

Twitter Sentiment Analysis of Super Bowl 2023 Using the Roberta Model



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Introduction

Super Bowl is an annual championship game of the National Football League (NFL) in the United States, which is considered one of the biggest sporting events in the world. In this project, we aim to perform sentiment analysis on tweets related to Super Bowl 2023 using the Roberta model, a state-of-the-art language model for natural language processing. The analysis will help us understand how people feel about the recent Super Bowl on Twitter and what aspects are most commonly praised or criticized.

Data Analysis Process

1 | Data Collection

2 | Data -
Preprocessing

3 | Performing
Sentiment Analysis

4 | Analyze Result

5 | Visualization

6 | Insights and
Recommendations

Data Collection

- Used “Super Bowl” keyword to search for related Tweets.
- We only considered the tweets for February 12, 2023.

Technologies Used:

- Python as Programming Language
- Visual Studio Code
- Pandas, SNS Scrape and Datetime as Python Library

DATA SCRAPING

```
import pandas as pd
import sncrape.modules.twitter as sntwitter
from datetime import datetime, timedelta

# Define the search term and date range
search_term = "Super Bowl"
since_date = datetime(2023, 2, 12)
until_date = since_date + timedelta(days=1)

# Create a list to store the tweets and their links
tweets_data = []

# Use TwitterSearchScraper to scrape tweets containing the search term
scraper = sntwitter.TwitterSearchScraper(f"{search_term} since:{since_date.strftime('%Y-%m-%d')} until:{until_date.strftime('%Y-%m-%d')}")

# Iterate over the tweets and extract the data from each tweet
for tweet in scraper.get_items():
    # Extract the data from the tweet
    tweet_data = [tweet.date, tweet.rawContent, tweet.likeCount, tweet.url]
    print(tweet_data)
    # Append the tweet data to the list
    tweets_data.append(tweet_data)

# Create a pandas DataFrame from the list of tweet data
df = pd.DataFrame(tweets_data, columns=["Date", "Tweet", "Likes", "Link"])

# Save the DataFrame to a CSV file
df.to_csv("1. scraped_data.csv", index=False)
```



AFTER 5 HOURS . . .

