Deciphering the Public Opinion on Apple - SXSW Conference

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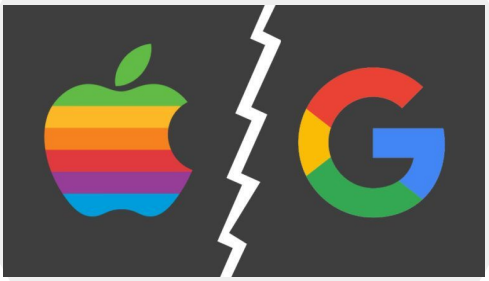
Hi, welcome to our presentation. Today we will be discussing two main topics: the first will be an analysis of the public opinion on Apple for the SXSW Conference, and the second section will be outlining some machine learning models we developed for Apple to use for future analyses.

Why does public opinion matter?

To start off, why does public opinion matter? In the world we live in today, social media affects not only our personal lives but the day-to-day operations of businesses as well. People are sharing their thoughts on various products that they use daily on these platforms. With the world being more connected than ever, it is crucial for businesses to be able to read the public opinion about their products and brand, and adapt to changing trends as quickly as possible or even stay ahead of them. Staying connected and being in-the-know not only allows businesses to stay relevant but also provides them with opportunities to achieve and maintain financial success.

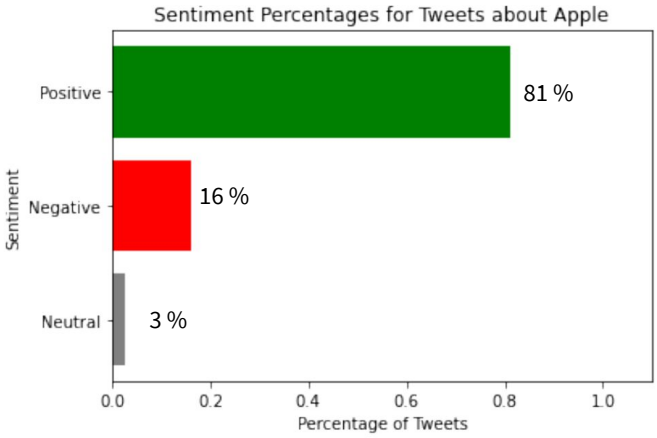
Objectives & Data Analysis

- **Objective:** Provide 5 recommendations for Apple to act on based on tweets about both Apple and the competition, Google
- **Goal:** Maintain and increase competitiveness by listening to users
- Sample size of 9,092 tweets
- Data from SXSW Conference 2011
- **Deliverable:** Machine learning models for future analyses



Our objective with this analysis was to provide 5 recommendations for Apple to act on based on the public opinion of the company and its products at the SXSW Conference. As discussed, staying on top of public opinion and listening to the feedback that the competition is getting can present unique opportunities to maintain and even increase a company's competitive advantage. For this analysis, we looked at a sample of approximately 9000 tweets about the SXSW Conference in 2011. Additionally, we developed machine learning models for Apple to utilize for future analyses.

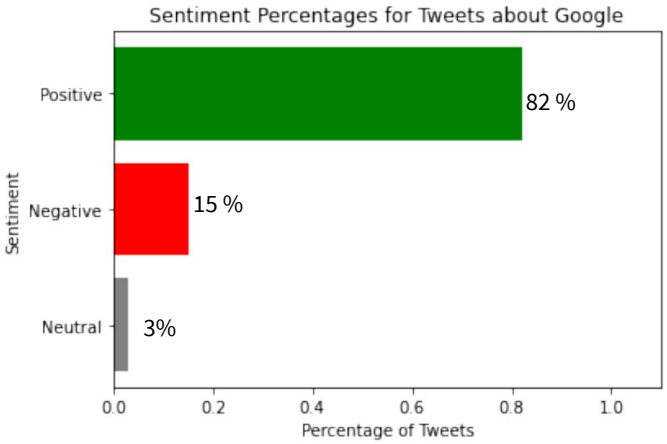
Percentage of Tweets by Sentiment - Apple



- The view of everything Apple-related during SXSW was mostly positive.

