

Airline Sentiment Analysis

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Business Problem

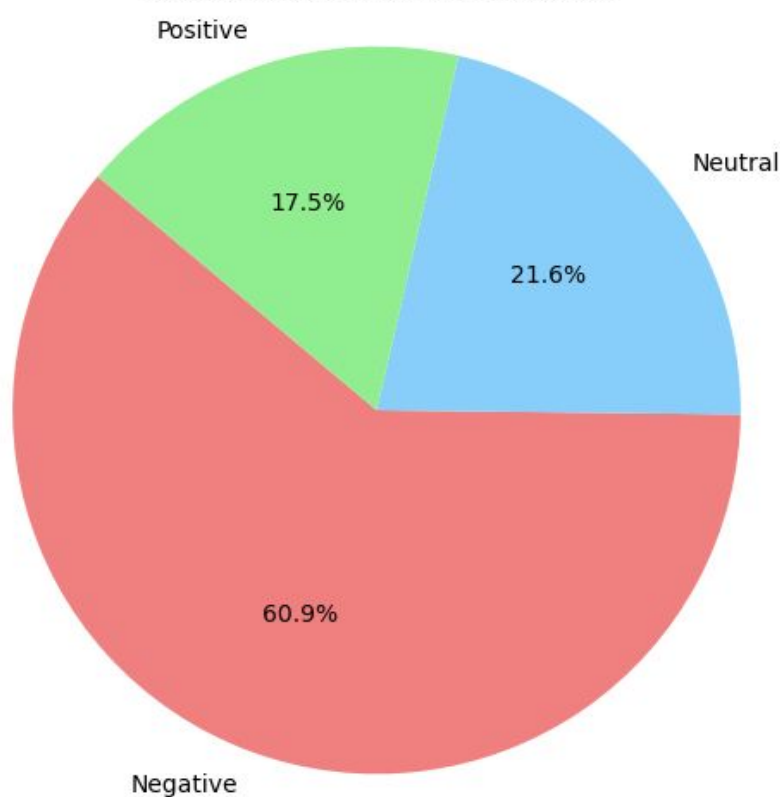
The CCO at JetBlue Airways is closely monitoring social media to understand customer sentiment. They've observed a surge in negative tweets and a decrease in overall customer satisfaction scores in recent months. This trend has raised concerns within JetBlue's management team, as they are committed to providing exceptional service.

The JetBlue logo, featuring the word "jetBlue" in a dark blue, sans-serif font. The "jet" is in a smaller weight than "Blue", which is in a bold weight. The "j" has a distinctive dot.

