

NATURAL LANGUAGE PROCESSING

Twitter Topic Modeling:
#January6thCommitteeHearing

Client

The Washington Post would like to understand the topics that are trending on Twitter within the January 6th Committee Hearings to get potential story ideas.

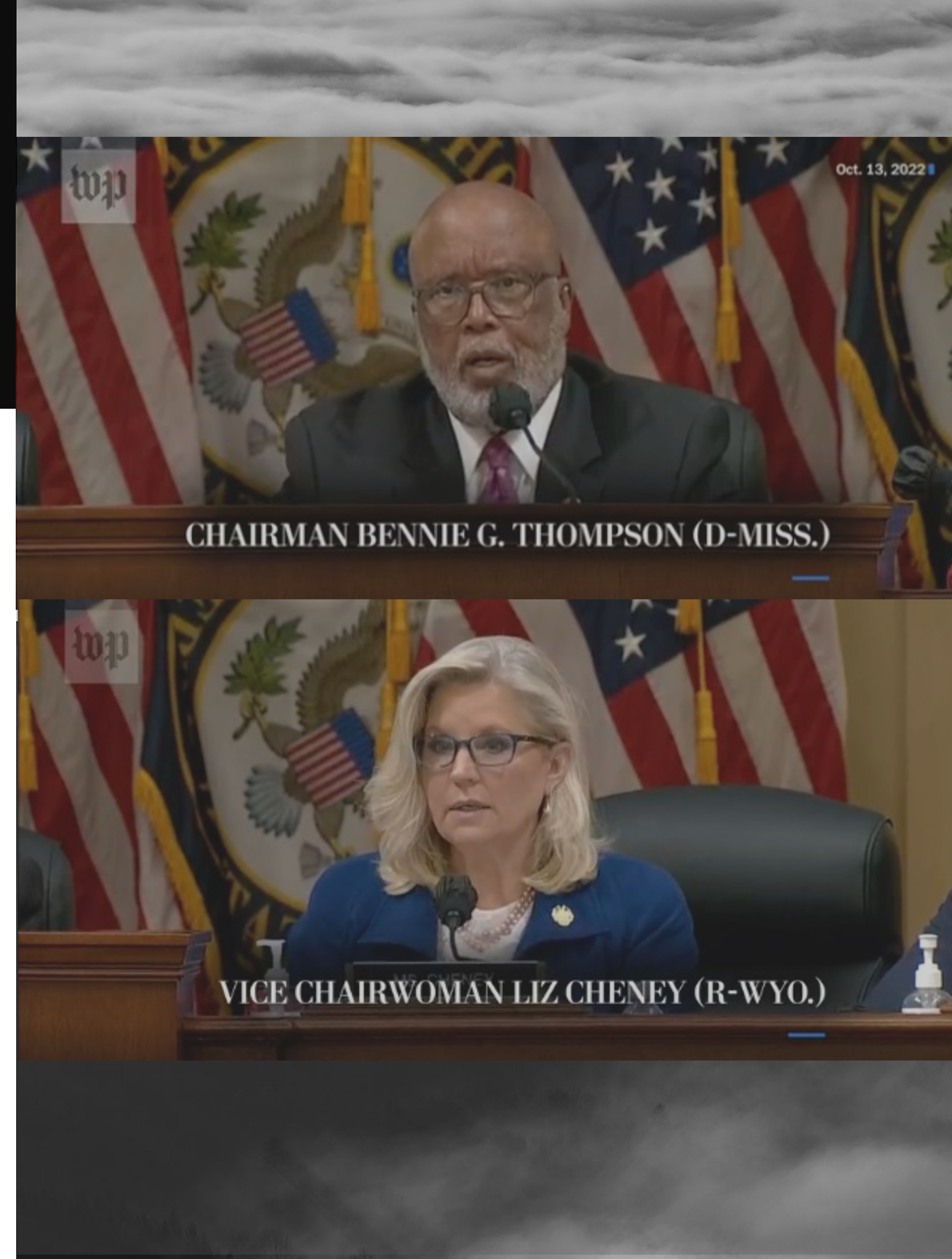


The Washington Post

Key Questions

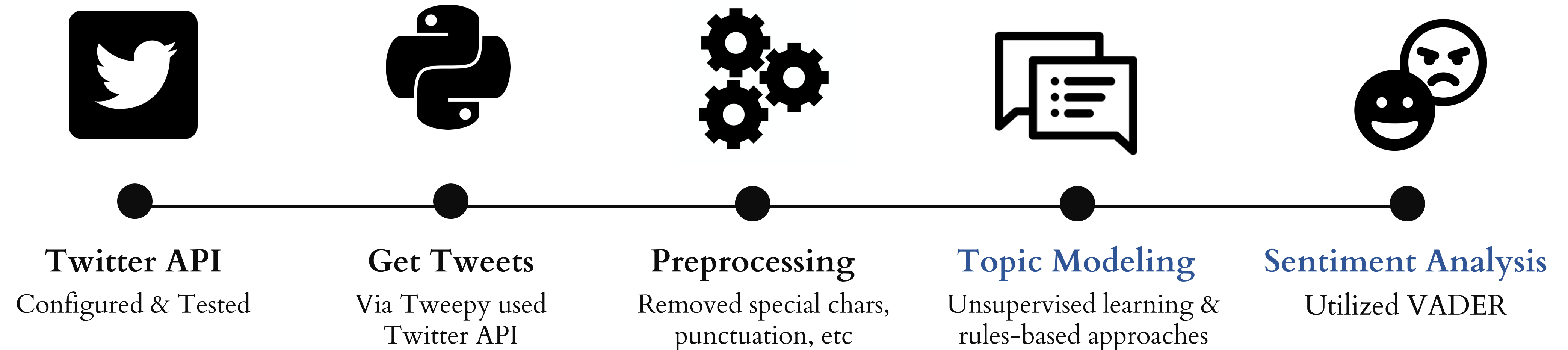
The January 6th Committee had a hearing on October 13th 2022
Additional video evidence was presented, and they voted to subpoena Trump.

- 🔑 What topics were most tweeted about during the Oct 13th hearing?
- 🔑 What was the primary topic associated with Trump?
- 🔑 What was the sentiment of the primary topic associated with Trump?



Getting to Answers

35,000 Tweets + Retweets





Topic Modeling

Methodology

Utilize a breadth of algorithms to uncover signals in the data that
lead to human-understandable topics

LSA

Matrix Factorization utilizing SVD on the
matrix of document terms

&

CountVectorizer

- Frequency of words in text
- Considers words that are abundant in corpus as most statistically significant
- Doesn't identify relationships between words

LSA

Matrix Factorization utilizing SVD on the
matrix of document terms

&

TF-IDF

- Frequency of words in text **AND**
- Inverse Document Frequency downscales words that appear a lot across documents
- Helps in highlighting a word that is frequent in a document but not across documents