In the big picture, out of all the tweets that were about Apple, 81% of tweets were positive, 16% were negative and 3% were neutral.

Percentage of Tweets by Sentiment - Google



- The sentiment towards Google and its products and services was also positive during the event.

Looking at the competition, around 82% of the tweets about Google were also positive followed by 15% of them being negative and 3% being neutral.

What about specific products and services?

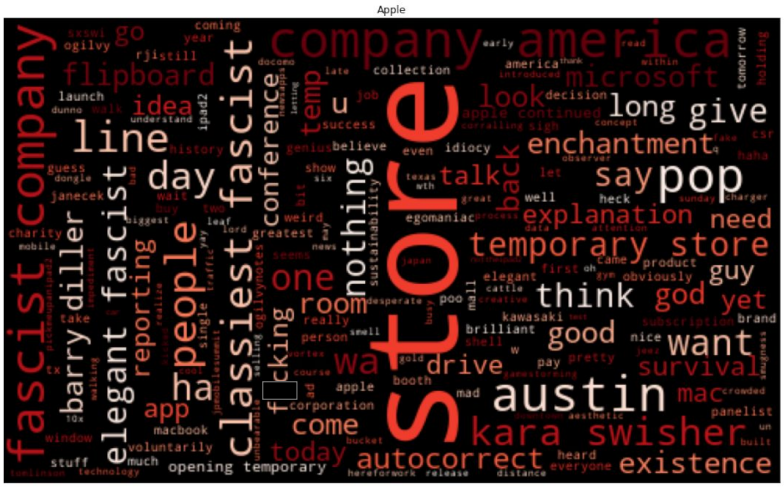
Looking at these graphs are helpful on a big picture level, but what about specific products and services? We generated wordclouds based on the brand and its products for different sentiments to provide an answer to this question. There will be a lot of information in these wordclouds and I'll be sharing a few takeaways from each.

Apple

Apple - Positives

Looking at the company level, once again we see that the opening of the temporary pop-up store in downtown Austin generated a lot of excitement for Apple's brand and many people think that Apple has "cool technology".

Apple - Negatives



On the negative side, the words “fascist company” are mentioned frequently along with Kara Swisher. This may be something that Apple may want to look into to see what the claims are and whether a marketing or PR campaign is warranted.

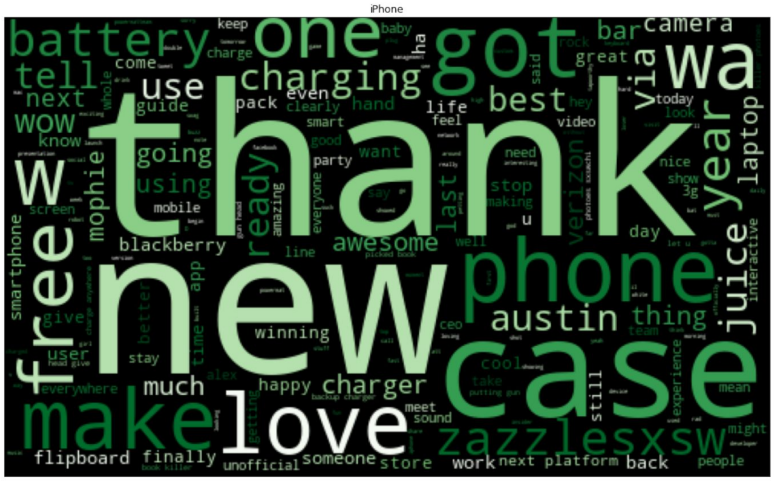
iPad - Positives

One of the most frequently talked about products was the iPad 2 which was launched during SXSW and sold in the temporary pop-up store that Apple opened in downtown Austin. Based on the tweets, Apple's launch of this product definitely generated a lot of buzz.

iPad - Negatives

On the negative side, some users seem to think that the design of the new iPad may not be up-to-par since it was referred to as a "design headache." Additionally, we are seeing words like “camera” and “photo” which may indicate other issues with iPad’s design.

iPhone - Positives



The iPhone is very well liked by the public based on words such as “thank” and “love” occurring frequently.

iPhone - Negatives

However, a lot of users are expressing concern about the iPhone's battery. Additionally, the word "blackberry" is also mentioned frequently which may indicate that some users prefer blackberrys instead of the iPhones.

