Twitter Sentiment Analysis

Sean Hart September 15, 2022

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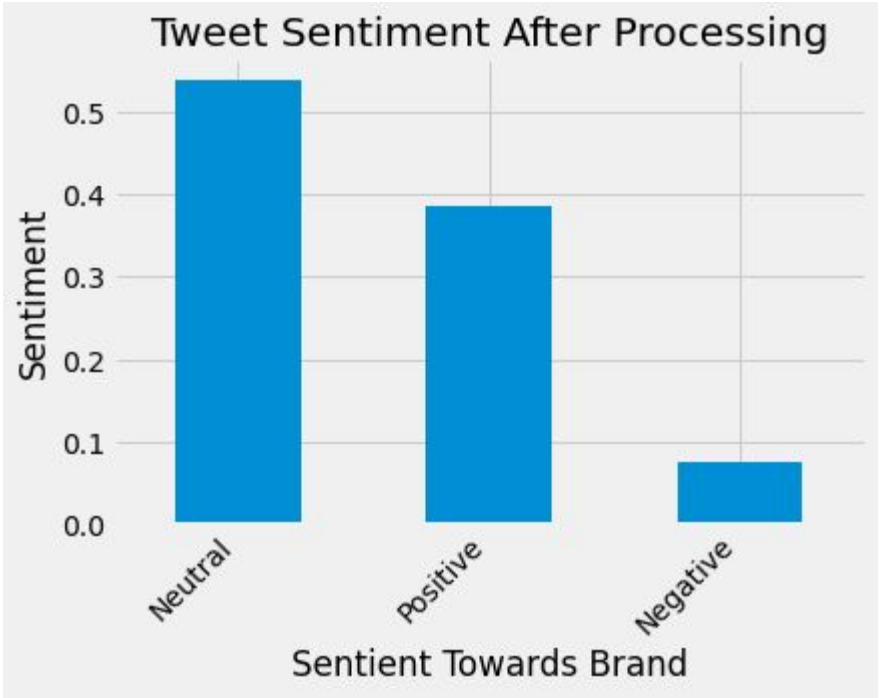
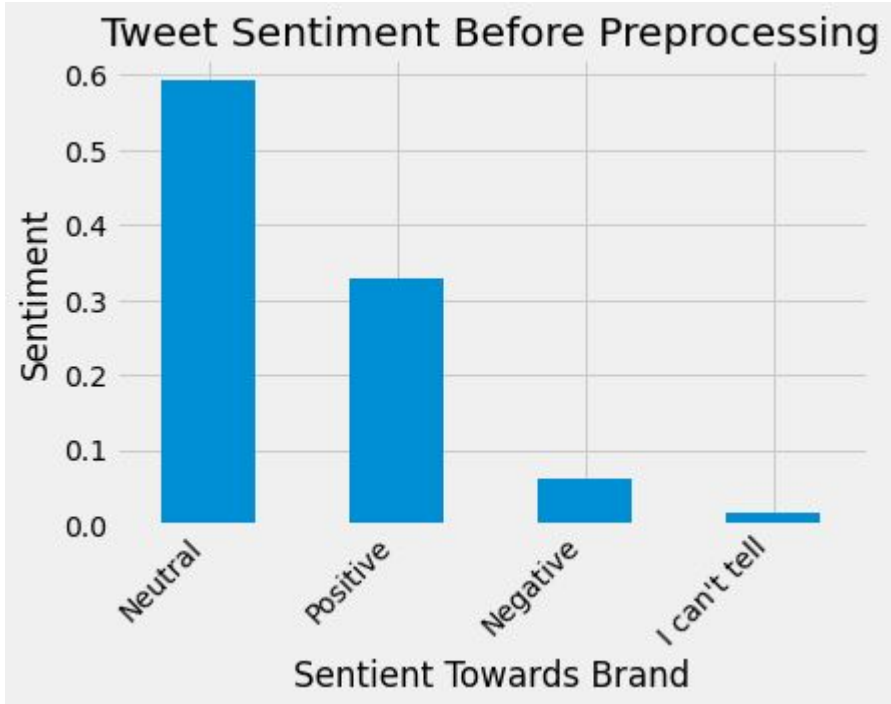
The Dataset