LDA

Probabilistic Modeling describes documents
by a distribution of word probabilities

&

CountVectorizer

- Frequency of words in text
- Considers words that are abundant in corpus as most statistically significant
- Doesn't identify relationships between words

LDA + Bigrams

Probabilistic Modeling & detect common
phrases using Gensim's 'Phrases()'

&

Gensim simple_preprocess

- Similar to CountVectorizer but has some additional pre-process techniques to make it easier

Compare Topic Terms by Algorithm

To see how the algorithms perform amongst each other, and see trends that can guide human naming of the topic groups

Template

Algorithm	Topic 1 Results	Topic 2 Results	Topic 3 Results	Topic 4 Results

Matrix Factorization

Algorithm	Topic 1 Results	Topic 2 Results	Topic 3 Results	Topic 4 Results
LSA with CountVectorizer	trump, knew, responsible, called	trump, violence, democracy, mark	mark, democracy, gop, country	lost, stone, roger, video
	mcconnell, mccarthy, mitch kevin	attack, decided summoned, excuse	maga, without, love, overthrowing	help, coup yet, new
LSA with TF-IDF	kevin, backed, mccarthy, mitch, mcconnell,	mark, democracy, violence, Hamill	decided, hatch, rudy, giuliani	demands, oath, unanimously, deserves
	responsible, called knew	Creating, correct, overthrowing, love	meadows, lost, yet, stone	history, voted, subpoena