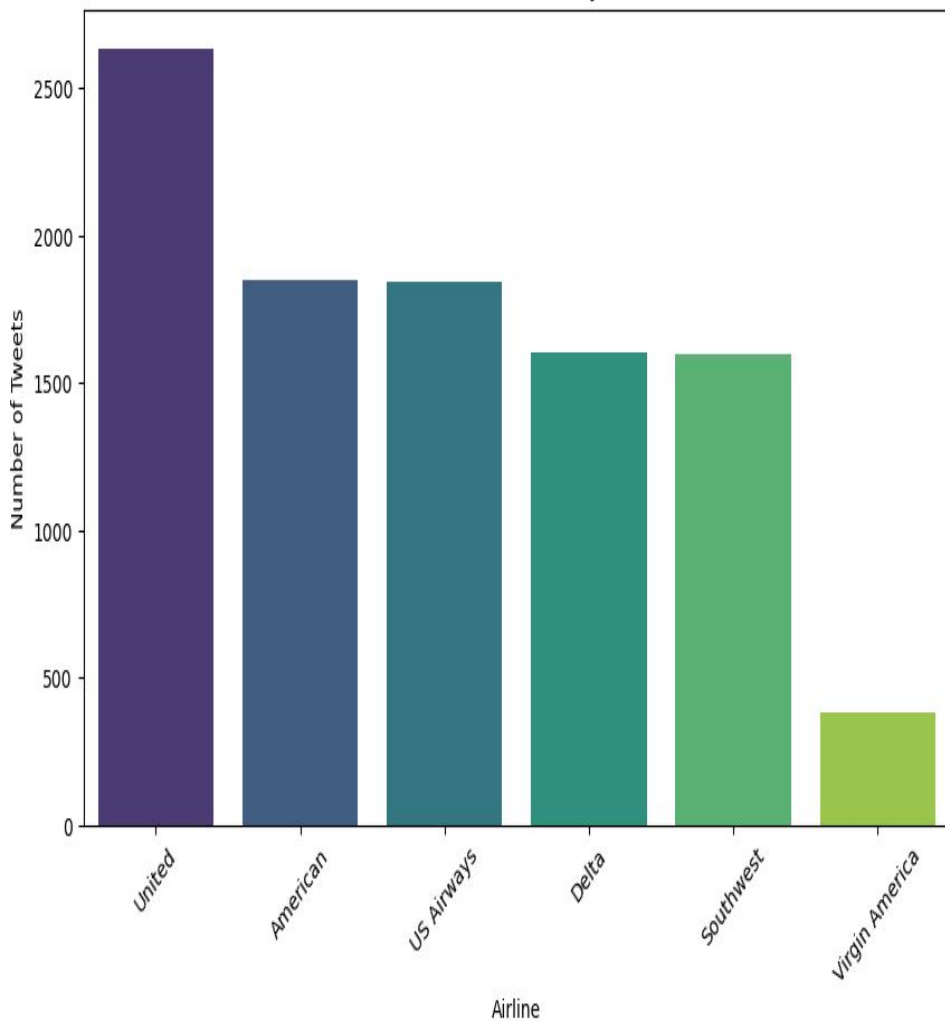
Dataset

- Im working with a kaggle dataset of twitter reviews. It was scrapped and uploaded in 2015, It includes 5 airlines and about 9000 rows of data.
- The dataset was imbalanced so I had to SMOTE it to be able to properly create my classification Models
- Positive, Neutral, and Negative are the values within the target variable

