Twitter Sentiment Classification

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Overview

- Developing research tools for an online publishing company.

- Classify tweets by their sentiment and generate visuals.

- This will cut down on prep time, identify subject matter that is generating interest, and give writers a tool to quickly write pertinent articles..

Project Objective:

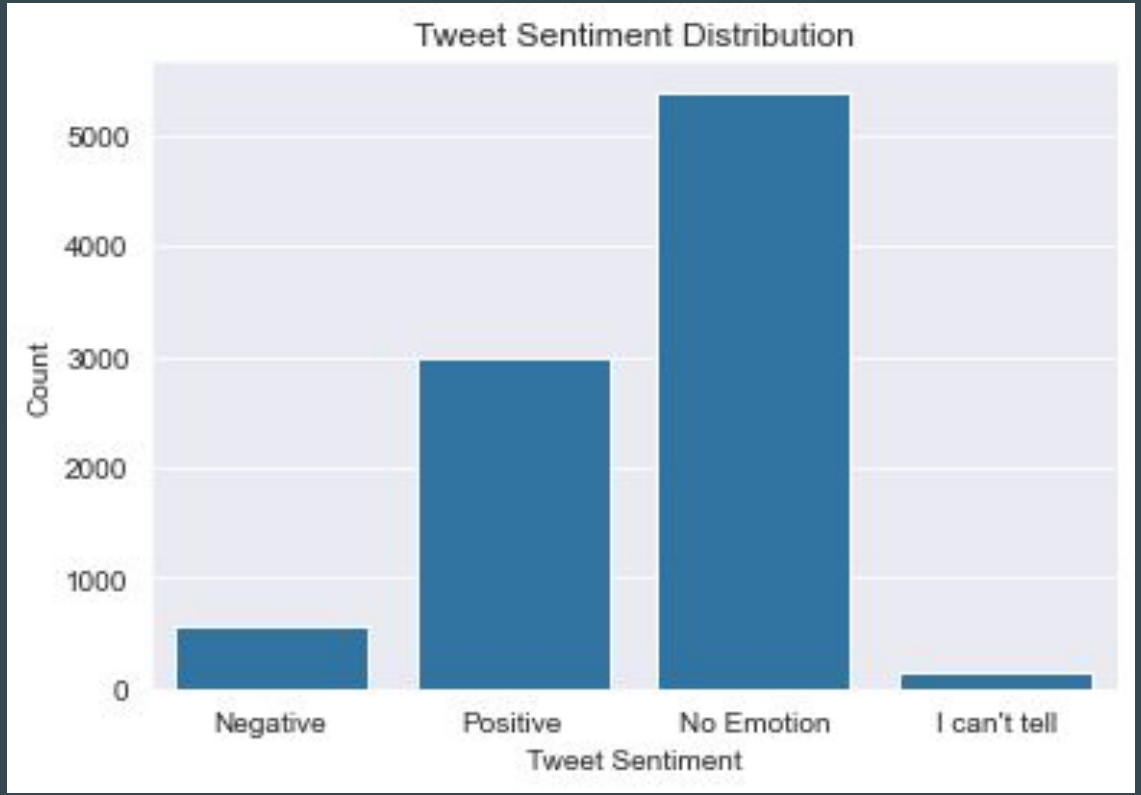
1. Group tweets by sentiment
    a. Positive +
    b. Negative x
    c. Neutral —
2. Develop visuals around common words in each category
    a. Distributions
    b. Word Clouds
    c. Tweets

Deliverables

Sentiment Distributions	Word Clouds/Frequencies	Example Tweets
Focused on overall public opinion on broader topics.	Easily identify high usage words within sentiment groups.	Establish context for high usage words

Examining Data

The dataset we are using today consists of 9,000 tweets collected by CrowdFlower. These tweets are related to the 2012 South by Southwest (SXSW) conference and are predominantly directed toward Google and Apple events and products.


Tweet Sentiment Distribution
Count
5000
4000
3000
2000
1000
0
Negative
Positive
No Emotion
I can't tell
Tweet Sentiment

Processing The Data

Cleaning:

- Removing punctuation
- Standardizing case
- Dropping irrelevant tweets

Processing

- Removing stopwords
- Stemming/Lemmatizing
- Vectorizing

Modeling

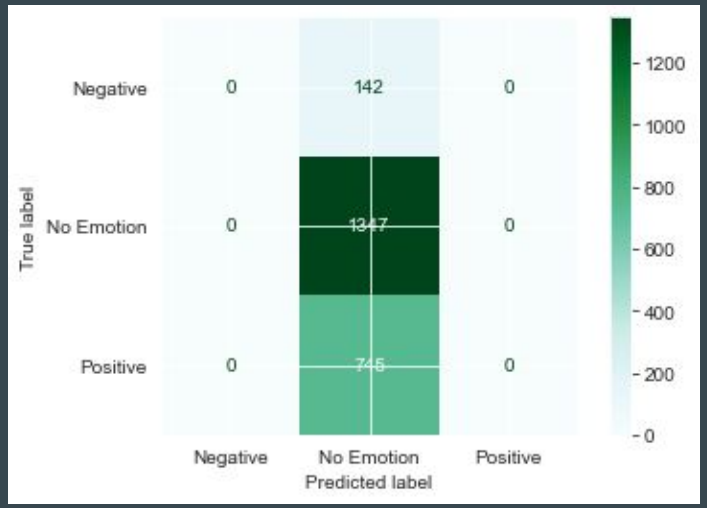
Strengths

- Majority class performance (89% classified)
- Overall accuracy (60%)
- Shows potential for ‘positive’ category. (19% classified)