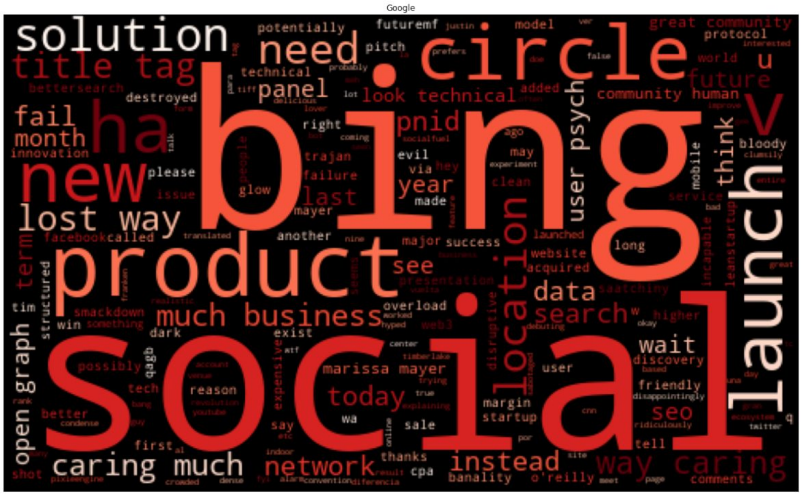
Google

Now we will be looking at the competition, Google’s tweets.

Google - Positives

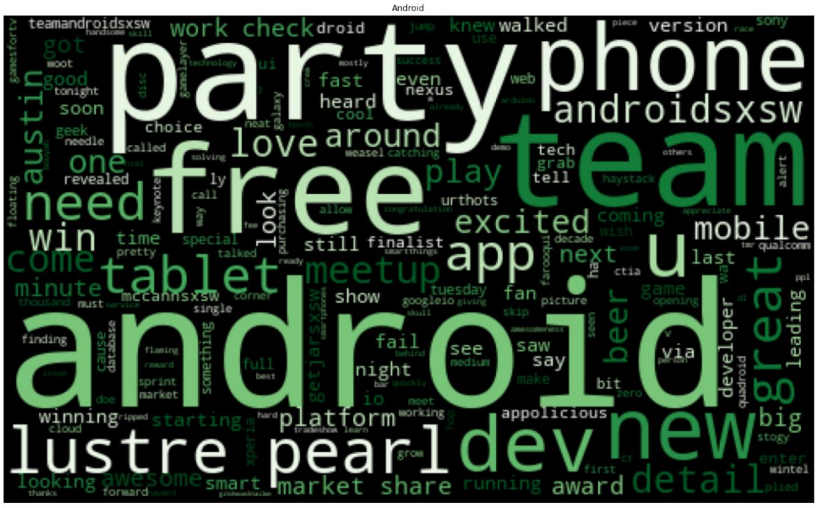
On a company level, a few things stand out. The party that Google threw seems to have generated a lot of buzz. Apple may want to look into what this party was like and consider planning something similar for the future SXSW conferences. Additionally, Google's new social network project Circle and Marissa Mayer's speech about Google Maps has been received positively by users.