	A	B	C	D	E	F	G	H	I	J
1	Date	Tweet	Likes	Link						
2	2023-02-12 23:59:59+00:00	Para mi la final del #SuperBowl arranca 21:45 cuando cante Rihanna y termina a la		0 https://twitter.com/matiaslarra/status/1624921290879512579						
3	2023-02-12 23:59:59+00:00	Are we going to have a shoot out for the Super Bowl???? #chiefsvs eagles #SuperE		0 https://twitter.com/diaryofabbw21/status/1624921290682388481						
4	2023-02-12 23:59:59+00:00	Pacheco baby!!!! #SuperBowl		0 https://twitter.com/claudiojovale1/status/1624921290522996736						
5	2023-02-12 23:59:59+00:00	Anyone gonna play defense in this Super Bowl?		0 https://twitter.com/jakeisapersonik/status/1624921290372001792						
6	2023-02-12 23:59:59+00:00	Super Bowl Sunday https://t.co/4cULsaEBSe		7 https://twitter.com/idahopetch/status/1624921290170859521						
7	2023-02-12 23:59:59+00:00	I just earned the 'Stadium Beers (2023)' badge on @untappd! https://t.co/j6BfDRt		0 https://twitter.com/mildandlazyguy/status/1624921290053152772						
8	2023-02-12 23:59:59+00:00	I got PHI winning the #SuperBowl #EaglesvsChiefs #Eagles		0 https://twitter.com/Blackmartian333/status/1624921289918914560						
9	2023-02-12 23:59:59+00:00	lâ€™m a lil concerned about this Eagles defense, they are on their heels! #SuperE		0 https://twitter.com/Marilyn_Renee/status/1624921289763831808						
10	2023-02-12 23:59:59+00:00	@thesherlyralph @SuperBowl This is exactly why this country is so damn divided		0 https://twitter.com/Pondam1/status/1624921289721884675						
11	2023-02-12 23:59:59+00:00	The #SuperBowlÂ teaser for â€FAST Xâ€™ has been released.		1 https://twitter.com/Takes2Movie/status/1624921289650589697						
12	2023-02-12 23:59:59+00:00	Is this gonna to be all offense no defense Super Bowl?		0 https://twitter.com/Fireemblemlord/status/1624921289495400449						
13	2023-02-12 23:59:59+00:00	Â¿QuiÃ©n es toda esta gente y dÃ¢nde estÃ¡n Spencer James y Jordan Baker? #Si		0 https://twitter.com/eltrinarr/status/1624921289201709058						
14	2023-02-12 23:59:59+00:00	2 pics below: hat, wrist bracelet, eagles eye make up, good luck cap from last supe		0 https://twitter.com/RollinRedThunde/status/1624921289193320448						
15	2023-02-12 23:59:59+00:00	NFT ad during the Super Bowl? Fucking waste of slot		1 https://twitter.com/RandomThongsOF1/status/1624921288950140930						
16	2023-02-12 23:59:59+00:00	gracias superbowl por los trailers y por rihanna		0 https://twitter.com/ouatineroda_/status/1624921288832688129						
17	2023-02-12 23:59:59+00:00	#Superbowl		2 https://twitter.com/XaviSol_/status/1624921288614588424						
18	2023-02-12 23:59:59+00:00	once again finding out how gullible and susceptible to phishing scams america is l		69 https://twitter.com/BrianMFloyd/status/1624921287939489792						
19	2023-02-12 23:59:59+00:00	Really happy NOT to have to listen to Joe Buck on #fox for #SuperBowl		1 https://twitter.com/smtoulson/status/1624921287889129472						
20	2023-02-12 23:59:59+00:00	@Popsicle The Eagles will be our winners tonight. #SuperBowl #Giveaway		1 https://twitter.com/oshn777/status/1624921287742177282						
21	2023-02-12 23:59:59+00:00	O homem estÃ¡ em campo!! @gersondesouza55 @pauloantunes #SuperBowlInaE		1 https://twitter.com/guimaraes_925/status/1624921287708622849						
22	2023-02-12 23:59:59+00:00	Olha os trailers saindo sÃ³ Ã©		0 https://twitter.com/ikaroOliveira03/status/162492128759182236						

420422	2023-02-12 00:00:00+00:00	Did you know the Super Bowl wasnâ€™t always broadcast during prime time? It w		4 https://twitter.com/MuseumTV/status/1624558906323394563						
420423	2023-02-12 00:00:00+00:00	Live Super Bowl Square pics https://t.co/uAnFKG0NJM		1 https://twitter.com/a_bag_of_lambs/status/1624558906293858308						
420424	2023-02-12 00:00:00+00:00	Letâ€™s be honest: The Super Bowl is really about the food.		3 https://twitter.com/WBEZreset/status/1624558906247876608						
420425	2023-02-12 00:00:00+00:00	Donald #Trump pestet gegen #Rihanna!		11 https://twitter.com/ransport/status/1624558905471942656						
420426	2023-02-12 00:00:00+00:00	Los 4 equipos que han ganado mÃ¡s juegos de #SuperBowl		1 https://twitter.com/DiarioCoahuila/status/1624558905069277184						
420427	2023-02-12 00:00:00+00:00	Two commercials about Jesus are scheduled to air during this Sundayâ€™s Super		1 https://twitter.com/RICatholic/status/1624558904876363776						
420428	2023-02-12 00:00:00+00:00	another year wherein I successfully make it to Super Bowl weekend whilst having		48 https://twitter.com/coolauntV/status/1624558904737951744						
420429	2023-02-12 00:00:00+00:00	ðŸŒˆðŸŒˆSi bien hay shows de #MedioTiempo del #SuperBowl que se han vuelto		0 https://twitter.com/ImagenPoblana/status/1624558904519827456						
420430	2023-02-12 00:00:00+00:00	It's #SuperBowl weekend! The game is in Arizona this year, so donâ€™t be shocke		172 https://twitter.com/RealTimers/status/1624558904406380544						
420431	2023-02-12 00:00:00+00:00	ðŸŒˆ #Deportes Negocio mexicano venderÃ¡ tamales en el Super Bowl 2023		0 https://twitter.com/ElCiudadano_Mx/status/1624558903748071425						
420432	2023-02-12 00:00:00+00:00	MaÃ±ana es el #SuperBowl y para sumarnos a la celebraciÃ³n, chicos les dejamos		0 https://twitter.com/fundaciontelmex/status/1624558903739711491						

