



NLP Model for Analysis of Twitter Sentiments on Google and Apple Products

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Introduction

- With the increasing use of Tweets, companies constantly need to find ways to analyze texts to improve product/service delivery
- Reading *Texts* can be overwhelming, **BUT** each *Word* has a meaning, there is a need for automation
- Tweets can convey useful user-emotions and/or experience
- This project explores the effectiveness of using such models, *Thanks to Data Science...*



Business Understanding

- **Overview**

The project is on building a natural language processing (NLP) model that will rate the sentiments of a Tweet based on its content

- **Business Problem**

The company needs to develop a model that will assist in judging people's emotions about brands and products using Tweets on Apple and Google products



Intro cont..

- **Business Aim**

To build a model that predicts customer's emotions on brands and products using their sentiments

- **Business Objectives**

- 1.To find out if a Tweet can demonstrate a sentiment on Apple and Google products
- 2.To identify the products with the most positive and negative sentiments
- 3.To establish the best classification model for analyzing sentiments on Twitter texts(automatically)



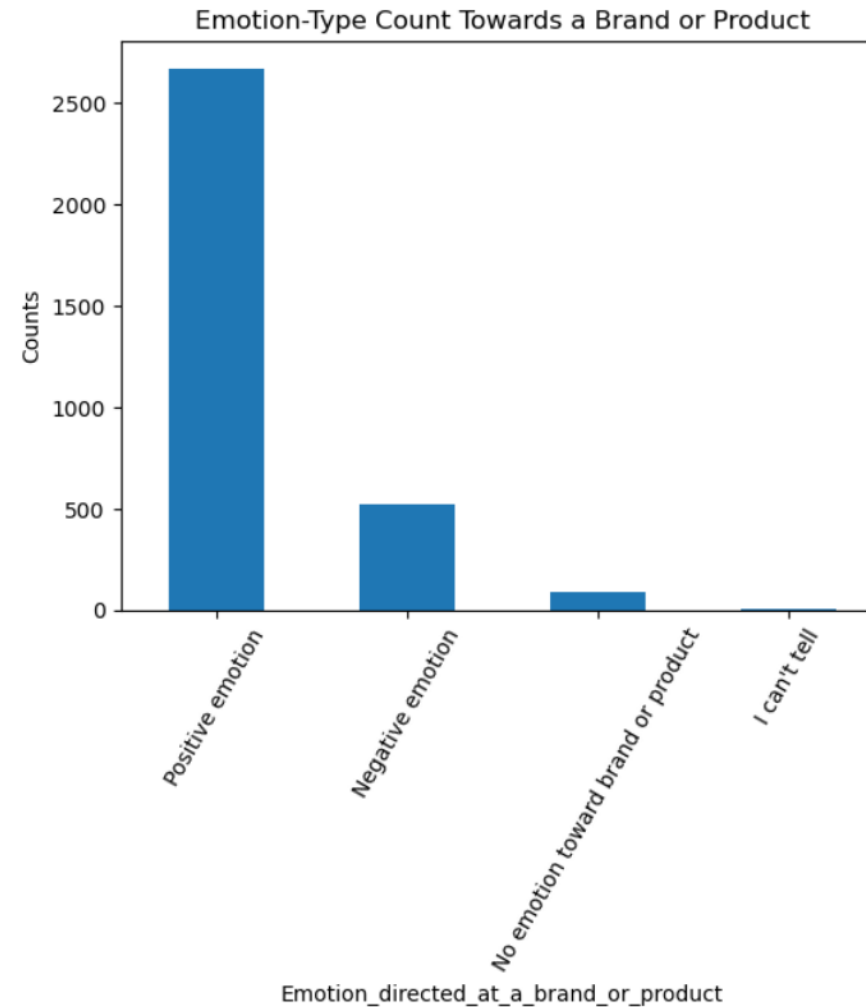


Data on Different Emotions on Tweets

Highest counts on 'Positive emotion' group on both Google and Apple products

Positive and Negative emotions constitute majority of tweets

'I can't tell' category had the lowest count



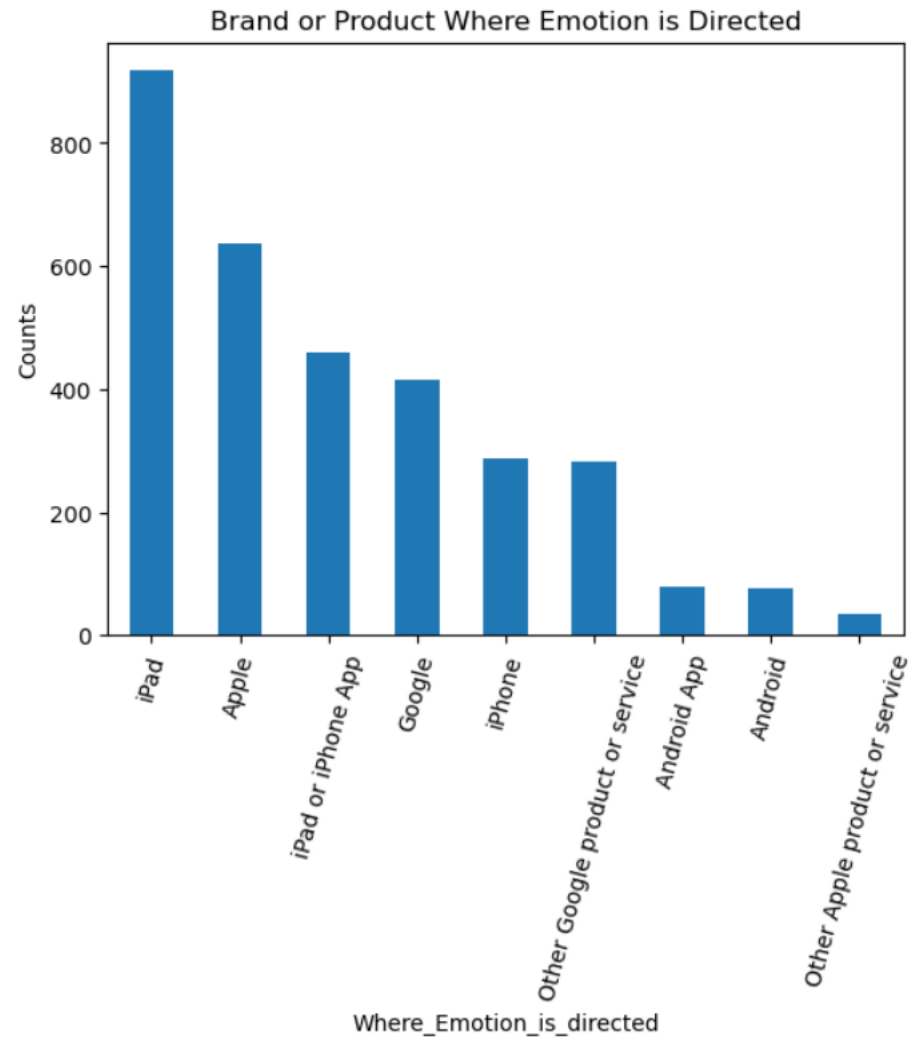


Data on Brands/Product Tweet is Directed

Apple and its related products
received the highest
emotional reaction on Tweets

‘iPad’ had the most common

‘Other Apple product or
service’ was the least
common

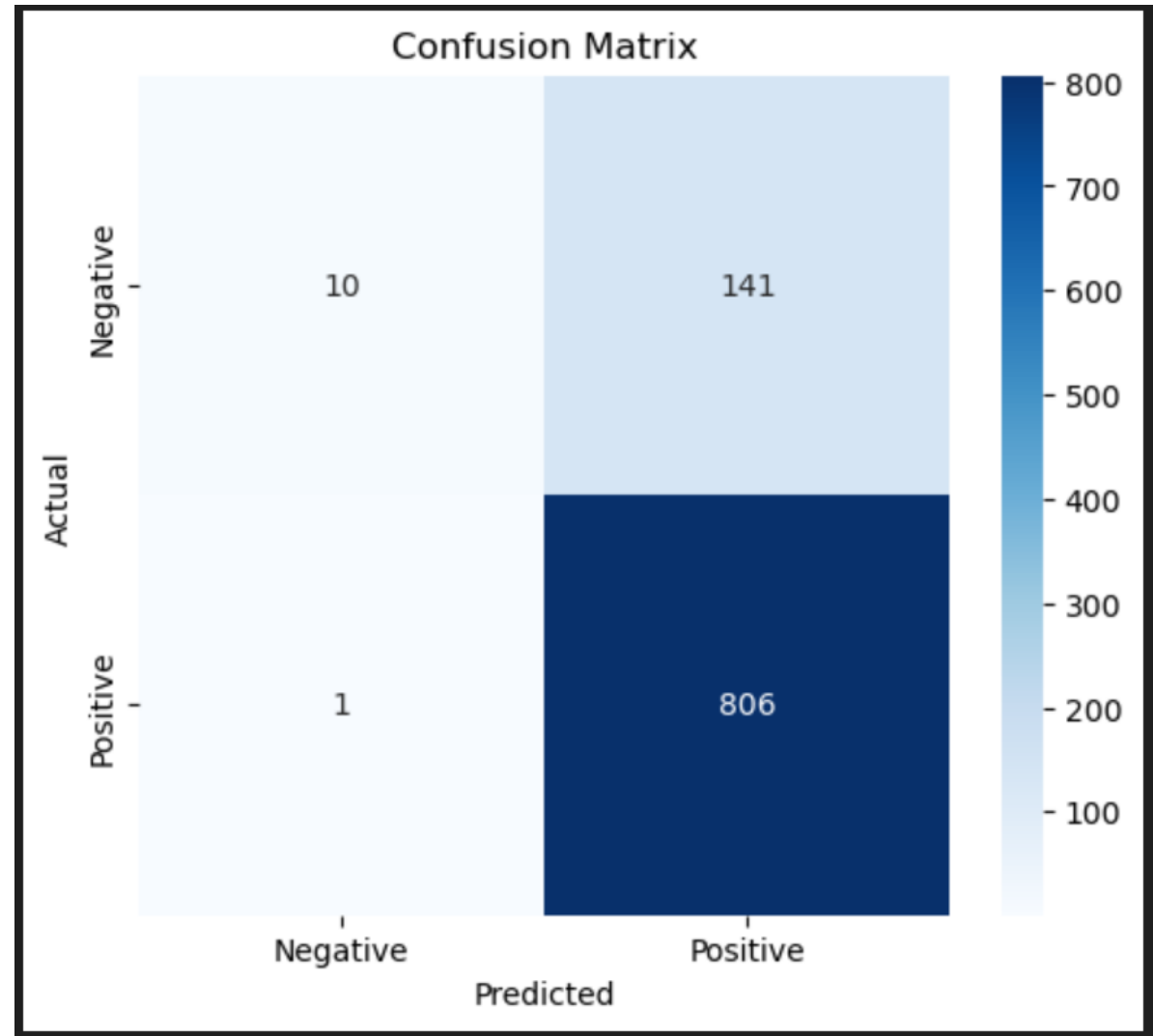


Unprocessed vs. Preprocessed Tweet-Text

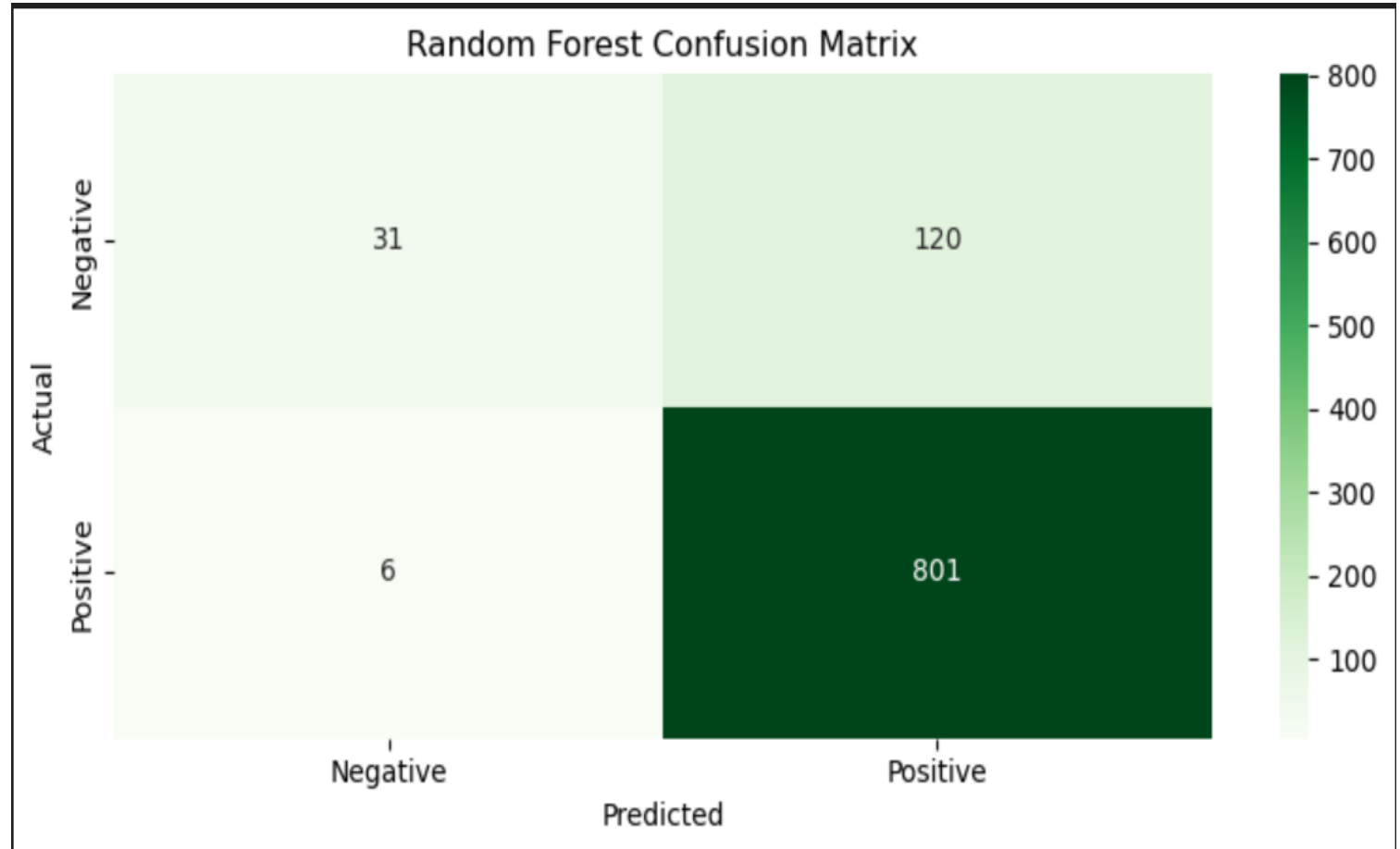
	tweet_text	preprocessed_text
0	.@wesley83 I have a 3G iPhone. After 3 hrs twe...	iphon hr tweet riseaustin dead need upgrad plu...
1	@jessedee Know about @fludapp ? Awesome iPad/i...	know awesom ipadiphon app youll like appreci d...
2	@swonderlin Can not wait for #iPad 2 also. The...	wait ipad also sale sxsw
3	@sxsw I hope this year's festival isn't as cra...	hope year festiv isnt crashi year iphon app sxsw
4	@sxtxstate great stuff on Fri #SXSW: Marissa M...	great stuff fri sxsw marissa mayer googl tim o...
...
9077	@mention your PR guy just convinced me to swit...	guy convinc switch back iphon great sxsw cover...
9079	"papyrus...sort of like the ipad" - ...	quotpapyrussort like ipadquot nice lol sxsw lavel
9080	Diller says Google TV "might be run over ...	diller say googl quotmight run playstat xbox e...
9085	I've always used Camera+ for my iPhone b/c it ...	ive alway use camera iphon imag stabil mode su...
9088	Ipad everywhere. #SXSW {link}	ipad everywher sxsw link