Weaknesses

- Minority class performance (2% classified.
- False positives/negatives (F1 Scores)
- Would result in poor visuals

Baseline Confusion Matrix

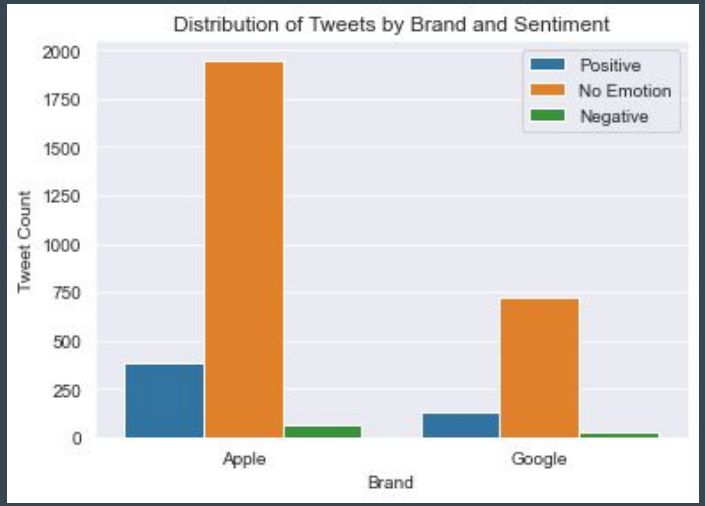


- 60% Overall accuracy is misleading.
- Model predicted “No Emotion” 100% of the time.
- No examples for visuals.

Final Confusion Matrix

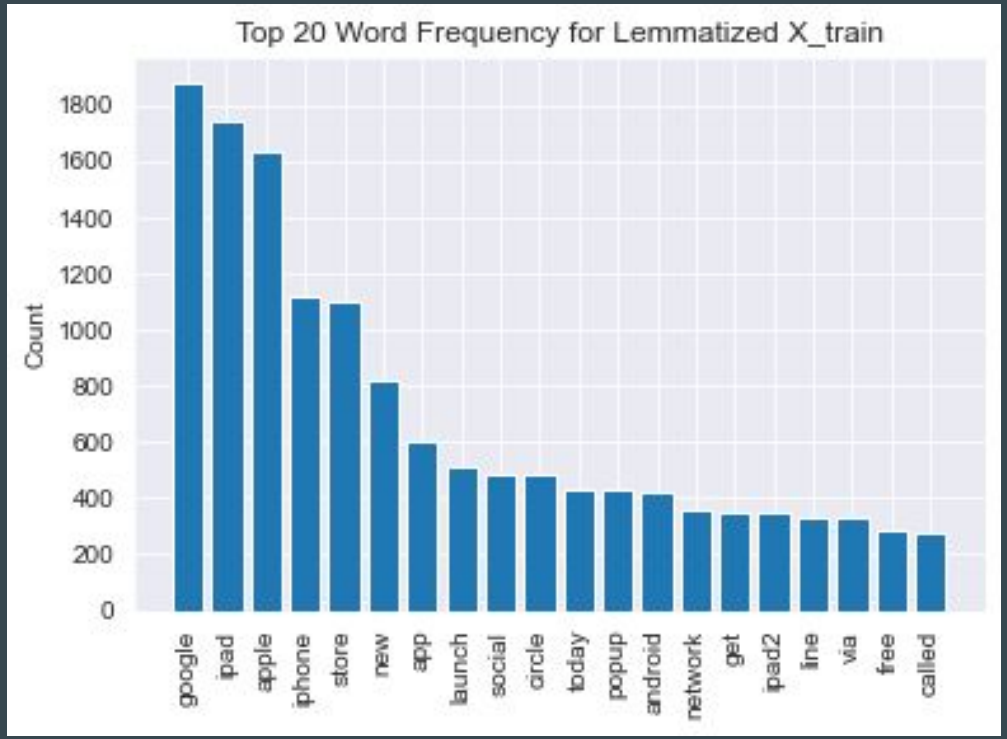
- Improved minority class performance.
- 90 examples of positives.
- Still few negative examples

Visuals/Results: Sentiment Distributions



- More total tweets regarding Apple
- Similar distributions
- Majority “No Emotion”

Top 20 Word Frequency



Apple: Positive

Store: Apple set up a popup store to sell the new iPad 2

Apple: Negative

Design: The overall design quality of the iPad 2 is getting mixed reviews.

Google: Positive

Marissa: Marissa Mayer's talk at this year's conference was very well received and was quoted heavily on Twitter.

Google: Negative

Circles: Google was set to launch a new social platform, however the launch never occurred.

Recommendations

Use of Deliverables:

Order of use:

1. Sentiment Distribution
2. Word Frequency
3. Word Clouds
4. Tweets

Potential Articles:

- iPad breakdown/review
- Failed launch of Circles
- Festival overview

Next Steps

More Minority Data

The real weakness of this model is poor performance on minority classes. A possible solution is to find more examples to balance out distribution.

Other Subjects

The model also should be applied to other subject matter to test usefulness in other realms.

Recent Data

The tweets in this set are 10 years old. More recent examples should be obtained to see how our model reacts to modern day tweets.

Thank You!

Please feel free to ask any questions.

You may also reach me via email:

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