CSE556: Natural Language Processing

Assignment 03 Outputs

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Assignment 3a: Sentiment Analysis in Twitter

For Naive Bayes

```
----------------
Accuracy: 0.7461958333333333
----------------

For the Positive CLass, Label:4
----------------
Precision: 0.7430617982119216
----------------
Recall: 0.755207727703118
----------------
F1 Score: 0.7490855316274242

For the Negative CLass, Label:0
----------------
Precision: 0.7494559396092967
----------------
Recall: 0.7371239611377736
----------------
F1 Score: 0.7432388001820971

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Macro Average F1 0.7461621659047606
----------------
Confusion Matrix:
                Predicted Negative   Predicted Positive
Actual Negative            176323                62881
Actual Positive             58945               181851
```

For Decision Trees

```
------------------
Accuracy: 0.7352
------------------

For the Positive CLass, Label:4
------------------
Precision: 0.7367301045267147
------------------
Recall: 0.734692436751441
------------------
F1 Score: 0.7357098597289397

For the Negative CLass, Label:0
------------------
Precision: 0.7336682369616876
------------------
Recall: 0.7357109412886073
------------------
F1 Score: 0.7346881692598638

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Macro Average F1 0.7351990144944017
------------------
Confusion Matrix:
                Predicted Negative  Predicted Positive
Actual Negative            175985               63219
Actual Positive             63885              176911
```

For MLP

```
------------------
Accuracy: 0.7629208333333334
------------------

For the Positive CLass, Label:4
------------------
Precision: 0.7784530919742855
------------------
Recall: 0.7372215485307065
------------------
F1 Score: 0.7572765006249493

For the Negative CLass, Label:0
------------------
Precision: 0.7488629057223823
------------------
Recall: 0.788791157338506
------------------
F1 Score: 0.7683086232241094

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Macro Average F1 0.7627925619245294
------------------
Confusion Matrix:
                Predicted Negative  Predicted Positive
Actual Negative            188682               50522
Actual Positive             63276              177520
```

For SVM

```
-----------------
Accuracy: 0.7994291666666666
-----------------

For the Positive CLass, Label:4
-----------------
Precision: 0.7966087085016255
-----------------
Recall: 0.8059643847904451
-----------------
F1 Score: 0.8012592378514513

For the Negative CLass, Label:0
-----------------
Precision: 0.8023361085727824
-----------------
Recall: 0.7928504540057859
-----------------
F1 Score: 0.797565078430548


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Macro Average F1 0.7994121581409996
-----------------
Confusion Matrix:
                Predicted Negative  Predicted Positive
Actual Negative             189653               49551
Actual Positive              46723              194073
```

Assignment 3b: Emotion Intensity Prediction

```
naman@enjay:~/NLP/A-3$ python evaluate.py 3 dt_anger.txt anger-test.txt SVM_anger.txt anger-test.txt MLP_anger.txt anger-test.txt
Pearson correlation between dt_anger.txt and anger-test.txt:    0.4781809290090092
Spearman correlation between dt_anger.txt and anger-test.txt:    0.45687511012618437
Pearson correlation for gold scores in range 0.5-1 between dt_anger.txt and anger-test.txt:    0.3727215341483071
Spearman correlation for gold scores in range 0.5-1 between dt_anger.txt and anger-test.txt:    0.3510923383880728
Pearson correlation between SVM_anger.txt and anger-test.txt:    0.6208637314798386
Spearman correlation between SVM_anger.txt and anger-test.txt:  0.6160188526406063
Pearson correlation for gold scores in range 0.5-1 between SVM_anger.txt and anger-test.txt:    0.42369724563467215
Spearman correlation for gold scores in range 0.5-1 between SVM_anger.txt and anger-test.txt:    0.4340079421772227
Pearson correlation between MLP_anger.txt and anger-test.txt:    0.4597999211270838
Spearman correlation between MLP_anger.txt and anger-test.txt:  0.4533532307020419
Pearson correlation for gold scores in range 0.5-1 between MLP_anger.txt and anger-test.txt:    0.30644809022941794
Spearman correlation for gold scores in range 0.5-1 between MLP_anger.txt and anger-test.txt:    0.28773198840255865

Average Pearson correlation:    0.5196148605386438
Average Spearman correlation:    0.5087490644896109
Average Pearson correlation for gold scores in range 0.5-1:    0.3676222900041324
Average Spearman correlationfor gold scores in range 0.5-1:    0.3576107563226181
naman@enjay:~/NLP/A-3$ python evaluate.py 3 dt_joy.txt joy-test.txt SVM_joy.txt joy-test.txt MLP_joy.txt joy-test.txt
Pearson correlation between dt_joy.txt and joy-test.txt:        0.4304911330000841
Spearman correlation between dt_joy.txt and joy-test.txt:        0.4401866018888625
Pearson correlation for gold scores in range 0.5-1 between dt_joy.txt and joy-test.txt: 0.13003386653259982
Spearman correlation for gold scores in range 0.5-1 between dt_joy.txt and joy-test.txt:    0.13079370386959754
Pearson correlation between SVM_joy.txt and joy-test.txt:        0.6413109952159647
Spearman correlation between SVM_joy.txt and joy-test.txt:      0.6456464764806413
Pearson correlation for gold scores in range 0.5-1 between SVM_joy.txt and joy-test.txt:    0.30957188482130266
Spearman correlation for gold scores in range 0.5-1 between SVM_joy.txt and joy-test.txt:    0.3222210324319196
Pearson correlation between MLP_joy.txt and joy-test.txt:        0.5509472681279123
Spearman correlation between MLP_joy.txt and joy-test.txt:      0.5484064870343951
Pearson correlation for gold scores in range 0.5-1 between MLP_joy.txt and joy-test.txt:    0.27594606637269914
Spearman correlation for gold scores in range 0.5-1 between MLP_joy.txt and joy-test.txt:    0.26882705755921693

Average Pearson correlation:    0.540916465447987
Average Spearman correlation:    0.5447465218012996
Average Pearson correlation for gold scores in range 0.5-1:    0.23851727257553387
Average Spearman correlationfor gold scores in range 0.5-1:    0.24061393128691133
```