DATA PRE-PROCESSING

1 | Removing of
non-English Tweets

2 | Removing of URLs

3 | Text Tokenization

4 | Lowercase

5 | Removing
Stopwords

6 | Stemming

7 | Removing of Special
Characters and
Numbers

8 | Joining Tokens back to
String

Technologies Used

- **Python as Programming Language**
- **Visual Studio Code**
- **Pandas, Langid, NLTK and RE as Python Library**

Removing Non-English Tweets

```
✓ import langid
import pandas as pd

# Load your data into a pandas DataFrame
df = pd.read_csv('1. scraped_data.csv')

# Identify the language of each tweet and keep only English tweets
df['lang'] = df['Tweet'].apply(lambda x: langid.classify(x)[0])
df = df[df['lang'] == 'en']

# Drop the 'lang' column and any rows with missing values
df.drop(['lang'], axis=1, inplace=True)
df.dropna(inplace=True)

# Save the cleaned data to a new CSV file
df.to_csv('2. removed_nonenglish.csv', index=False)
```

Data Preprocessing

```
import pandas as pd
import nltk
from nltk.corpus import stopwords
from nltk.stem import SnowballStemmer
import re

nltk.download('stopwords')
nltk.download('punkt')

stop_words = set(stopwords.words('english'))
stemmer = SnowballStemmer('english')
url_pattern = re.compile(r'https?:\/\/\S+|www\.\S+')

def preprocess(text):
    text = re.sub(url_pattern, '', text) # Remove URLs
    tokens = nltk.word_tokenize(text) # Tokenize text
    tokens = [token.lower() for token in tokens] # Lowercase
    tokens = [token for token in tokens if token not in stop_words] # Remove stop words
    tokens = [stemmer.stem(token) for token in tokens] # Stemming
    tokens = [token for token in tokens if token.isalpha()] # Remove special characters and numbers
    preprocessed_text = ' '.join(tokens) # Join tokens back into string
    return preprocessed_text

# Read in the non_english.csv file as a pandas DataFrame
df = pd.read_csv('2. removed_nonenglish.csv')

# Apply the preprocess function to the 'Tweet' column
df['Tweet'] = df['Tweet'].apply(preprocess)

# Save the preprocessed data to a new CSV file
df.to_csv('3. preprocessed_data.csv', index=False)
```



AFTER 2 HOURS . . .

Non-English Tweets Removed...