Initial Dataset

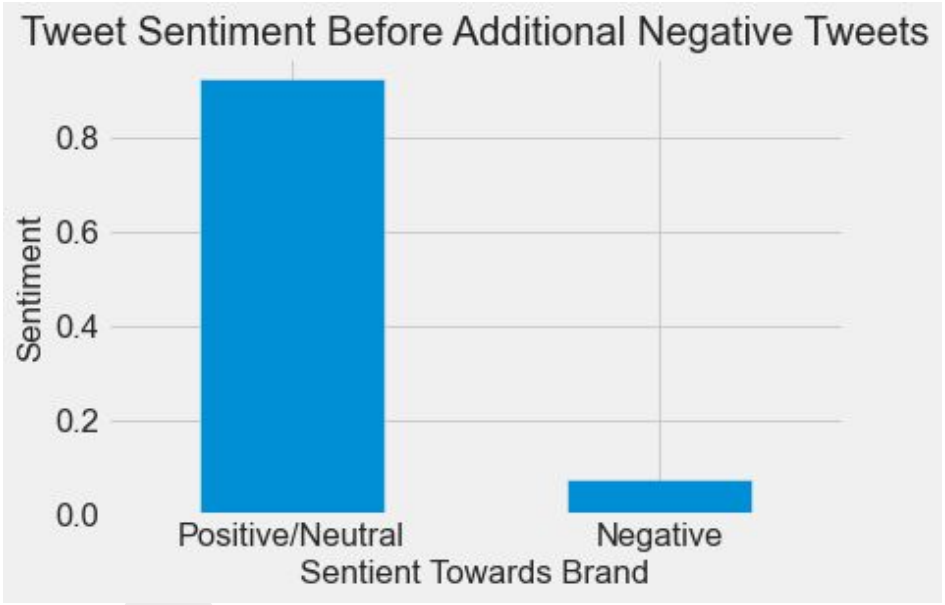
- 9902 Tweets from 2011 South by Southwest Conference
- Dataset included Tweet, Sentiment, and Object of Sentiment
- The dataset was highly imbalanced – very few negative sentiment examples.

