations, regularization factor and the learning rate

30 30 0.03

Accuracy before removing the stopwords

The accuracy over spam files is: 95.38461

The accuracy over ham files is: 98.85057

Accuracy after removing the stopwords

The accuracy over spam files is: 84.61539

The accuracy over ham files is: 81.60919

Accuracy remains static for the Naïve Bayes for minimum Laplace Smoothing Factor where as for Logistic Regression the accuracy starts fading once the number of iterations increases 30. Also with high regularization factor the accuracy declines as well. Higher the learning rate (like 0.05 to 0.1) the accuracy increases.

For Perceptron Training Rule the accuracy increases as the learning rate is kept high closer to 0.08 to 0.1 range and the number of iterations being between 100 and 500.