	A	B	C	D	E	F	G	H	I	J
1	Date	Tweet	Likes	Link						
2	2023-02-12 23:59:59+00:	Are we going to have a shoot out for the Super Bowl???? #chiefsvseagles #SuperBowlLVII		0 https://twitter.com/diaryofabbw21/status/1624921290682388481						
3	2023-02-12 23:59:59+00:	Anyone gonna play defense in this Super Bowl?		0 https://twitter.com/jakeisapersonik/status/1624921290372001792						
4	2023-02-12 23:59:59+00:	I just earned the 'Stadium Beers (2023)' badge on @untappd! https://t.co/j6BFdRNCpU #s		0 https://twitter.com/mildandlazyguy/status/1624921290053152772						
5	2023-02-12 23:59:59+00:	I got PHI winning the #SuperBowl #EaglesvsChiefs #Eagles		0 https://twitter.com/Blackmartian333/status/1624921289918914560						
6	2023-02-12 23:59:59+00:	Iâm™m a lil concerned about this Eagles defense, they are on their heels! #SuperBowl		0 https://twitter.com/Marilyn_Renee/status/1624921289763831808						
7	2023-02-12 23:59:59+00:	@thesherylralph @SuperBowl This is exactly why this country is so damn divided today.		0 https://twitter.com/Pondam1/status/1624921289721884675						
8	2023-02-12 23:59:59+00:	The #SuperBowlÂ teaser for â€™FAST Xâ€™ has been released.	1	https://twitter.com/Takes2Movie/status/1624921289650589697						
9	2023-02-12 23:59:59+00:	Is this gonna to be all offense no defense Super Bowl?	0	https://twitter.com/Fireemblemlord/status/1624921289495400449						
10	2023-02-12 23:59:59+00:	2 pics below: hat, wrist bracelet, eagles eye make up, good luck cap from last superbowl	0	https://twitter.com/RollinRedThunde/status/1624921289193320448						
11	2023-02-12 23:59:59+00:	NFT ad during the Super Bowl? Fucking waste of slot	1	https://twitter.com/RandomThongsOF1/status/1624921288950140930						
12	2023-02-12 23:59:59+00:	once again finding out how gullible and susceptible to phishing scams america is by tossi	69	https://twitter.com/BrianMFloyd/status/1624921287939489792						
13	2023-02-12 23:59:59+00:	Really happy NOT to have to listen to Joe Buck on #fox for #SuperBowl	1	https://twitter.com/smtoulson/status/1624921287889129472						
14	2023-02-12 23:59:59+00:	@Popsicle The Eagles will be our winners tonight. #SuperBowl #Giveaway	1	https://twitter.com/oshn777/status/1624921287742177282						
15	2023-02-12 23:59:59+00:	@SNFonNBC Yes Patrick will be a Hall of Famer with the win tonight #ChiefsKingdom #Su	0	https://twitter.com/mikerobb38/status/1624921287280713730						
16	2023-02-12 23:59:59+00:	i'm still traumatized from last year's superbowl btw so i'm on edge ðŸŸ´	0	https://twitter.com/liseventh/status/1624921287238856708						
17	2023-02-12 23:59:59+00:	If the Super Bowl match up was the Cheeks vs The Beavers, Iâm™d be much more interes	0	https://twitter.com/snytzu/status/1624921287138181121						
18	2023-02-12 23:59:59+00:	An early favorite of mine for the night. #SuperBowl #commercials	1	https://twitter.com/ScottWLUton/status/1624921286789963777						
19	2023-02-12 23:59:58+00:	I just finished rewatching Friday Night Lights and now, watching the superbowl, I'm reali	0	https://twitter.com/_crystalised/status/1624921286563561477						
20	2023-02-12 23:59:58+00:	Think Iâm™ve watched too much TV today, what else do these superbowl ads have for	0	https://twitter.com/chinuaa/status/1624921286248890374						
21	2023-02-12 23:59:58+00:	Nobody came to tackle today apparently #SuperBowl	0	https://twitter.com/TheDavidCHoke/status/1624921286127284229						
22	2023-02-12 23:59:58+00:	@itsJeffTiedrich Jesus man give it a rest and go watch the Super Bowl	0	https://twitter.com/TTThoma19588479/status/1624921285712027648						
23	2023-02-12 23:59:58+00:	#SuperBowl	0	https://twitter.com/cleeiireez/status/1624921284978135041						
24	2023-02-12 23:59:58+00:	#SuperBowl	0	https://twitter.com/aaronrthepoet/status/1624921284713873409						
25	2023-02-12 23:59:58+00:	I hope Messi wins the Super Bowl	1	https://twitter.com/TechyzGG/status/1624921284663562242						
26	2023-02-12 23:59:58+00:	Well, at least both QBs looks very healthy enough. NO EXCUSES! #SuperBowl	0	https://twitter.com/100PercentAfrik/status/1624921284508323841						

Data Preprocessing using NLTK Library...