Google - Negatives



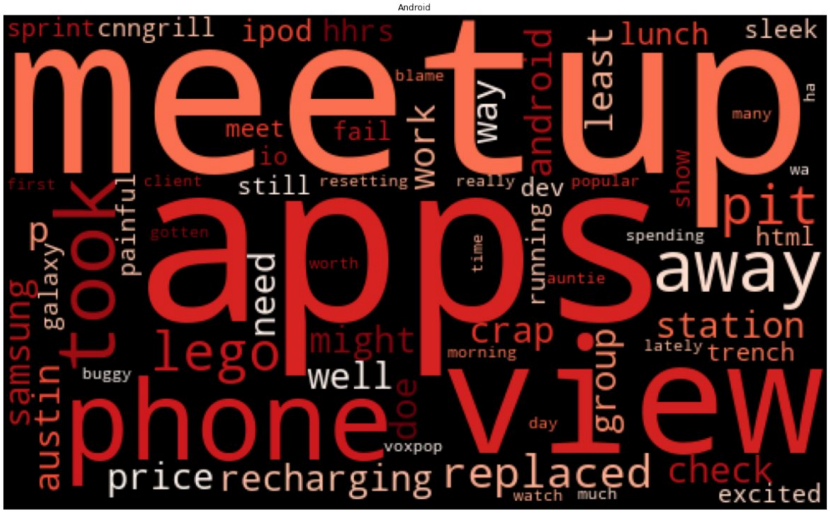
For negatives, some users seem to think that Google entering the social network space is not a good idea with words like social network and circle popping up once again.

Android - Positives



For Android, once again the party in the restaurant “lustre pearl” is showing up. Additionally, based on words like “new” and “excited” people seem to be excited for the new version of Android.

Android - Negatives



On the negative side for Android, based on words like “apps”, “painful”, “replaced” and “buggy”, a lot of users seem to be having issues with Android OS and its apps. This may be an opportunity for Apple which we will discuss in more detail shortly.

Recommendations

Products:

- R&D on iPhone's battery performance
- User survey for iPad's design
- Issues with Android apps + making sure iOS has none of these issues = opportunity

Conferences:

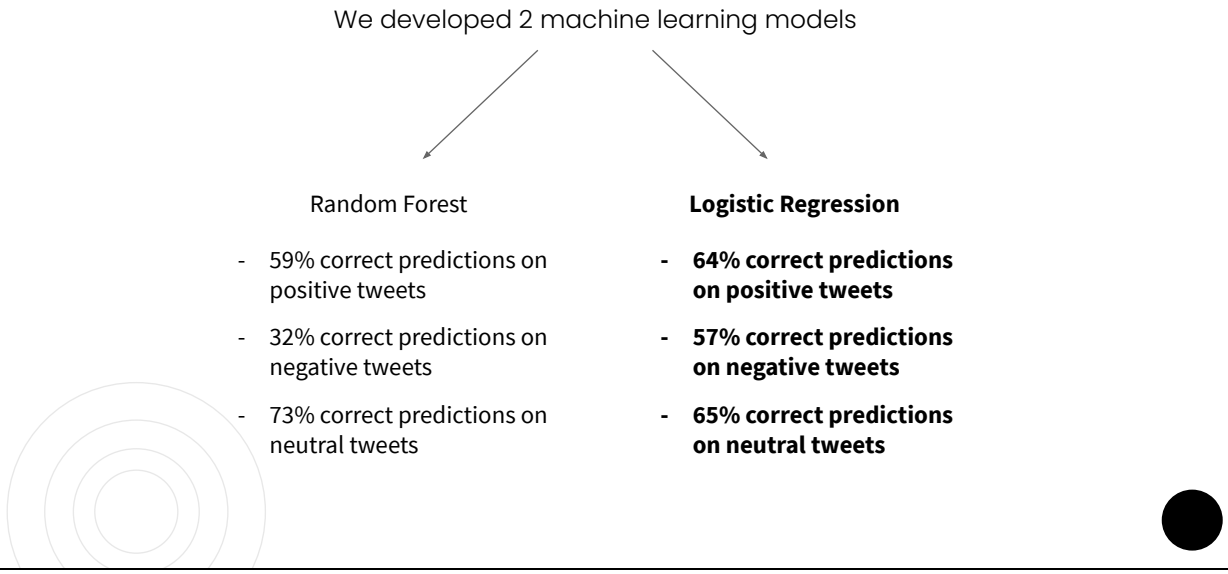
- The marketing strategy for the pop-up stores can be employed in conjunction with other conferences or major events.
- It may be effective to throw a party during the next SXSW Conference to generate excitement.