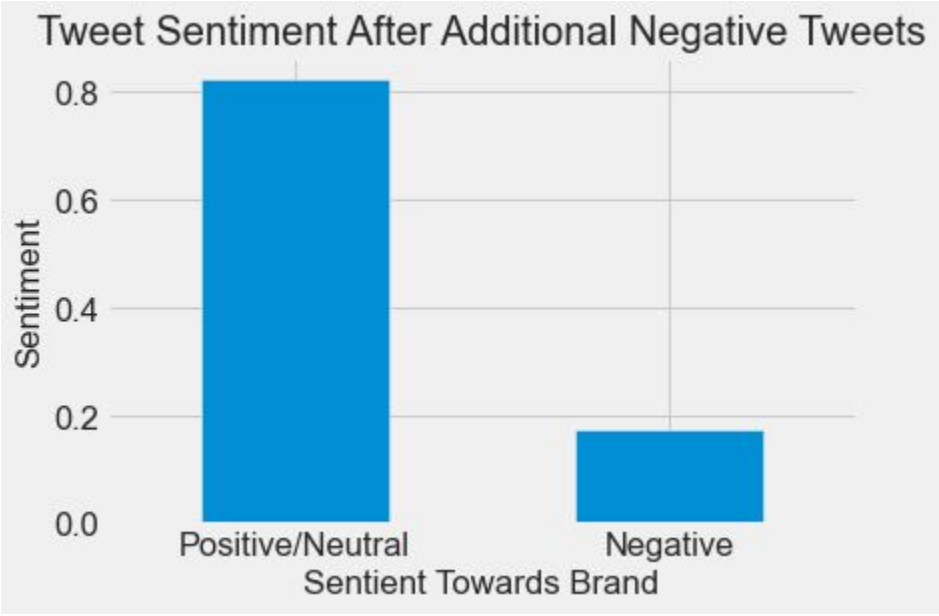
Sentiment Breakdown



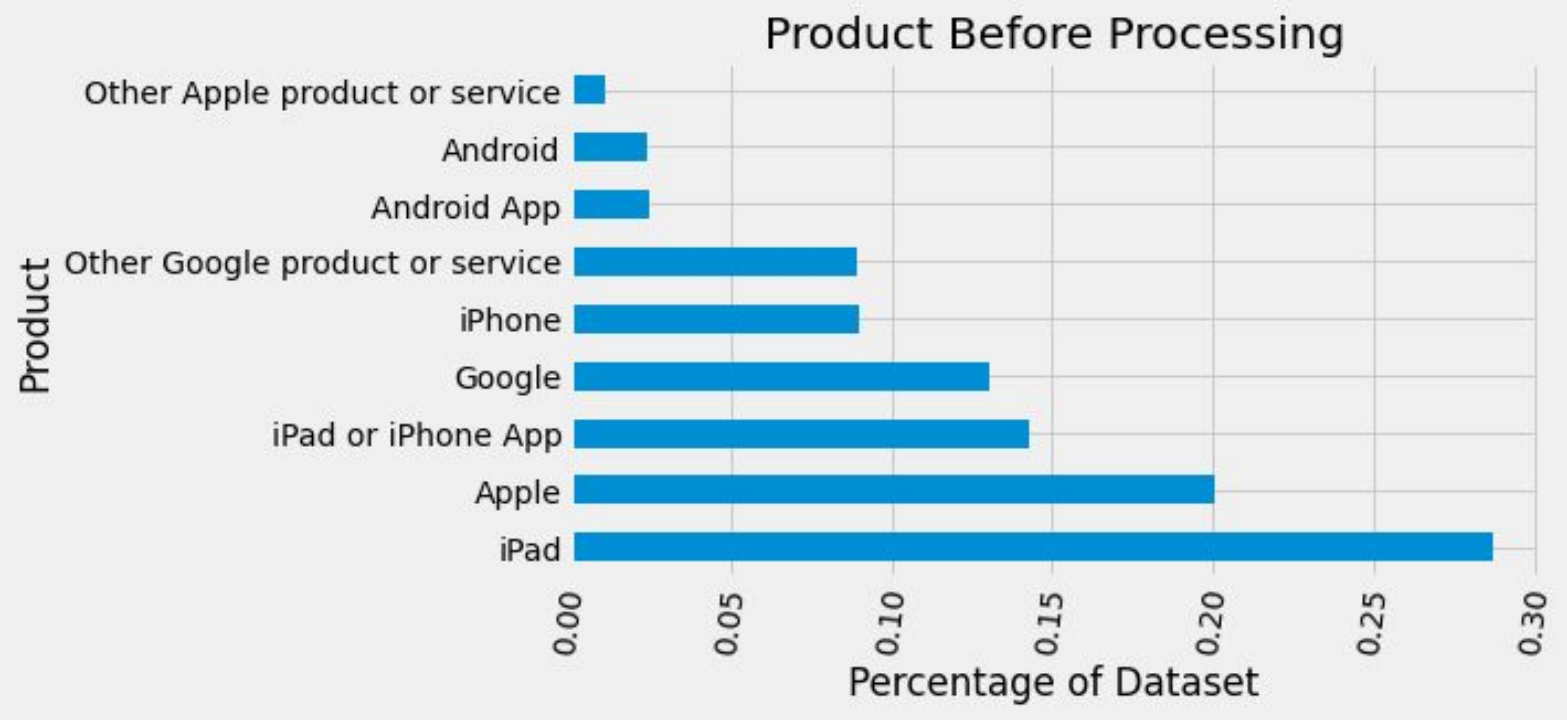


Sentiment - Binary Modeling

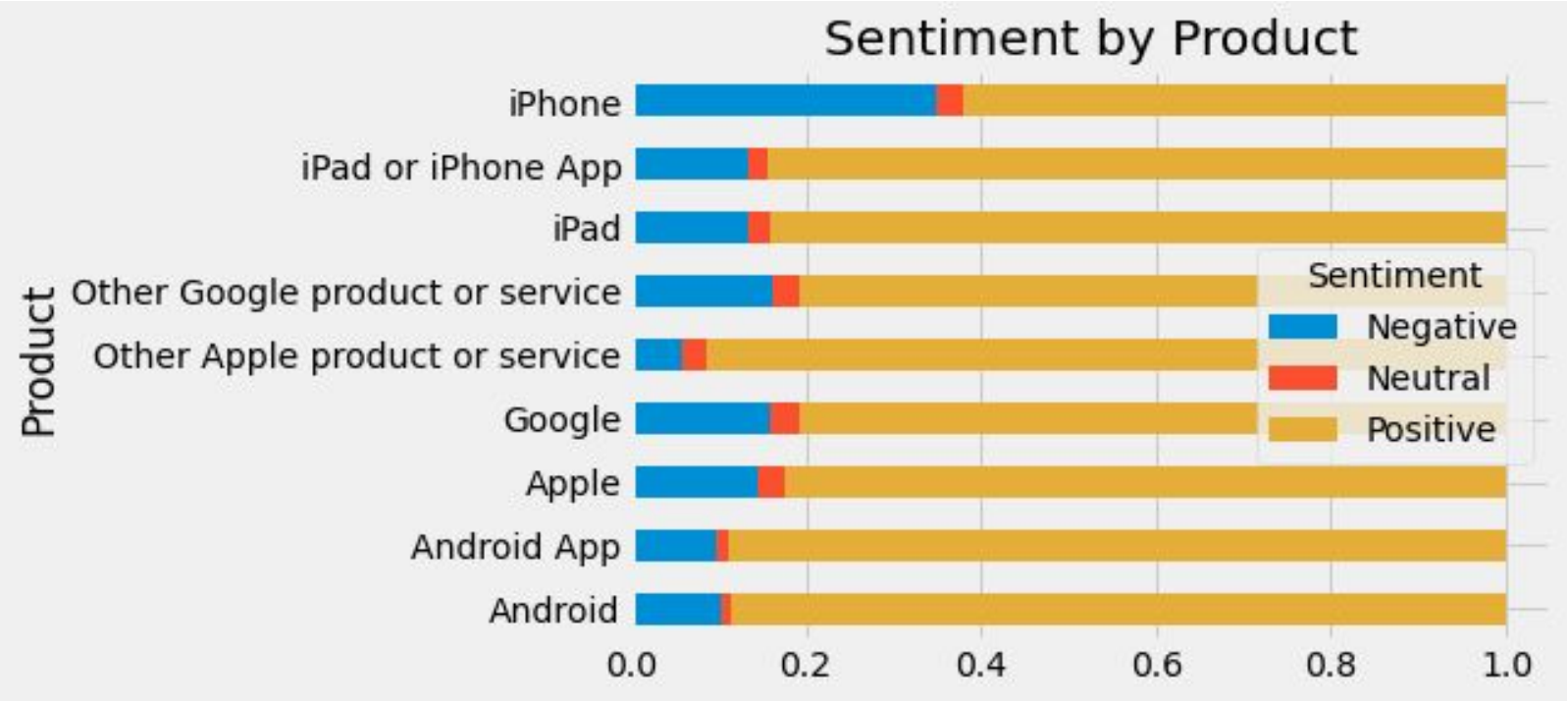


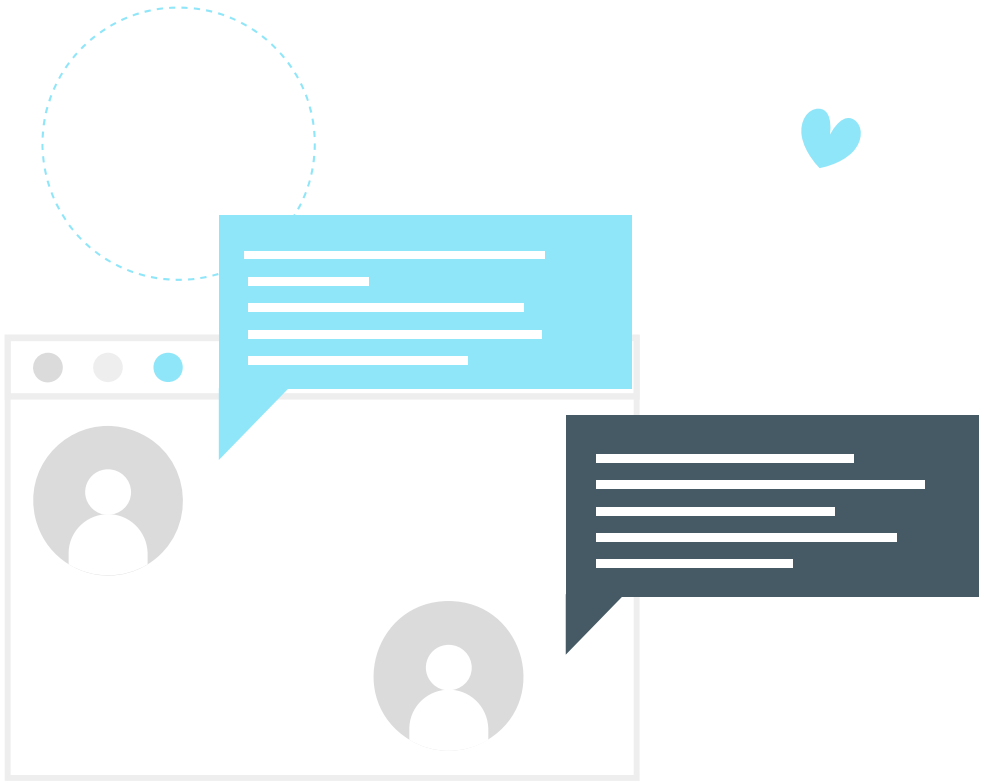


Product Breakdown



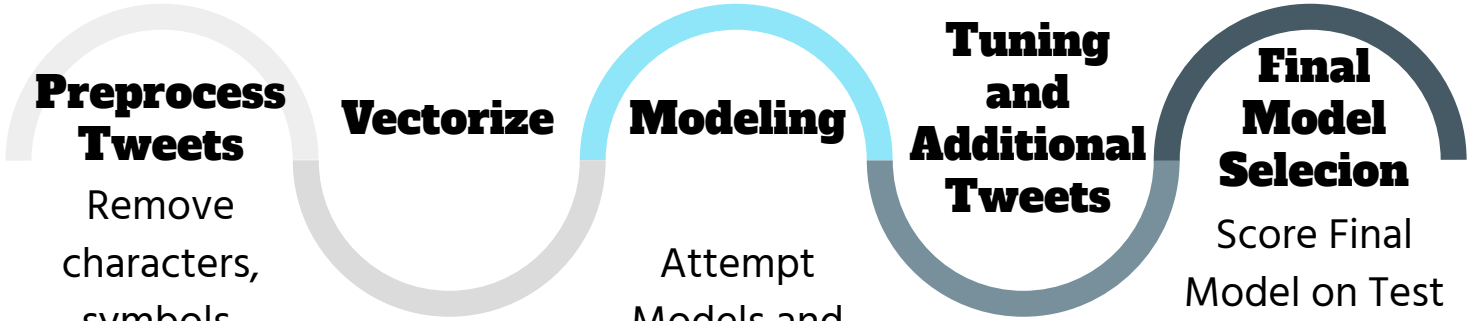
Product Breakdown