	A	B	C	D	E	F	G	H	I	J
1	Date	Tweet	Likes	Link						
2	2023-02-12 23:59:59+00	go shoot super bowl chiefsvseagl superbowlvii		0	https://twitter.com/diaryofabbw21/status/1624921290682388481					
3	2023-02-12 23:59:59+00	anyon gon na play defens super bowl		0	https://twitter.com/jakeisapersonik/status/1624921290372001792					
4	2023-02-12 23:59:59+00	earn stadium beer badg untappd superbowl footbal lager		0	https://twitter.com/mildandlazyguy/status/1624921290053152772					
5	2023-02-12 23:59:59+00	got phi win superbowl eaglesvschiefl eagl		0	https://twitter.com/Blackmartian333/status/1624921289918914560					
6	2023-02-12 23:59:59+00	lil concern eagl defens heel superbowl		0	https://twitter.com/Marilyn_Renee/status/1624921289763831808					
7	2023-02-12 23:59:59+00	thesherylralph superbowl exact countri damn divid today countri one nation ant		0	https://twitter.com/Pondam1/status/1624921289721884675					
8	2023-02-12 23:59:59+00	superbowl teaser fast x releas film releas may theater		1	https://twitter.com/Takes2Movie/status/1624921289650589697					
9	2023-02-12 23:59:59+00	gon na offens defens super bowl		0	https://twitter.com/FireemblemLord/status/1624921289495400449					
10	2023-02-12 23:59:59+00	pic hat wrist bracelet eagl eye make good luck cap last superbowl win wawa hoa		0	https://twitter.com/RollinRedThunde/status/1624921289193320448					
11	2023-02-12 23:59:59+00	nft ad super bowl fuck wast slot		1	https://twitter.com/RandomThongsOF1/status/1624921288950140930					
12	2023-02-12 23:59:59+00	find gullibl suscept phish scam america toss qr code commerci super bowl	69	https://twitter.com/BrianMFloyd/status/1624921287939489792						
13	2023-02-12 23:59:59+00	realli happi listen joe buck fox superbowl	1	https://twitter.com/smtoulson/status/1624921287889129472						
14	2023-02-12 23:59:59+00	popsicl eagl winner tonight superbowl giveaway	1	https://twitter.com/oshn777/status/1624921287742177282						
15	2023-02-12 23:59:59+00	snfonbnc yes patrick hall famer win tonight chiefskingdom superbowl	0	https://twitter.com/mikerobb38/status/1624921287280713730						
16	2023-02-12 23:59:59+00	still traumat last year superbowl btw edg	0	https://twitter.com/liseventh/status/1624921287238856708						
17	2023-02-12 23:59:59+00	super bowl match cheek vs beaver much interest still go watch	0	https://twitter.com/snytzu/status/1624921287138181121						
18	2023-02-12 23:59:59+00	earli favorit mine night superbowl commerci	1	https://twitter.com/ScottWLuton/status/1624921286789963777						
19	2023-02-12 23:59:58+00	finish rewatch friday night light watch superbowl realiz actual help understand f	0	https://twitter.com/_crystalised/status/1624921286563561477						
20	2023-02-12 23:59:58+00	think watch much tv today els superbowl ad definit watch whole game	0	https://twitter.com/chinuaa/status/1624921286248890374						
305944	2023-02-12 00:00:01+00	drake end super bowl parti perform tribut whitney houston via tiktok zanelow	193	https://twitter.com/HipHopDX/status/1624558908634284032						
305945	2023-02-12 00:00:01+00	score touchdown tomorrow davissanchez tekeyah give favourit touchdown prop	3	https://twitter.com/TSN_Edge/status/1624558907489419265						
305946	2023-02-12 00:00:00+00	re live sportsradiowip flyeaglesfli superbowl	3	https://twitter.com/BILLadelphia1/status/1624558907057229824						
305947	2023-02-12 00:00:00+00	attent toledo one chanc remain see merri widow purchas ticket sunday perform	1	https://twitter.com/ToledoOpera/status/1624558906935595009						
305948	2023-02-12 00:00:00+00	weekend kansa citi chief philadelphia eagl take year super bowl celebr contest c	9	https://twitter.com/MrAutofire/status/1624558906893647875						
305949	2023-02-12 00:00:00+00	win print predict correct final score win team chief eagl prior kickoff must follow	15	https://twitter.com/DaveChoate/status/1624558906369269760						
305950	2023-02-12 00:00:00+00	know super bowl alway broadcast prime time year first super bowl would move	4	https://twitter.com/MuseumTV/status/1624558906323394563						
305951	2023-02-12 00:00:00+00	live super bowl squar pic ili tombradi superbowl phi footbal squar	1	https://twitter.com/a_bag_of_lambs/status/1624558906293858308						
305952	2023-02-12 00:00:00+00	let honest super bowl realli food get rib tip best wing spot town bpoptv	3	https://twitter.com/WBEZreset/status/1624558906247876608						
305953	2023-02-12 00:00:00+00	two commerci jesus schedul air sunday super bowl game commerci sponsor get	1	https://twitter.com/RICatholic/status/1624558904876363776						
305954	2023-02-12 00:00:00+00	anoth year wherein success make super bowl weekend whilst idea whomst play	48	https://twitter.com/coolauntV/status/1624558904737951744						
305955	2023-02-12 00:00:00+00	superbowl weekend game arizona year shock republican accept result	172	https://twitter.com/RealTimers/status/1624558904406380544						