So in light of these few insights, here are our recommendations. On a product level Apple should look into iPhone's battery performance and evaluate whether investing in R&D for this product is necessary.
Additionally, conducting a user survey for the new iPad's design to pinpoint what is not liked about it may be fruitful.
Also, if Apple can make sure that iOS has none of the issues that Android users seem to be having, this may be an opportunity to market iOS to Android users and have them switch over.
On a conference level, we think that the marketing strategy of opening up a temporary pop-up store for the conference has worked beautifully in generating excitement and it can be utilized for future conferences or major events.
It also may be productive to plan a party during the future SXSW conferences based on the responses to Google's party.

Tools for further analysis

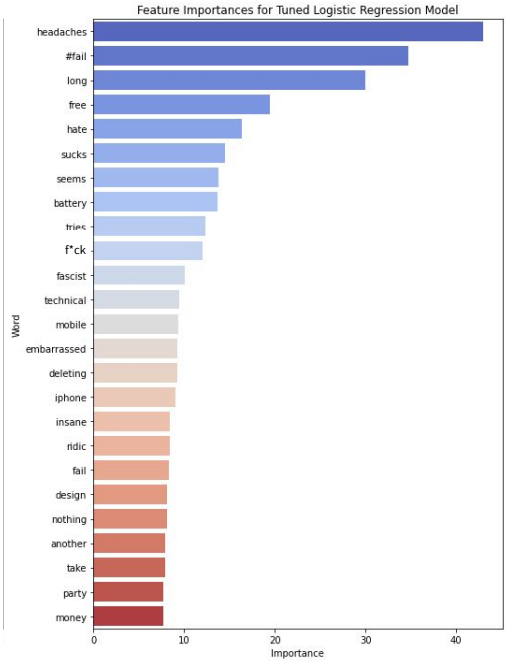
Pivoting into the second part of our presentation, we think that by using machine learning models, Apple can automate the classification of tweets or social media content in general so that similar analyses can be conducted on an ongoing basis to monitor public opinion.

Machine Learning - Multiclass Classification



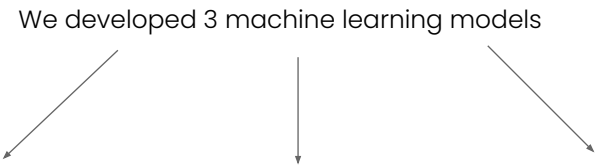
For this purpose, we trained machine learning models that can classify tweets as “positive”, “negative” or “neutral”.. We started off by developing a multiclass classification model. The best model we had was the Logistic Regression model with 64% correct predictions on positive tweets, 57% correct predictions on negative tweets and 65% correct predictions on neutral tweets.

What were some of the most important words in tweets according to our **multiclass** classification model?



Here, we can see the top 25 words with highest importance levels within the tweets in this dataset according to our model. We can see that there are words such as “headaches”, “battery”, “fail” appearing.