02 Project Metrics & Methods

Project Steps



Project Metrics

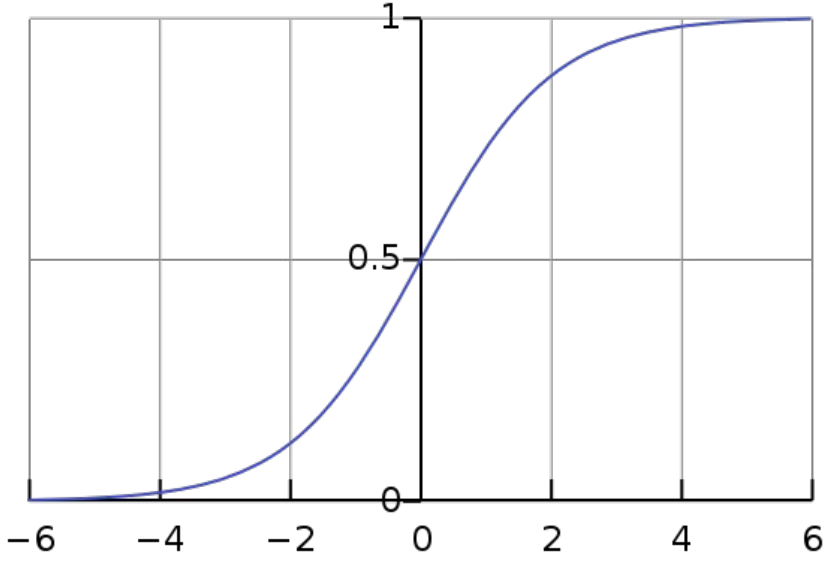
Recall - Casting the Net

- Recall – What percentage of Negative Tweets Were Captured
- Precision – What percentage of the time were the predicted actually Negative.
- Optimized with F-Beta 2 Scorer. Sought a Balance Between Recall and Precision.

FInal Model Selection

Tuned Logistic Regression Model

- Simple Model Nimble Model Using Bag-of-Words Vectors.
- Selected Models Using Cross-Fold-Validation and Grid Search
- Augmented the Training Data with an Additional 1219 Negative Tweets