PERFORMING SENTIMENT ANALYSIS

- Used ROBERTA MODEL (Robustly Optimized BERT Approach) to classify if Tweets are Positive, Negative or Neutral.

ROBERTA MODEL

- Roberta is a large-scale language model developed by Facebook AI and published in 2019. It is based on the transformer architecture and trained on a massive amount of text data to perform a wide range of natural language processing (NLP) tasks, such as language understanding, sentiment analysis, and question answering.
- The name "Roberta" stands for "Robustly Optimized BERT approach," referring to its improvement over the original BERT model developed by Google. Roberta uses a similar architecture to BERT but is trained on larger amounts of data and with more advanced training techniques, resulting in better performance on various NLP benchmarks.

Technologies Used

- **Python as Programming Language**
- **Visual Studio Code**
- **Torch, Pandas, and Transformers as Python Library**

Performing Sentiment Analysis

```
import torch
import pandas as pd
from transformers import AutoTokenizer, AutoModelForSequenceClassification
tokenizer = AutoTokenizer.from_pretrained("cardiffnlp/twitter-roberta-base-sentiment")
model = AutoModelForSequenceClassification.from_pretrained("cardiffnlp/twitter-roberta-base-sentiment")
def classify_sentiment(text):
    if not isinstance(text, str):
        text = str(text)
    inputs = tokenizer.encode_plus(
        text,
        add_special_tokens=True,
        return_tensors='pt',
        max_length=512
    )
    outputs = model(**inputs)
    logits = outputs.logits
    pred = torch.argmax(logits, dim=1)
    return pred.item()

df = pd.read_csv("tweets - Copy.csv", encoding='ISO-8859-1')

sentiments = []
for tweet in df.iloc[:, 1]:
    sentiment = classify_sentiment(tweet)
    if sentiment == 0:
        sentiments.append('Negative')
    elif sentiment == 1:
        sentiments.append('Positive')
    else:
        sentiments.append('Neutral')
df.insert(5, "Sentiment", sentiments)
df.to_csv("tweets - Copy.csv", index=False)
```



AFTER 2 HOURS . . .