Confusion Matrix

The logistic regression model did perform so well on predicting unseen data with a baseline accuracy level of 0.8517...



Confusion Matrix
The Random Forest
Model had a higher
baseline accuracy score
of 0.865...



Validation of the RF Model

	Tweet	Actual_Sentiment	Predicted_Sentiment
2760	dear appl could roll hot dog cart full ipad au...	Positive emotion	Positive emotion
2697	tim get one appl employe show forc sxsw popup ...	Positive emotion	Positive emotion
2126	sxsw quotappl come cool technolog one ever hea...	Positive emotion	Positive emotion
1093	appl smart open popup store austin sxsw crowd	Positive emotion	Positive emotion
2956	woot rumor appl open temporari store downtown ...	Positive emotion	Positive emotion
1715	sxsw gadget lust rub think want ipad must esca...	Positive emotion	Positive emotion
1712	sxsw check holler gram ipad app link ti cover ...	Positive emotion	Positive emotion
6308	love sxsw quotappl come cool technolog one eve...	Positive emotion	Positive emotion
296	temporari appl store sxsw realli coola ipad ap...	Positive emotion	Positive emotion
4878	went appl store kingston friend sxsw new ipad ...	Positive emotion	Positive emotion

Insights

- **Random Forest is the best classification model for Positive and Negative emotions due to its high baseline accuracy scores**
 - This implies that the actual versus predicted emotions in the tweets will be subject to higher accuracy in classification
- **Actual and Predicted labels demonstrate alignment;**
 - This implies that there will be no confusion in the interpretation of the emotions
- **The balanced color mapping highlights clear distinctions between positive and negative emotions**
 - This depiction is useful in determining areas to be improved in the model but for this case, it performs well



Conclusion

- A single Tweet from Apple or Google can be use in predicting the emotions towards the product or brand.
- Classification models have high accuracy in predicting the emotions from a tweet text
- Possible errors in the LogisticRegression Model can be reduced further by implementing the RandomForest Model
- Tweet_texts are useful in identifying a problem with a product or brand from either Google or Apple, this informs on areas for improvement.





-- THANK YOU --