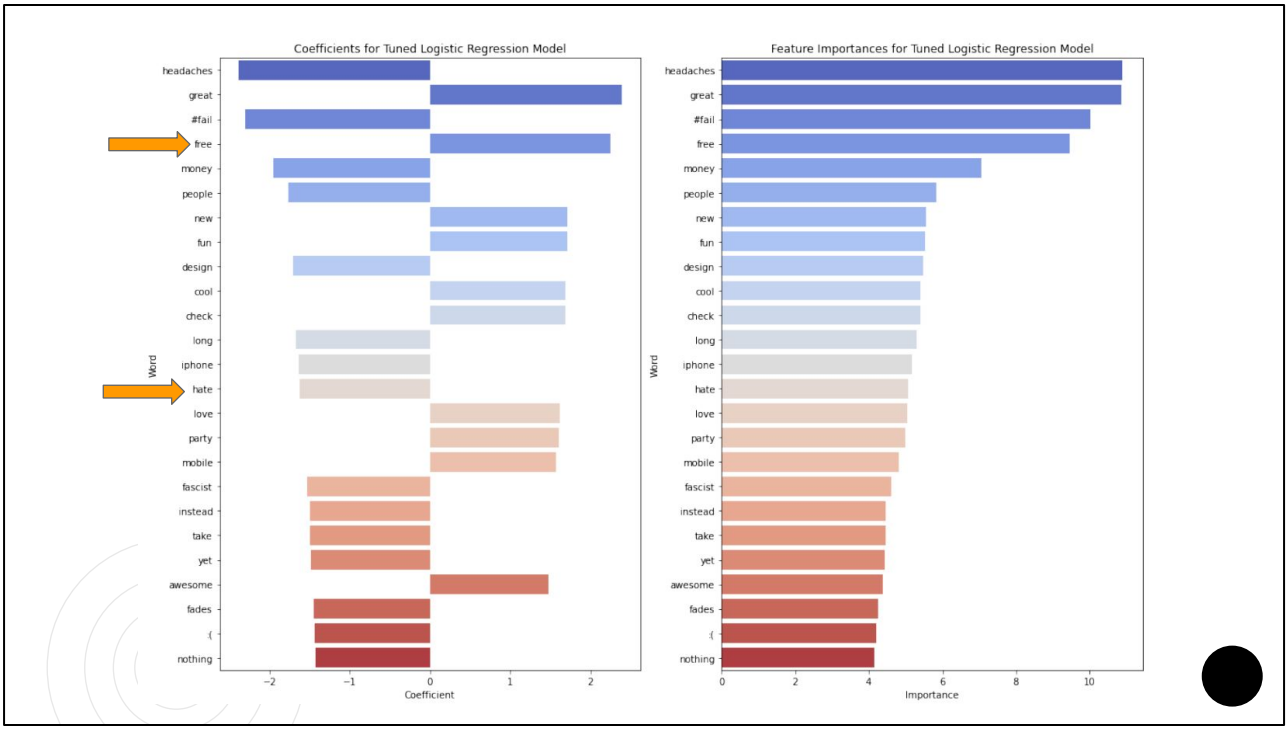
Machine Learning - Binary Classification



Multinomial Naive Bayes	**Logistic Regression**	Random Forest
- 86% correct predictions on positive tweets	- **89% correct predictions on positive tweets**	- 81% correct predictions on positive tweets
- 71% correct predictions on negative tweets	- **68% correct predictions on negative tweets**	- 63% correct predictions on negative tweets

We then wanted to simplify the classification problem to a binary problem where our models were trying to classify tweets as either “positive” or “negative”. Out of the three models that we trained for the binary classification problem, the logistic regression model performed the best with 89% correct predictions on positive tweets and 68% correct predictions on negative tweets. The performance of this model was 16% higher compared to the multiclass model model since this was a simpler task .

What were some of the most important words in tweets according to our **binary** classification model?



On the right here, we can once again see the importance levels that our model assigned to specific words within tweets in this dataset. As shown, the word list is a little different compared to the multiclass model's. On the left, we are seeing how each of these words are affecting the model's prediction where each word is pushing the prediction in another direction. *click* For example the word "hate" not surprisingly was pushing the prediction in the negative direction while the word "free" *click* was pushing it in the positive direction. We think that Apple can utilize these lists of words in their future analyses by keeping an eye out for them.

Conclusions

- Public opinion is a useful tool that organizations can utilize to evaluate and monitor views of their brand, products, and services
- Apple can leverage these machine learning models to monitor the general sentiment of their events and products via social media platforms
- This tool also allows Apple to stay on top of what people are saying about their competitors
    - May give Apple key insights into where they should focus their resources to maintain their competitiveness in the market

Thank you!

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