Probabilistic Modeling

Algorithm	Topic 1 Results	Topic 2 Results	Topic 3 Results	Topic 4 Results
LDA	knew, trump, pelosi, amp	trump, knew, responsible, mcconnell	trump, maga, chris, thing	Trump, lost, decided, attack,
	today, like, still, fbi	called, mitch, backed, mccarthy, kevin	national, miller, person, acting	Coup, help, video, new
LDA with Bigrams	knew, trump, democracy, lost	trump, subpoena_donald, testify, voted_unanimously	trump, roger_stone, trump_lost, help	called, mitch_mcconnell, knew_trump, responsible
	American_people, break, trump_tried, accept	demands, oath_democracy, history_deserves	yet, mark_meadows, decided, rudy_giuliani	kevin_mccarthy, backed, thing

trump, knew, responsible, called
mcconnell, mccarthy, mitch kevin

trump, violence,
democracy, mark

mark, democracy,
gop, country

decided, hatch, rudy, giuliani
meadows, lost, yet, stone

**Adam Kinzinger #fella**  @AdamKinzinger · Oct 13 · 

Mitch **McConnell**.
Kevin McCarthy.
They both **knew Trump** was **responsible**.
They both **called** him out.
They both backed down.
That's cowardice - not leadership.
[#January6thCommitteeHearings](#)

 1,752  9,771  47.9K

**bill cochrane** @CochraneBill · Oct 14

Replying to [@GOPLeader](#)
Mitch McConnell.
Kevin McCarthy.
They both knew Trump was responsible.
They both called him out.
They both backed down.
That's cowardice - not leadership.

**Irfan Khan** @IrfanEmmaJordan · Oct 14

Replying to [@bennyjohnson](#)
Mitch McConnell & Kevin McCarthy.
They both knew Trump was responsible.
They both called him out initially.
They both backed down.
That's cowardice - not leadership.

Mitch + Kevin Knew Trump Responsible

**john d wrobel** @wrobocop01 · Oct 14

Replying to [@Resist_MAGA_GOP](#)
I wish we all followed **Mark Hamill's** example of standing up for democracy or we may lose it!!

  1 

**TheDeaner** @TheDeaner79 · Oct 13

Replying to [@Resist_MAGA_GOP](#)
Mark Hamill is an intolerable douche.

**Serious Trickster** @EvolutionGlobe · Oct 14

Replying to [@Resist_MAGA_GOP](#)
Mark Hamill hasn't been correct, or right in the head, for years. He thinks he's part of the resistance but he fully supports the empire.

**GOP Traitors to Democracy** @Resist_MAGA_GOP · Oct 13

Mark Hamill is correct. You can love this country without creating violence by overthrowing democracy. [#January6thCommitteeHearings](#) [#HATH](#)



"PEOPLE COMPLAINING ABOUT MY ANTI-TRUMP TWEETS NEED TO UNDERSTAND: I LOVE MY COUNTRY AND I FEEL IT'S MY DUTY TO OPPOSE THIS DEMENTED SOCIOPATH WITH EVERY FIBRE OF MY BEING." - MARK HAMILL

 482  2,180  12.8K 

Mark Hamill for Democracy – Against Trump

**StandForBetter.org** @StandForBetter · Oct 13

 NEW Video:

Trump Lost, yet he **decided** to **hatch** a coup with the help of Mark Meadows, Roger Stone, **Rudy Giuliani**, and others. Liz Cheney lays it out. I am never voting for a Republican.

Retweet this video: [#TrumpsCoupPlaybook](#)

[#January6thCommitteeHearings](#)
[#Jan6thHearings](#)



[#TrumpsCoupPlaybook](#)
Capitol Hill
3:05 PM

he incited his supporters

BREAKING NEWS
INSURRECTION IN WASHINGTON FOLLOWING TRUMP ENCOURAGEMENT
1:35 108.7K views
PRESIDENTIAL ELECTION: CONGRESS COUNTS THE VOTE
LIVE
CNN
HOMERELLECTION

 203  2,476  3,826 

**SmarderDanU** @SmarderDanU · Oct 13

RT [@StandForBetter](#):
Trump Lost, yet he **decided** to **hatch** a coup with the help of Mark Meadows, Roger Stone, **Rudy Giuliani**, & others. Liz Cheney lays it out. Never voting for a Republican
[#TrumpsCoupPlaybook](#)
[#January6thCommitteeHearings](#)
[#Jan6thHearings](#)



[#TrumpsCoupPlaybook](#)

2:07 108.7K views
and I'll be there with you.