Sentiment Classification

	A	B	C	D	E
1	Date	Tweet	Likes	Link	Sentimen
2	2023-02-12 23:59:	go shoot super bowl chiefsvseagl superbowlvii		0 https://tw	Positive
3	2023-02-12 23:59:	anyon gon na play defens super bowl		0 https://tw	Positive
4	2023-02-12 23:59:	earn stadium beer badg untappd superbowl footbal lager		0 https://tw	Positive
5	2023-02-12 23:59:	got phi win superbowl eaglesvschief eagl		0 https://tw	Positive
6	2023-02-12 23:59:	lil concern eagl defens heel superbowl		0 https://tw	Positive
7	2023-02-12 23:59:	thesherylralph superbowl exact countri damn divid today countri one nation anthem wo		0 https://tw	Negative
8	2023-02-12 23:59:	superbowl teaser fast x releas film releas may theater		1 https://tw	Positive
9	2023-02-12 23:59:	gon na offens defens super bowl		0 https://tw	Positive
10	2023-02-12 23:59:	pic hat wrist bracelet eagl eye make good luck cap last superbowl win wawa hoagi let		0 https://tw	Neutral
11	2023-02-12 23:59:	nft ad super bowl fuck wast slot		1 https://tw	Negative
12	2023-02-12 23:59:	find gullibl suscept phish scam america toss qr code commerci super bowl	69	https://tw	Negative
13	2023-02-12 23:59:	realli happi listen joe buck fox superbowl		1 https://tw	Positive
14	2023-02-12 23:59:	popsicl eagl winner tonight superbowl giveaway		1 https://tw	Positive
15	2023-02-12 23:59:	snfonnbc yes patrick hall famer win tonight chiefskingdom superbowl		0 https://tw	Neutral
16	2023-02-12 23:59:	still traumat last year superbowl btw edg		0 https://tw	Positive
17	2023-02-12 23:59:	super bowl match cheek vs beaver much interest still go watch		0 https://tw	Neutral
18	2023-02-12 23:59:	earli favorit mine night superbowl commerci		1 https://tw	Positive
19	2023-02-12 23:59:	finish rewatch friday night light watch superbowl realiz actual help understand footbal r		0 https://tw	Positive
20	2023-02-12 23:59:	think watch much tv today els superbowl ad definit watch whole game		0 https://tw	Positive
21	2023-02-12 23:59:	nobodi came tackl today appar superbowl		0 https://tw	Positive
22	2023-02-12 23:59:	itsjeffriedrich jesus man give rest go watch super bowl		0 https://tw	Positive
23	2023-02-12 23:59:	superbowl		0 https://tw	Positive
24	2023-02-12 23:59:	superbowl		0 https://tw	Positive
25	2023-02-12 23:59:	hope messi win super bowl		1 https://tw	Neutral
26	2023-02-12 23:59:	well least qbs look healthi enough excus superbowl		0 https://tw	Neutral
27	2023-02-12 23:59:	tbh even know team play superbowl excit halftimeshow rihanna time		1 https://tw	Positive
28	2023-02-12 23:59:	wish could watch superbowl game instead reli twitter constant refresh googl gobird flye		0 https://tw	Positive
29	2023-02-12 23:59:	nfl award hand super bowl includ post season imo pacheco would definit case oroy		0 https://tw	Positive
30	2023-02-12 23:59:	offens superbowl might great night superbowl		1 https://tw	Neutral
31	2023-02-12 23:59:	superbowl compar world cup lmao rihanna think re excit see perform		0 https://tw	Positive
32	2023-02-12 23:59:	mayb superbowl bettman read piec paper announc jakobchychrun trade lake		4 https://tw	Positive
33	2023-02-12 23:59:	pain dfs nfl fanduel superbowl		1 https://tw	Positive
34	2023-02-12 23:59:	shoutout nflonfox superbowl broadcast team congratul guy superbowlvii superbowl		2 https://tw	Neutral



DATA ANALYSIS AND VISUALIZATION

Technologies Used

- **DataBricks**
- **PySpark as Library**



INSIGHTS AND RECOMMENDATIONS

Insights

- The Total Number of Positive Tweets is higher compared to Negative and Neutral Comments. Overall, NFL event generated a Positive Sentiment among Twitter users.
- The Number of Tweets increases steadily as the game time approaches (18:30 E.T.), and experiences an exponential surge after the game ends (22:30 E.T.).
- One of the most talked-about events, aside from the Super Bowl game itself, is the **National Anthem, Half Time Show, and Save Warrior Nun.**

Recommendations

- Expand the analysis to cover at least one week's worth of Tweet.
- Conduct sentiment analysis on comments from other social media platforms like Facebook or Instagram.
- Address Negative Sentiments: Analyze and address the sources of negative sentiment to improve the overall experience for future events. Consider conducting surveys or interviews to gain a deeper understanding of these negative sentiments and implement changes accordingly.
- Monitor Sentiment in Real-Time: Implement real-time sentiment analysis during future events to promptly address any negative sentiment that may arise. This can help you make timely adjustments to the event or address concerns on social media platforms.