Flatiron Capstone Project

Analysis of former reddit the_donald

Angelo Turri

Stakeholder

- A social media communications team for the Republican Party wants me to extract meaningful insights from Reddit data
    - Goal: have a better grasp of the sentiment within their voter base
- Reddit: r/the_donald (no longer exists)

Data

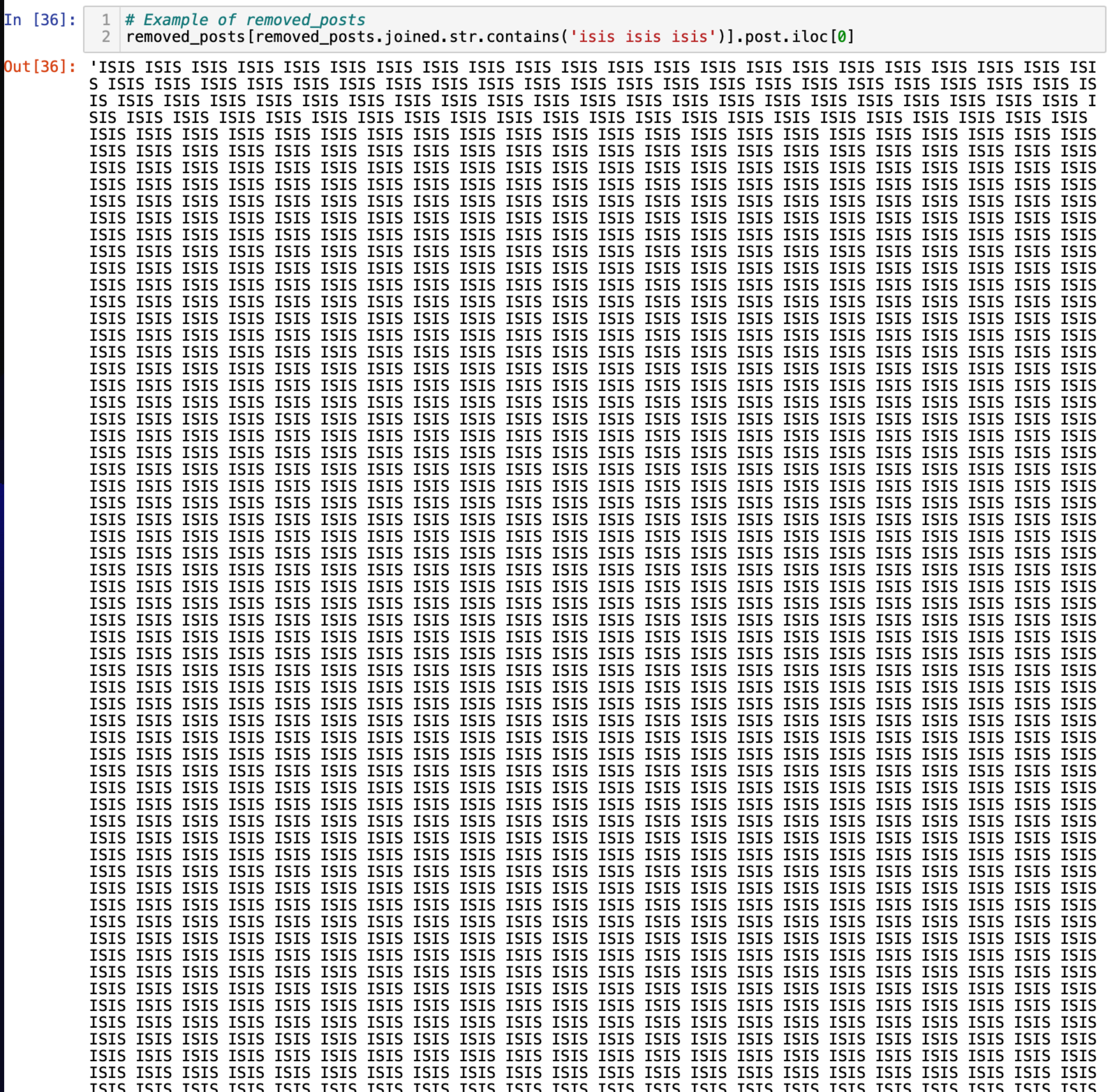
- Origin: https://the-eye.eu/redarcs/
- Dataset properties
    - Date range: 2015–2020
    - 178,308 unique authors
    - 48 million posts
    - Reduced to 2.1 million due to excessively large dataset size