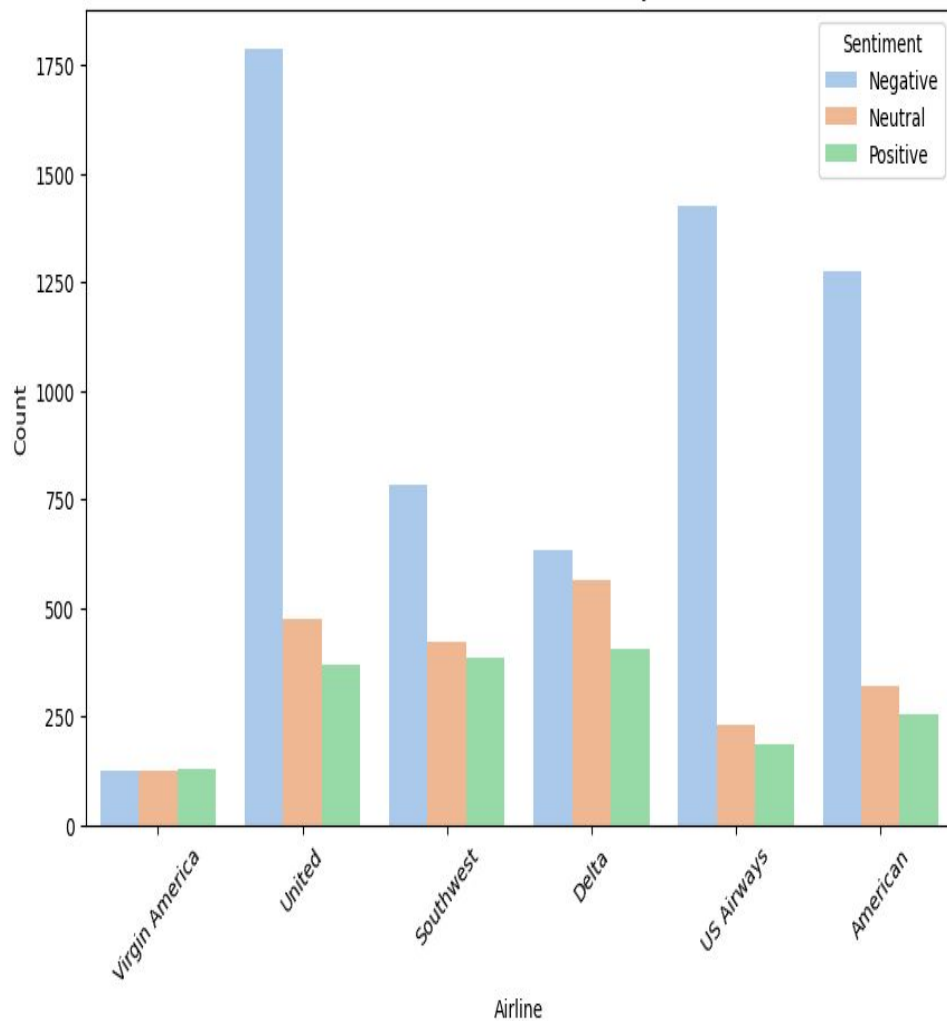
Distribution of Airline Sentiment



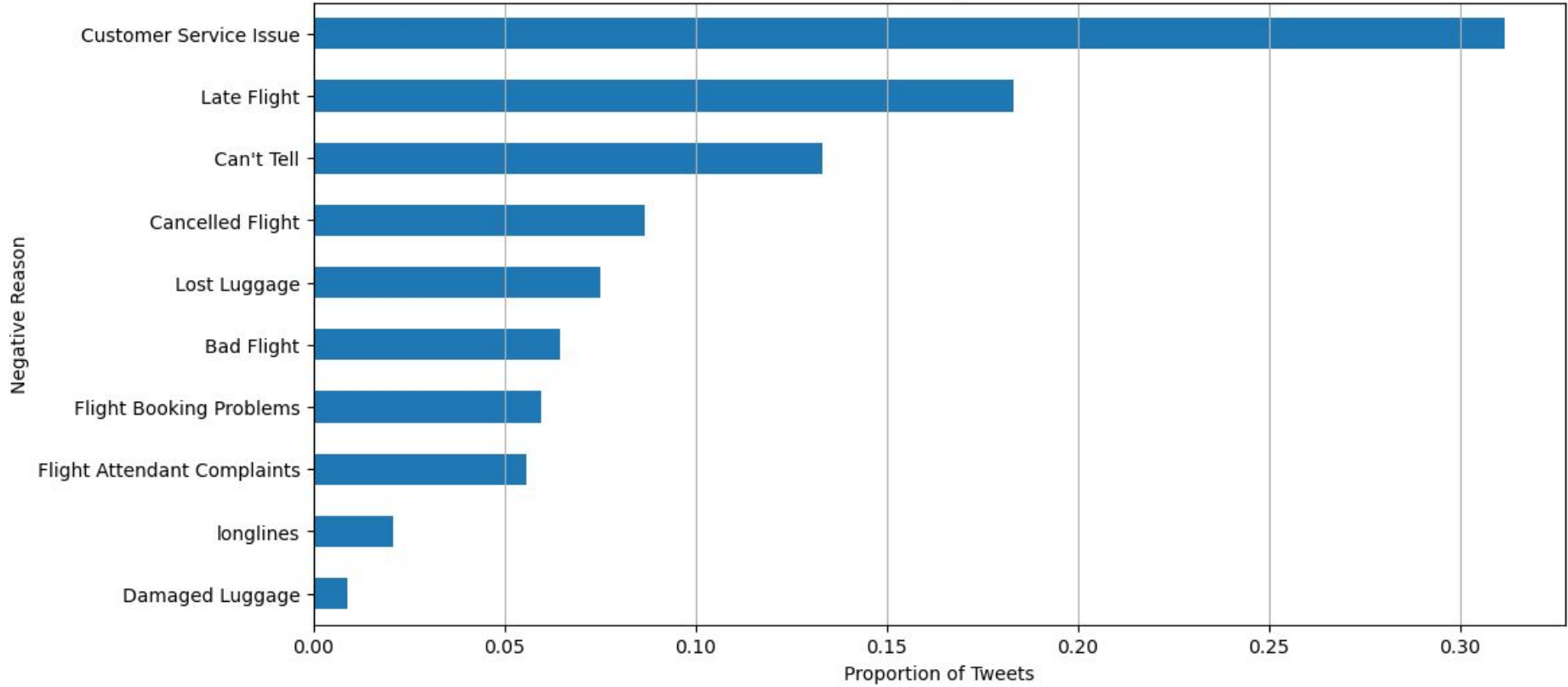
Distribution of Tweets by Airline



Distribution of Airline Sentiment by Airline