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Results & Interpretation

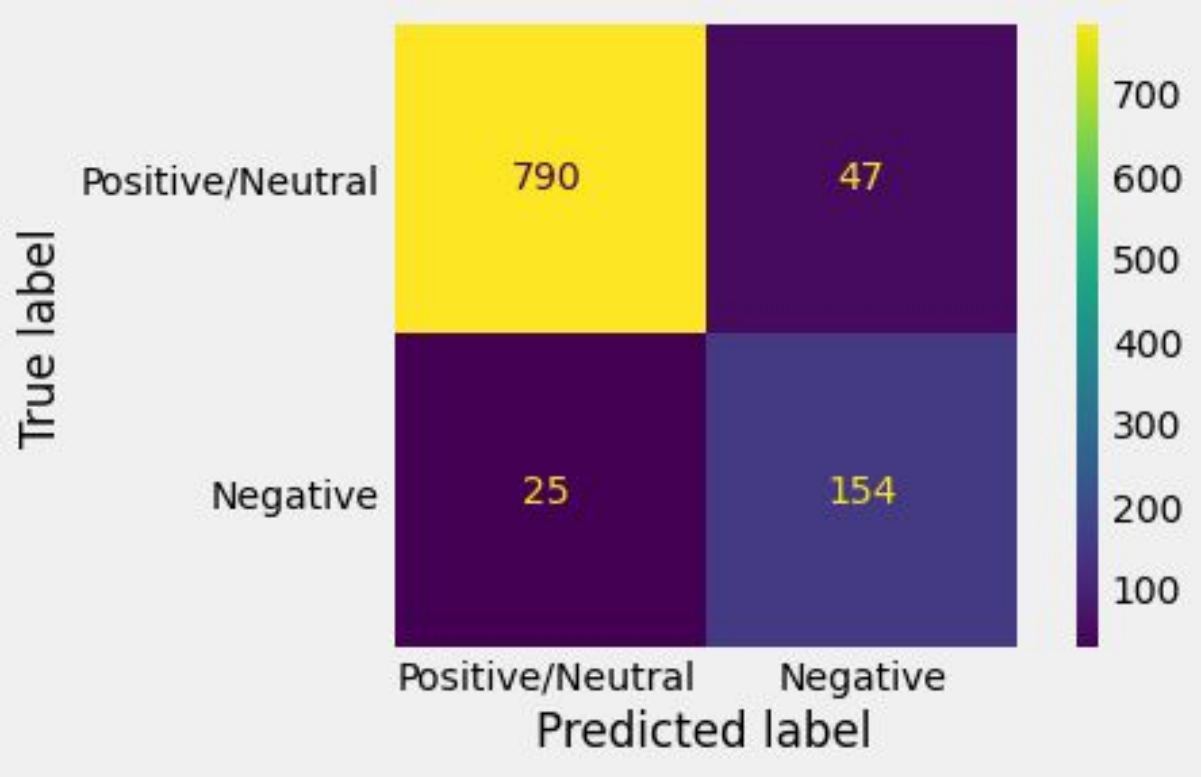
Final Model Results

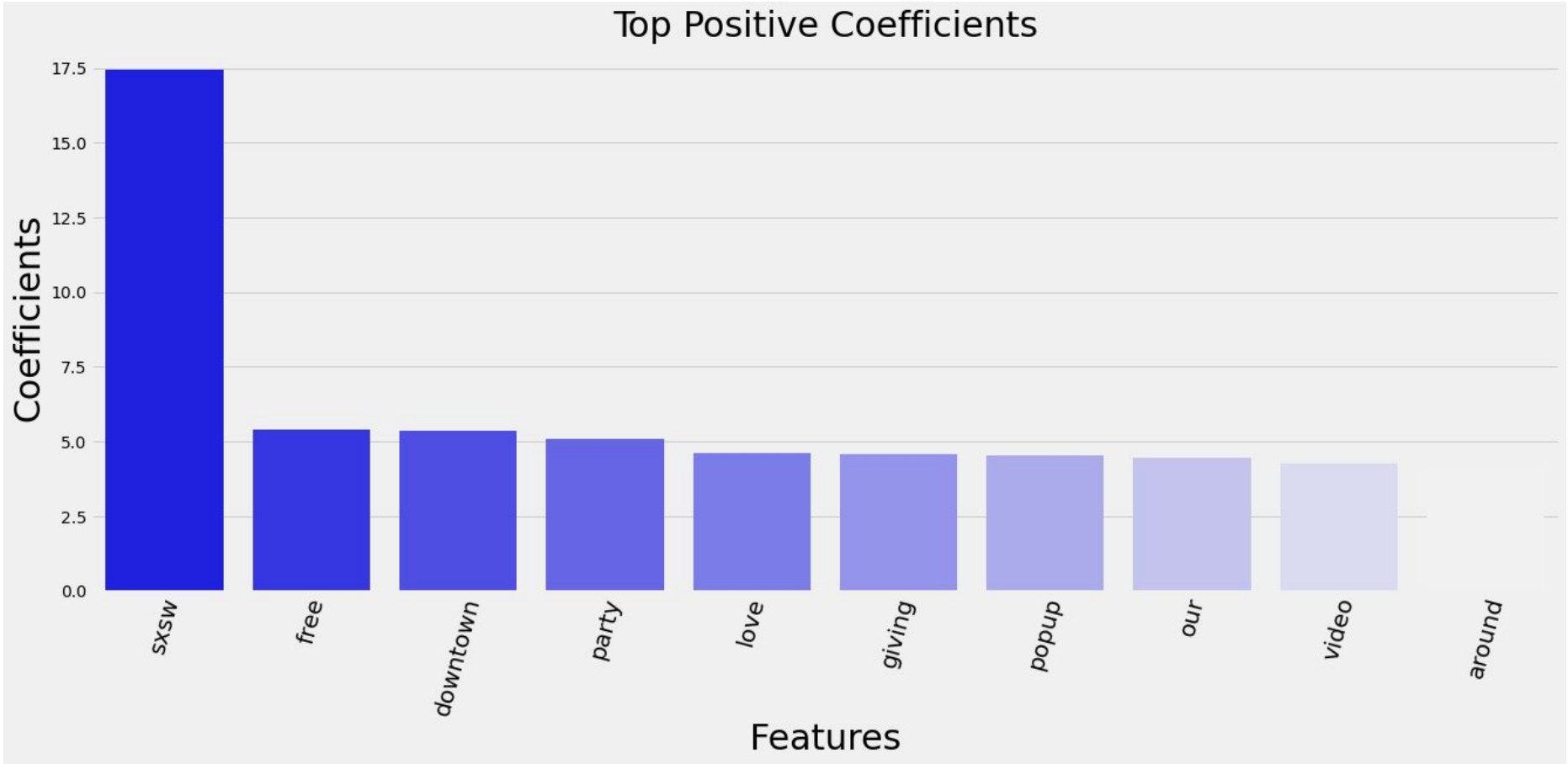
Recall Score - 86%

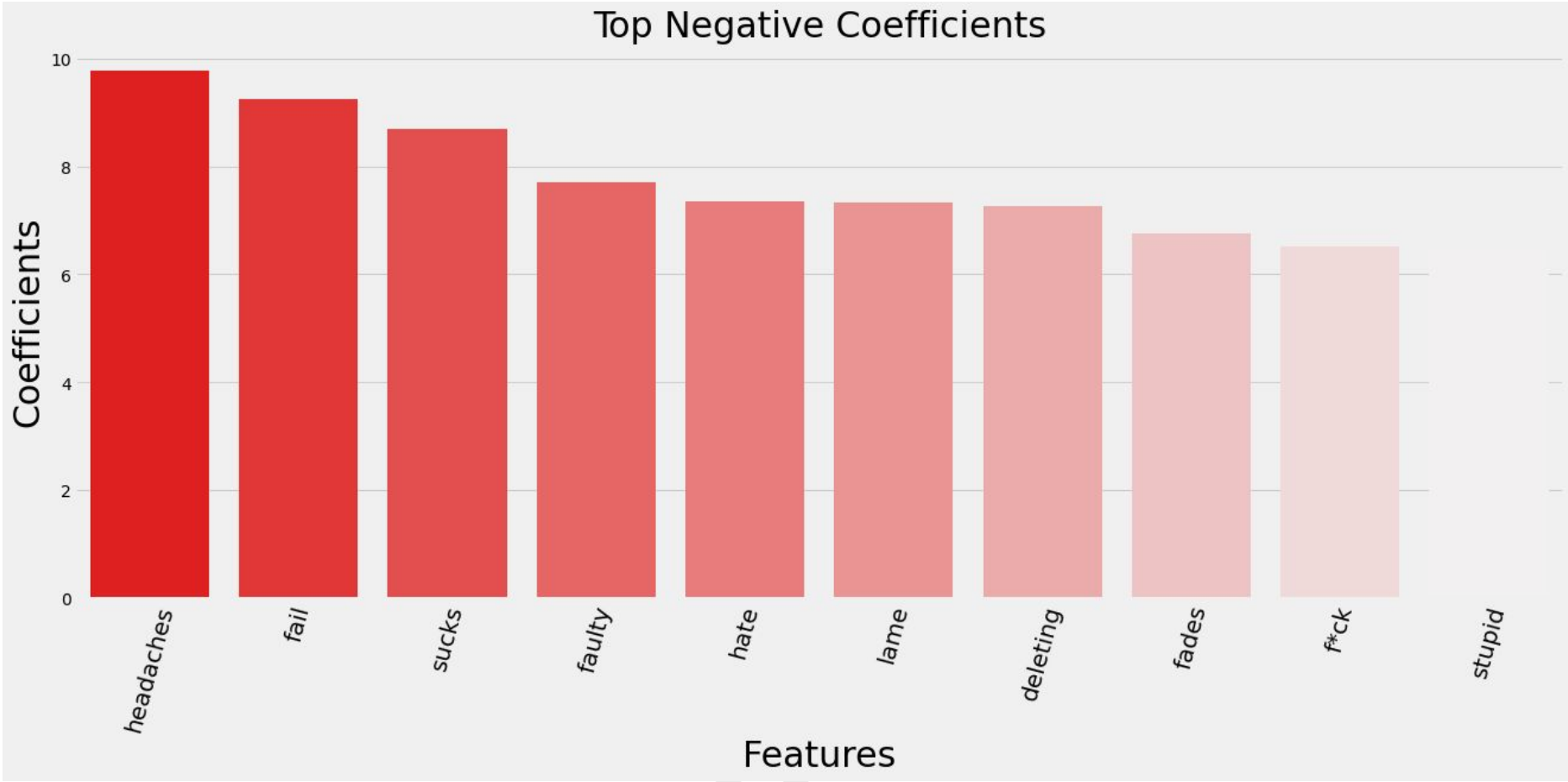
Precision - 77%

F1 Score - 81%

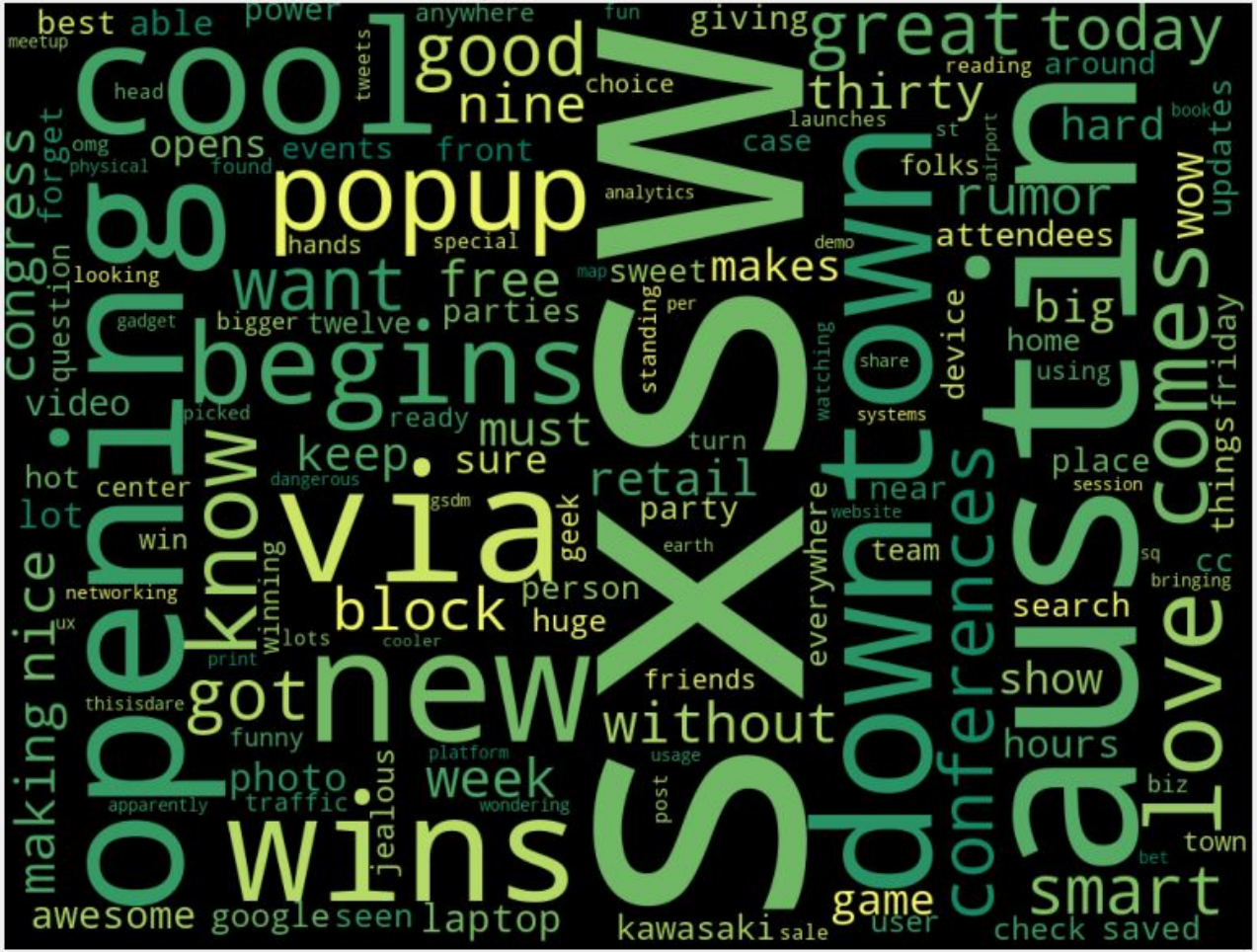
Accuracy - 93%



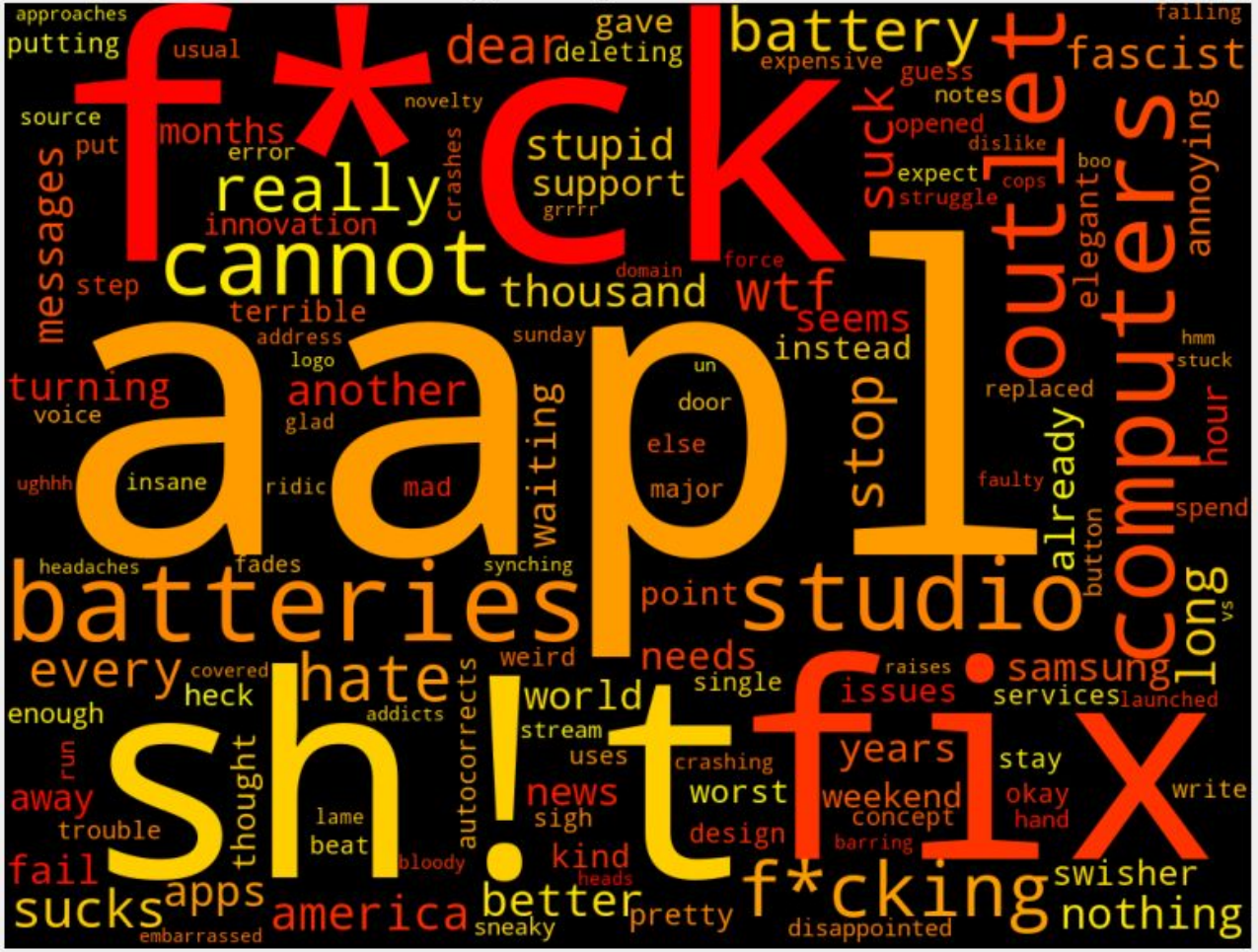

Top Positive Coefficients
Coefficients
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
sxsw
free
downtown
party
love
giving
popup
our
video
around
Features


Top Negative Coefficients
Coefficients
10
8
6
4
2
0
headaches
fail
sucks
faulty
hate
lame
deleting
fades
f*ck
stupid
Features

Apple Positive Words



Apple Negative Words



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Conclusion & Future Work

Conclusions

- Attack the battery issue – major source of complaints.
- Throw some parties – people like free stuff, it can turn the tide of sentiment.
- People want to like brands at SXSW – it's a succes!

Future Work

- Analyze the use of emojis and GIFS in tweets.
- Gather location-based data in real-time to respond to negative and positive feedback on-site.
- Experiment with Sentiment forecasting - could any of these reactions be predicted by Twitter chatter in advance of the event?