Cleaning

- Removing:
  - Bot posts
  - Spam (any post containing numerous consecutive duplicate words or phrases)
  - Stop-words
    - Commonly used words with little meaning that make very small contributions at best to models

Spam example

D:



In [36]:
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# Example of removed_posts
removed_posts[removed_posts.joined.str.contains('isis isis isis')].post.iloc[0]
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Out[36]:
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Feature Engineering (Bag of Words)

- Three levels of analysis
  - Unigrams (single words)
  - Bigrams (two-word phrases)
  - Trigrams (three-word phrases)
- Limited vocabulary to top-100 unigrams, bigrams, or trigrams
- Every sentence including one or more of these words/phrases was used for modeling

How is a sentence represented?

Vocabulary: 5 words - [‘Donald’, ‘Trump’, ‘became’, ‘President’, ‘apple’]

“Donald Trump became President”

is_donald	is_trump	is_became	is_president	is_apple
1	1	1	1	0

All Target Variables

- Post score (upvotes - downvotes)
- VADER sentiment score (engineered)
  - “Valence Aware Dictionary sEntiment Reasoner”

🤦‍♂️

- These are different ways of measuring sentiment, we will choose whichever one allows for a better model and more interpretable results.

Type of model used: Linear Regression

- Highly interpretable model: it provides the values of coefficients
  - Lets us know which words the model thought negatively impacted sentiment and which ones positively impacted it
- I will create a separate linear regression model for each set of features, so that unigrams, bigrams and trigrams can be analyzed separately