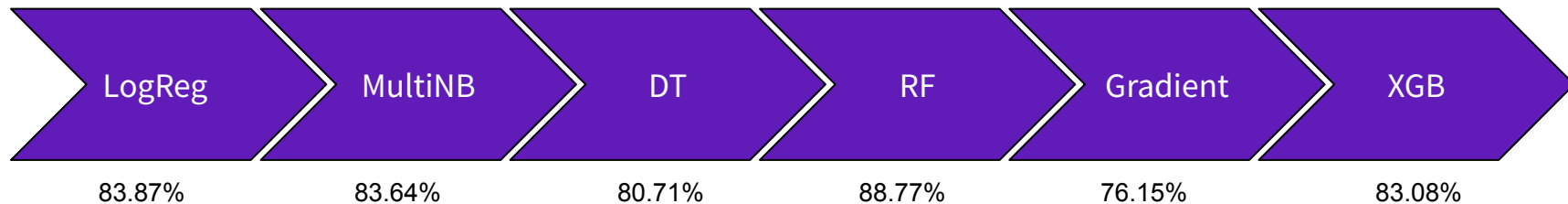


Distribution of Negative Reasons

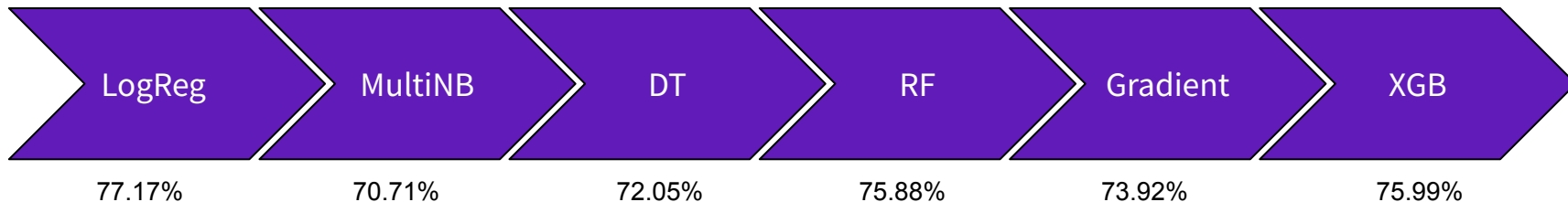


Cross-Validations (Precision):

TF-IDF:

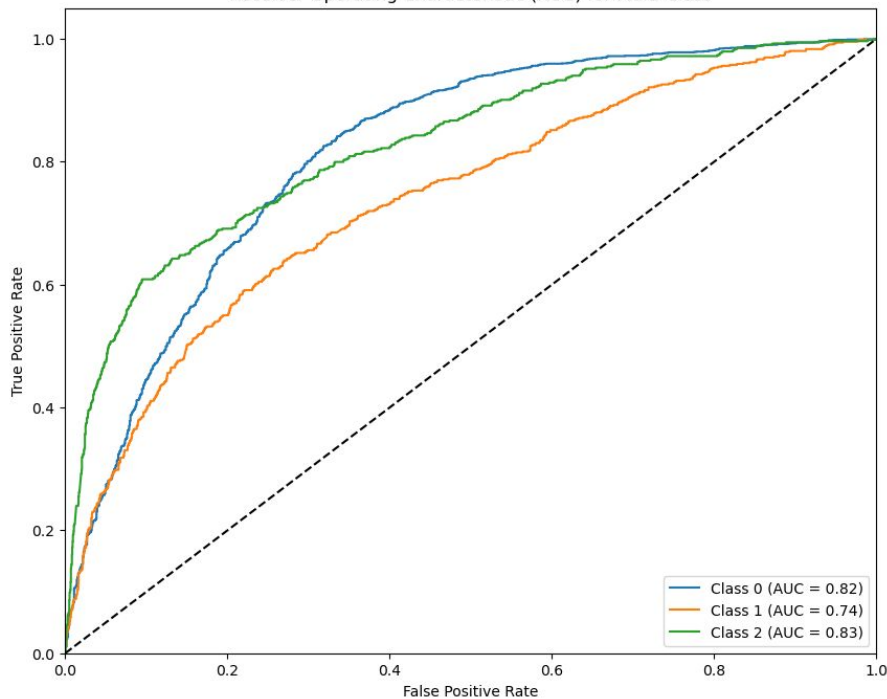


Count Vectorization:

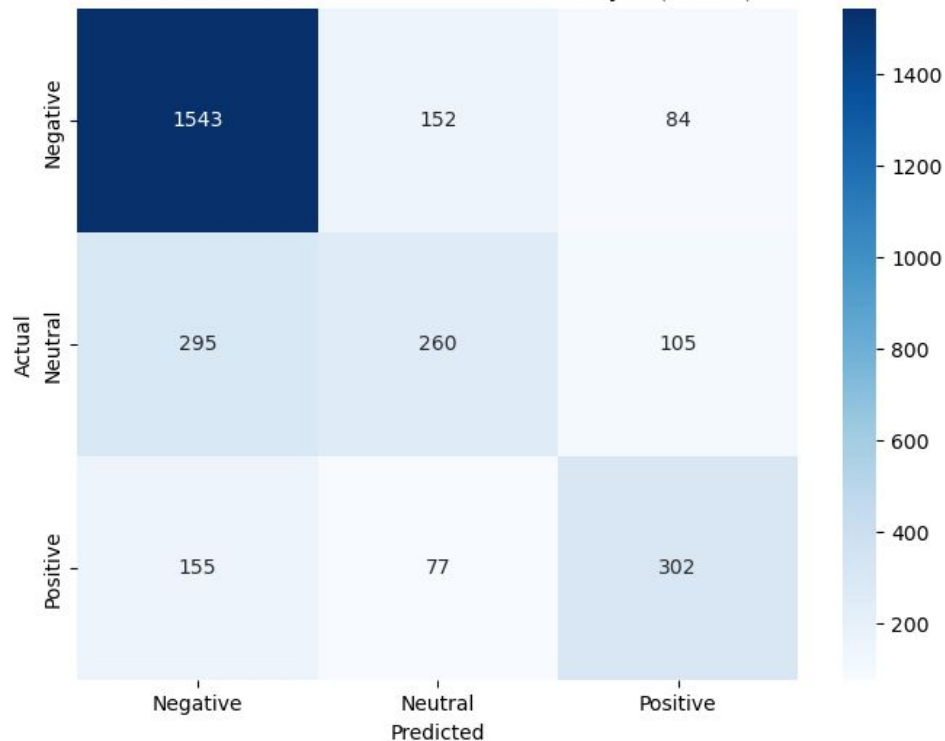


Best Performing Model:

Receiver Operating Characteristic (ROC) for Multi-Class



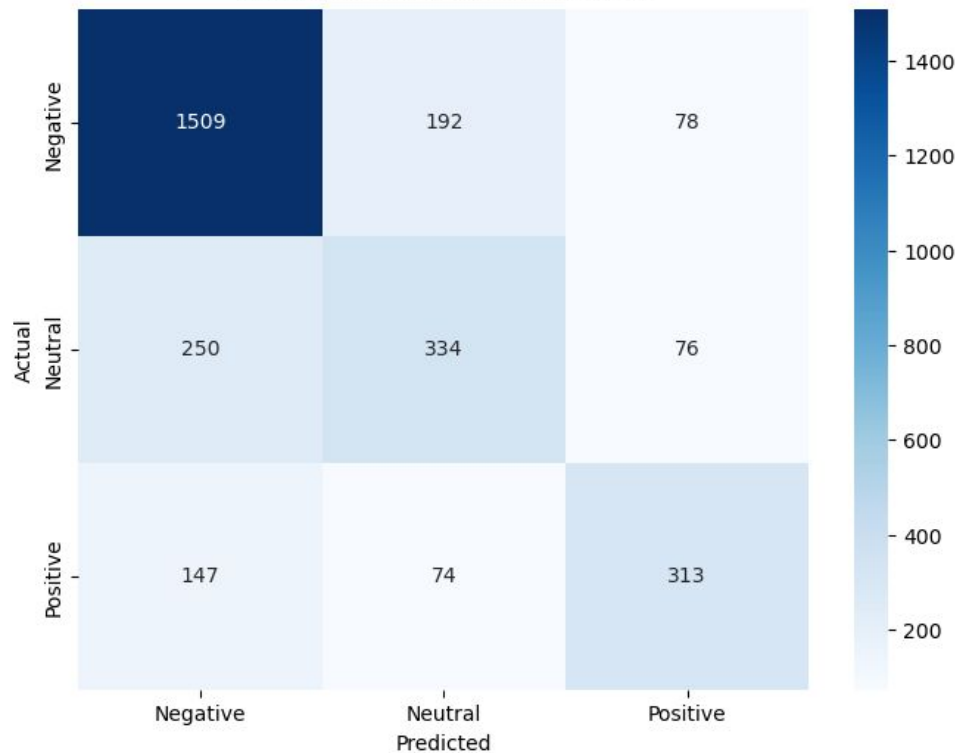
Confusion Matrix - Multinomial Naive Bayes (TF-IDF)



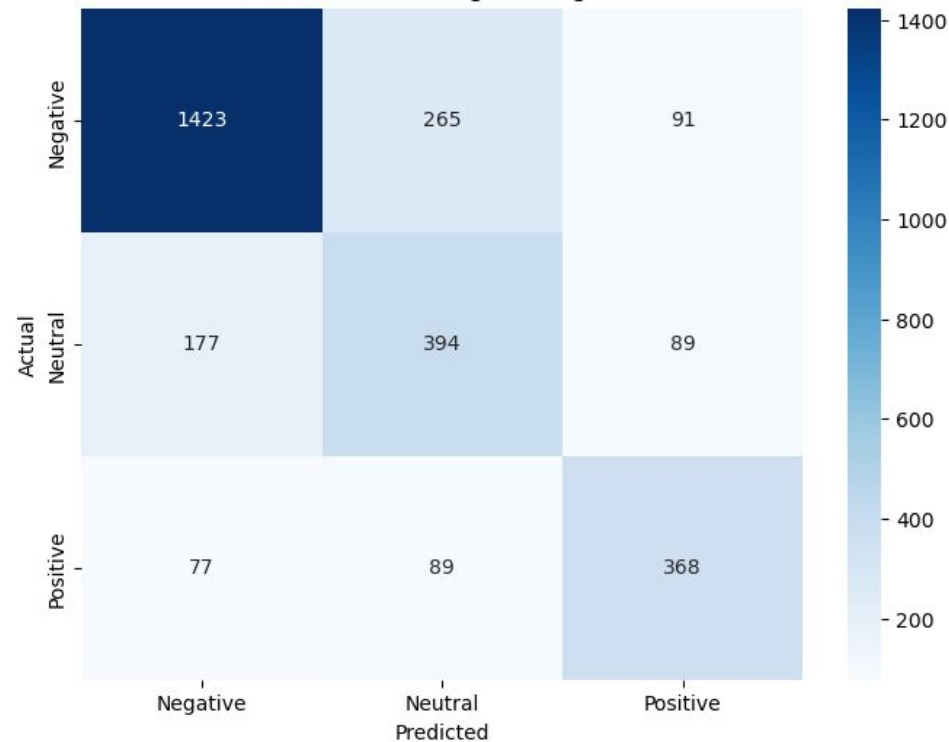
The MNB reached a score of 87.94% after Hyperparameter tuning, a 4.3% increase, The AUC went from 0.81 to 0.82

Compared to other models:

Confusion Matrix - Random Forest



Confusion Matrix - Logistic Regression



Next Steps:

- Expanding our model to Predict the reasoning of a negative review
- Utilize services like AWS and saturn cloud to improve model performance without sacrificing time
- Predict what airline is being targeted based off common words often associated with the airlines.

Contact me:

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