From [StandForBetter.org](#)

  15  19 

Trump Hatched Coup with Meadows, Guiliani, Stone

Roger Stone Video



Trish @meinmelbourne · Oct 14

The smarmy, nihilistic **Roger Stone**, was shown in a Danish filmmaker's **video** footage from before the election: "Fuck the voting," Stone laughed, as he walked through an airport."Let's get right to the violence."
[@January6thCmte](#)
[#TrumpCoupAttempt](#)
[#RogerStone](#)



newyorker.com

Donald Trump, January 6th, and the Elusive Search for Accountability

The House-select-committee hearings are over, but will the former President ever be held responsible for the tragedy?

Subpoena Trump



Adam Kinzinger #fella @AdamKinzinger · Oct 13

We just voted **unanimously** to subpoena Donald Trump to testify UNDER **OATH**.
Democracy **d**emands it.
History **d**eserves it.
[#January6thCommitteeHearings](#)



1:21 165.3K views



floridavoicesforprogress @PROGRESSIVES4FL · Oct 14

browardprogress: RT [@amprog](#): **Donald Trump** is at the center of the multistep scheme to overturn our election.

Yesterday, [@January6thCmte](#) **voted unanimously** to subpoena **Trump** to **testify** under oath. Now, he must answer for his actions.



0:51 1,188 views

From American Progress



The Boston Globe @BostonGlobe · Oct 14

The US House select committee investigating the attack on the Capitol **unanimously voted** to issue a **subpoena** to former president **Donald Trump** to **testify**. But what happens next? What does a **subpoena** mean?

Here's [@JamesPindell](#)'s analysis: [trib.al/75ZzpLs](#)

Jan. 6 committee hearing
October 13, 2022



Representative Liz Cheney

We are obligated to seek answers directly

0:32 1,245 views

Trump Lost Decided Attack

julie brough @juliebrough7 · Oct 14
accept his loss but knew he had **lost**. When you [@MSNBC](#) pretend **Trump** didn't lead this **attack** on 1/6 and summon his MAGA army and he continues his seditious **attack** on our country I know you have **decided** you will accept autocracy in America and don't care one bit for our Democracy.

Show this thread

Peter Welch @WelchForVT · Oct 13
Today's January 6 committee hearing gave us more evidence of what we already knew: The insurrection was not a spur of the moment event.

It was a planned and orchestrated **attack** on democracy by **Donald Trump** who **decided** months in advance he would declare victory even if he **lost**.

Show this thread

99ermikeb @99ermikeb · Oct 14
Being the mental midget that he is, knowing that he understood he **lost** the election, then **decided** to **attack** our nation's capital, **Trump** still pushing the big lie, even though we know he knows that we know that he knows what the truth is:

Glenn Kirschner @glennkirschner2 · Oct 14
Trump's letter responding to being subpoenaed by the J6 committee is powerfully incriminating evidence that will be introduced against him when he's prosecuted. And those who helped him draft it are co-conspirators. #JusticeMatters video dropping later today.



Matrix Factorization

Algorithm	Topic Name	Topic Name	Topic Name	Topic Name
LSA with CountVectorizer	Mitch + Kevin Knew	Hamill for Democracy	Hamill for Democracy	Roger Stone Video
LSA with TF-IDF	Mitch + Kevin Knew	Hamill for Democracy	Trump Hatched Coup with Meadows, Giuliani, Stone	Subpoena Trump