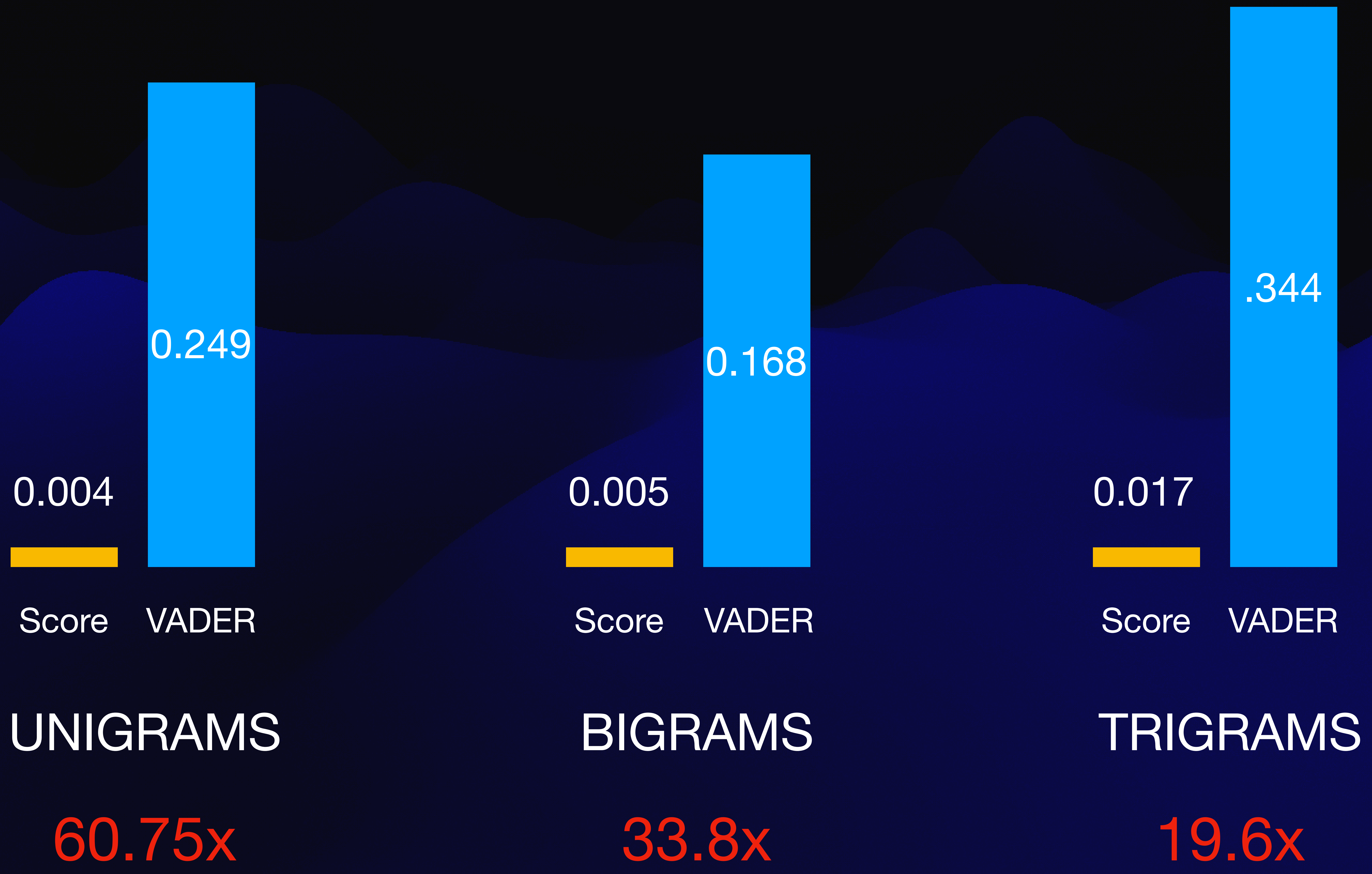
Target Variable: Score

- Abysmal results across the board
- R-squared < 0.1 for unigrams, bigrams and trigrams models
  - R-squared ranges from 0 to 1
- Models categorized negative words as positive
- Models categorized positive words as negative
- Off by an average of 7-8 upvotes where the average score was 7-8 upvotes

Target Variable: VADER sentiment

- Much better results
- R-squared of 0.243, 0.169, and 0.333 for unigrams, bigrams and trigrams respectively
- The broad sentiment of the top positive words and negative words was what you'd expect.
- Off on average by 0.33, 0.433, and 0.363 for unigrams, bigrams and trigrams respectively
  - VADER sentiment ranges from -1 to 1

