Part 1:

VADER - Accuracy: 0.6755994358251057, F1-Score: 0.7783758639021797

SentiWordNet - Accuracy: 0.6228782646758426, F1-Score: 0.7262198997245958

Part 2:

Model: Naive Bayes

Execution Time: 0.5431101322174072 seconds

Accuracy: 0.7538 (+/- 0.0272)

F1 Macro: 0.5852 (+/- 0.2143)

F1 Micro: 0.7538 (+/- 0.0272)

Model: Logistic Regression

Execution Time: 1.2423911094665527 seconds

Accuracy: 0.7793 (+/- 0.0024)

F1 Macro: 0.6658 (+/- 0.0646)

F1 Micro: 0.7793 (+/- 0.0024)

Model: Support Vector Machine

Execution Time: 179.12005400657654 seconds

Accuracy: 0.7730 (+/- 0.0036)

F1 Macro: 0.6119 (+/- 0.0095)

F1 Micro: 0.7730 (+/- 0.0036)

Model: Random Forest

Execution Time: 76.72748112678528 seconds

Accuracy: 0.7582 (+/- 0.0016)

F1 Macro: 0.5975 (+/- 0.0190)

F1 Micro: 0.7582 (+/- 0.0016)

Model: Decision Tree

Execution Time: 11.65309476852417 seconds

Accuracy: 0.6979 (+/- 0.0190)

F1 Macro: 0.6007 (+/- 0.0158)

F1 Micro: 0.6979 (+/- 0.0190)

# Part 3 – Questions

* Unsupervised learning
  1. How did you classify a score of 0? I used 0 as postive
  2. Which of the lexicons performed better? Vader performed better
* Supervised learning
  1. Which models did you choose and why?

I decided to choose all of the options to see how they would compare

* 1. Look at the final metric scores and provide some insights into your results based on what we’ve learned in class.

Logistic regression was the best, SVM is the most intensive to run, Logistic Regression performed the best but its execution time is slower than Naive Bayes. Decision Tree is faster than SVM and Random Forest in terms of execution time but its performance is the lowest.

* General
  1. Can we compare our unsupervised results to our supervised results, why or why not?

I could compare them based on their F1 and accuracy scores, it would be a comparison of different methods

* 1. Did you notice anything about the accuracy score and micro F1 score? Why do you think this is the case?

The accuracy and f1 score micro are almost the same. They are effectively calculating the same ratio of correctly classified samples to total samples.

* 1. Did you notice a significant difference in runtime between the supervised and unsupervised approaches? If so, which one was slower, and why do you think that is?

Yes, there was a significant difference in runtime between the supervised and unsupervised approaches. The supervised learning method, particularly Support Vector Machine (SVM), took the longest by far. This is due to it needing to go through a training process on the given data, which can be computationally intensive and time-consuming, especially for complex models like SVM.

On the other hand, unsupervised methods, such as VADER and SentiWordNet, were far quicker because they do not require a training process. Instead, these methods work by applying pre-defined rules or sentiment scores to compute the sentiment, which is less computationally demanding