Created Topic Names

Mitch + Kevin Knew Trump Responsible

Mark Hamill for Democracy – Against Trump

Trump Hatched Coup with Meadows, Giuliani, Stone

Roger Stone Video

Subpoena Trump

Trump Lost Decided Attack

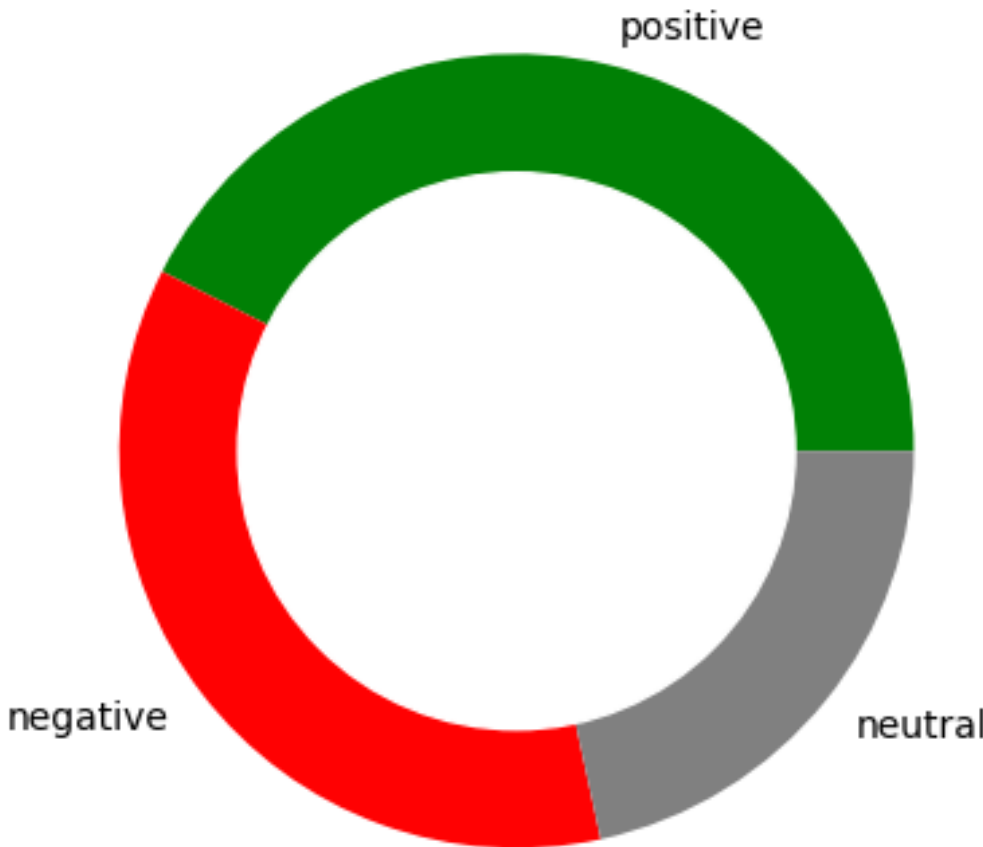
Probabilistic Modeling

Algorithm	Topic Name	Topic Name	Topic Name	Topic Name
LDA	Not Clear Enough	Mitch + Kevin Knew	Not Clear Enough	Trump Lost Decided Attack
LDA with Bigrams	Not Clear Enough	Subpoena Trump	Trump Hatched Coup with Meadows, Giuliani, Stone	Mitch + Kevin Knew

Sentiment

When looking at the entire conversation

Is VADER Sentiment making sense given the context of the conversation?



There’s murkiness:

- Seems difficult to be clear about what’s negative and positive
- Prompts the question: Is the positive sentiment indicating a positive human conversation?

Tweet	Neg/Pos	Compound Score
TRUMP LOST, KNEW HE LOST! You maga fools are all party to effin Treason	Neg	-0.88
ANGRY ANGRY ANGRY. It's way beyond bourbon	Neg	-0.87
Keep wasting time and money losers January6thCommitteeHearings	Neg	-0.72
Ugh. This shit again	Neg	-0.75
Hooooooooooly shit	Neg	-0.55
Fuck Fox News	Neg	-0.54
Distraction 101	Neg	-0.38
wow wow trumpisgoingtojail capitolriot nancypelos	Pos	0.82
Justice & Peace	Pos	0.78
Stunning. Stunning. Stunning. Stunning	Pos	0.85
Treat Trump like the Rosenbergs	Pos	0.63
GOOD! #January6thCommitteeHearings #Trumpisgoingtoprison	Pos	0.44
Too funny 😂 #January6thCommitteeHearings	Pos	0.44
Interesting	Pos	0.40
Joke	Pos	0.29



Thanks for Listening