Model R-squared improvement

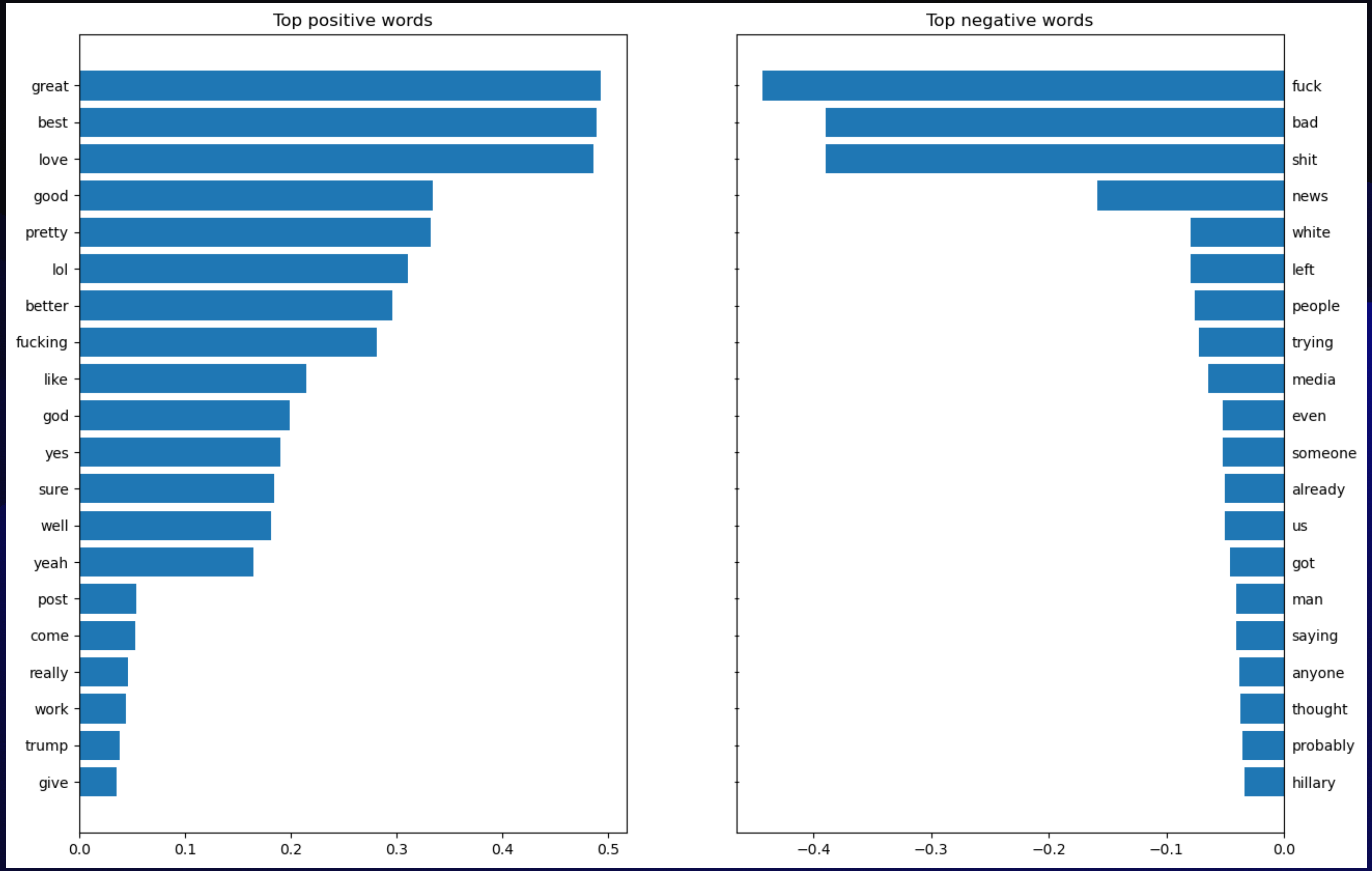


Top unigrams after tuning

- The longer the bar, the more emotionally charged that word/phrase

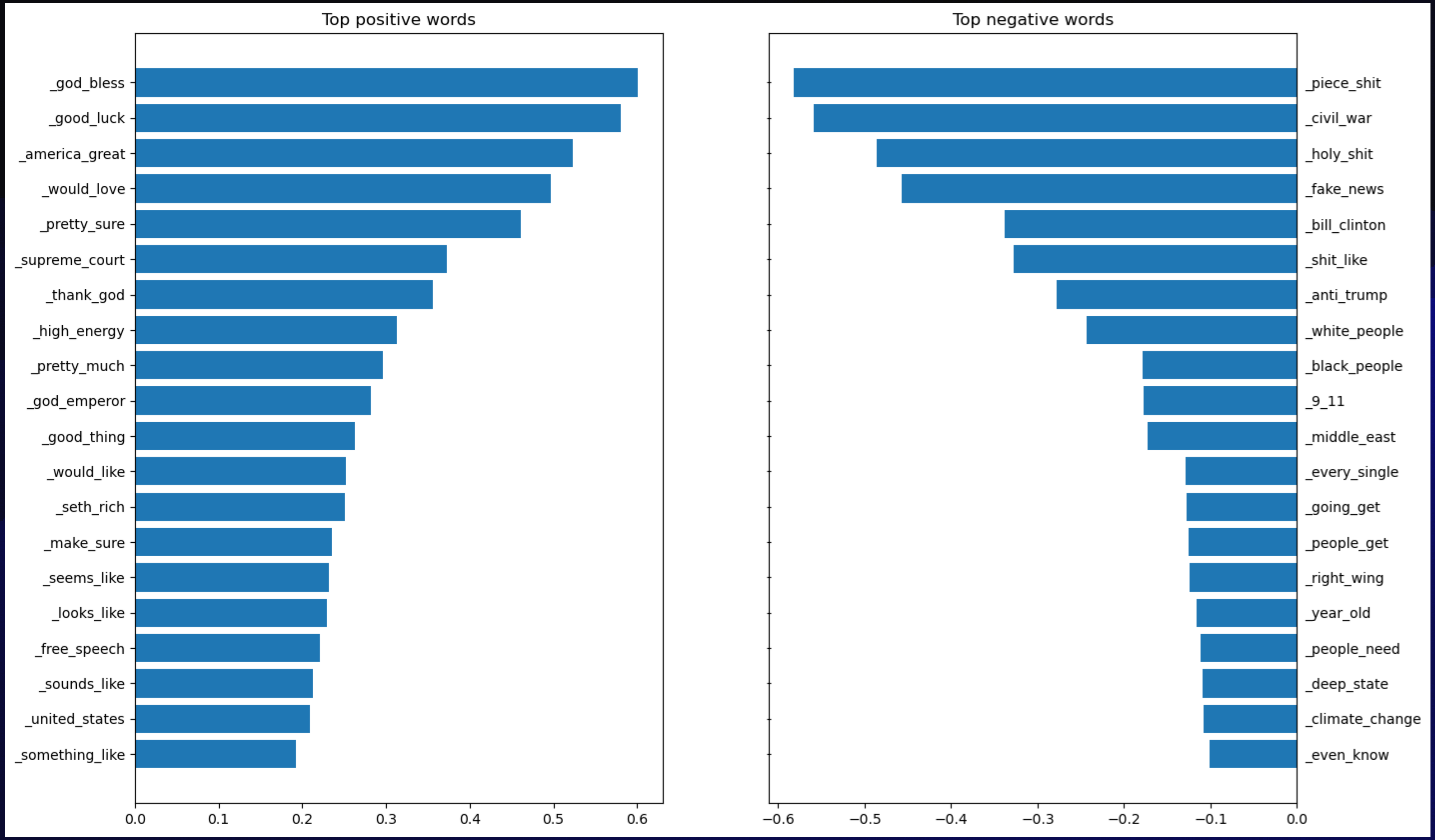
- Positive column: Best, God, Trump

- Negative column: News, media, Hillary



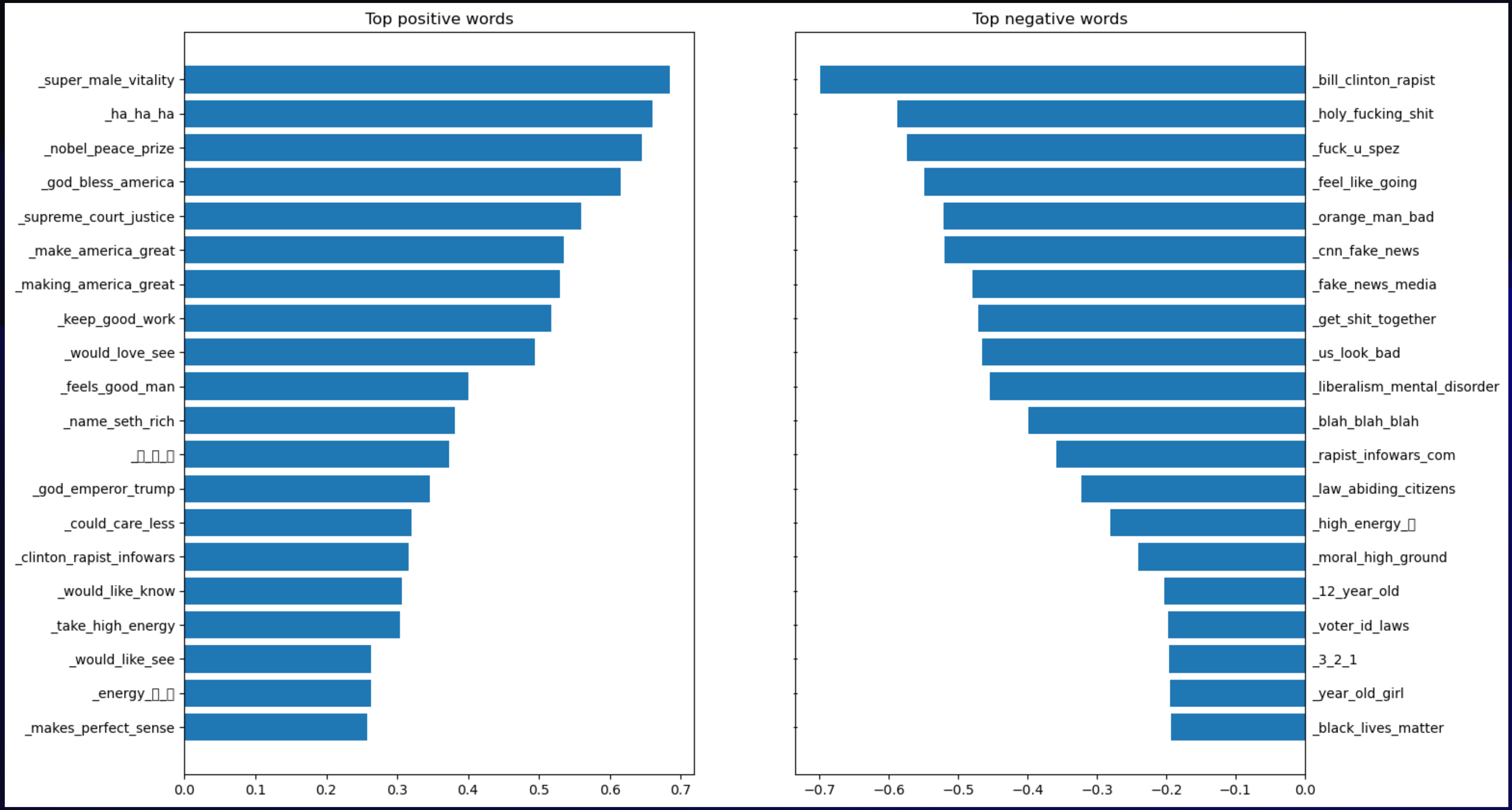
Top bigrams after tuning

- The longer the bar, the more emotionally charged that word/phrase
- Positive column: God bless, America great, thank God, god emperor, United States, free speech
- Negative column: civil war, fake news, Bill Clinton, anti-Trump, Middle East, Deep State



Top trigrams after tuning

- The longer the bar, the more emotionally charged that word/phrase
- Positive column: God bless America, make America great, God emperor Trump
- Negative column: Bill Clinton rapist, orange man bad, CNN fake news, liberalism mental disorder



Insight #1

- The base is passionate about their representative
  - "Best" is listed in the most positive words
  - The word "Trump" is listed in the most positive words
  - The phrase "god emperor Trump" is listed in the most positive trigrams
  - Phrases insulting their representative such as "orange man bad" and "anti trump" are listed in the most negative trigrams

Insight #2

- The base is passionately against opposing politicians and organizations
  - “News”, “media”, “fake news”, “fake news media”, “CNN fake news” and “deep state” appear in the most negative phrases
  - “Hillary”, “Bill Clinton,” “Bill Clinton rapist”, “left”, and “liberalism mental disorder” appear in the most negative phrases

Insight #3

- The base is highly religious
  - “God”, “God bless,” “thank God”, and “God bless America” appear in the most positive phrases.

Insight #4

- The base is very passionate about the relevant issues
    - Swear words such as the f-word and “shit” commonly appear in both the most positive and negative phrases column.

Insight #5

- The base is very fond of their country
    - Country-oriented phrases such as “America great”, “United States”, “God bless America,” “make America great,” and “making America great” appear in the positive column.
    - Phrases such as “civil war” and “middle east” appear in the negative column.

Recommendations

- Try to match the base’s enthusiasm with your own
- Be aware that they are angry against certain people and organizations and want immediate change

Thank You!

- All questions are welcome.
- You may contact me here:
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