

HurriHelp

A Hurricane Help
Twitterbot

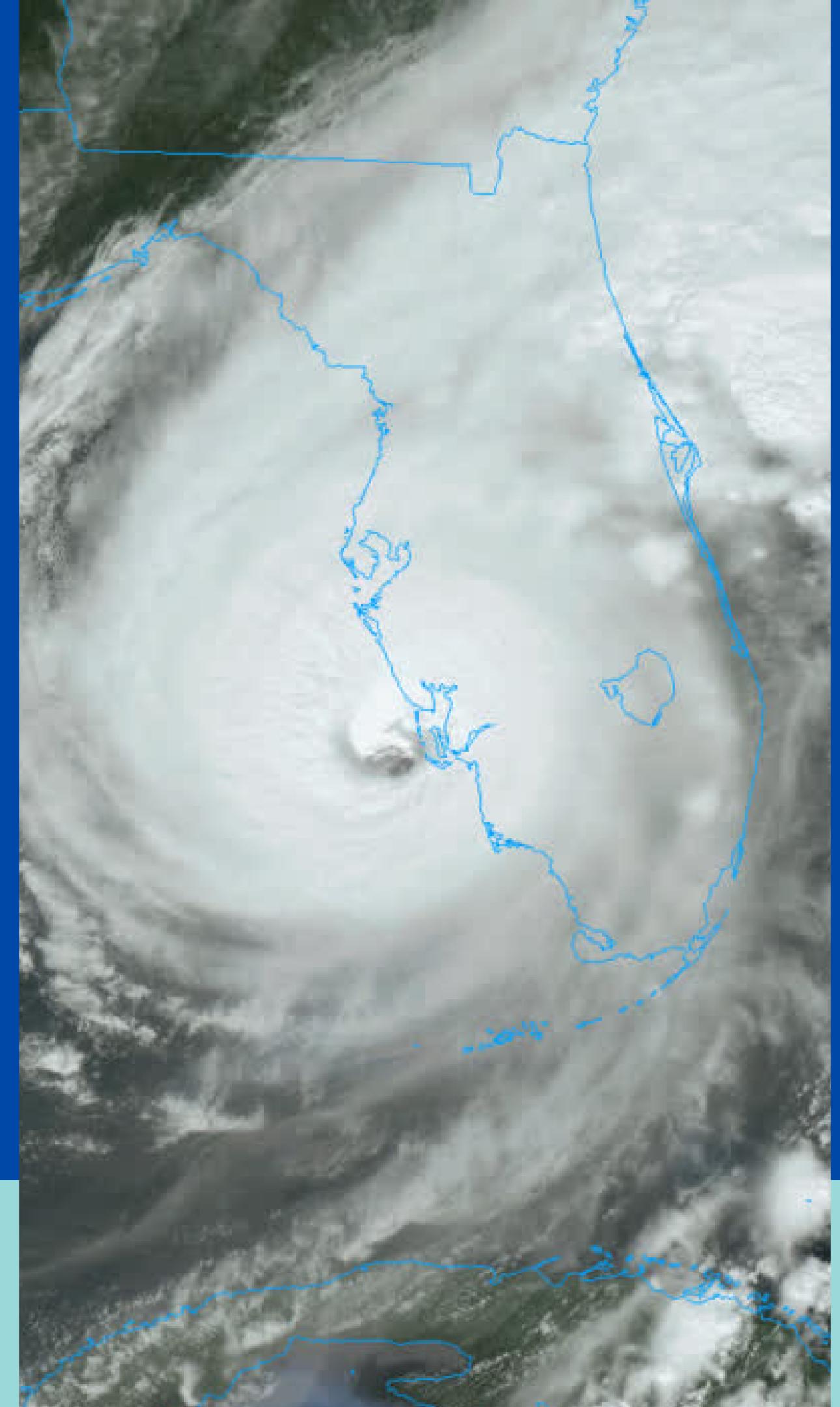


IMAGE BY NOAA, COLLEGE OF DUPAGE

LOUIS CASANAVE, FLATIRON SCHOOL



Hurricane Ian Boiler Plate:

- Category 4 Hurricane
- 152 Confirmed Dead in USA
- Over \$50 billion in Damages
- Millions without Power



Problem

Survivors Need Help Connecting to Existing Resources:

- National Disaster Distress Helpline
- FEMA

Solution

OUTREACH ON TWITTER:

USING MACHINE

LEARNING TO TARGET

FOLKS IN DISTRESS



Susan Who Believes in Science

@HardChick18 · [Follow](#)



#Ian #Sanibel #Missing #Help

We lost our home & everything in when
#Hurricanelan hit Sanibel (West Gulf Dr.). I
am searching for my parents ashes. They are
in this box, in a very heavy sealed bronze box
with the name Saner on it. I know it's a long
shot, but please share. 🙏💔



4:22 PM · Oct 1, 2022



HURRIHELP: A HURRICANE HELP TWITTERBOT



Bitchin' Post
@WindDance79 · [Follow](#)



I just went through an almost category 5 hurricane. 5 minutes away from ground zero.

After 9 days, we got our power back, and in 10, I got my Twitter/internet back.

It was horrific, it was the scariest night of our lives.

So grateful to still be here.

#Hurricanelan

9:52 PM · Oct 7, 2022



Hi! I'm HurriHelp, a hurricane helper bot. Here's some resources: National Disaster Distress Helpline (1-800-985-5990), for more info: <https://www.fema.gov/disaster/4673>"



Vision

Project Goals:

1. Collect Tweets Directly From Twitter
2. Analyze Sentiment
3. Analyze Word Frequency
4. Discernment Algorithm for HurriHelp
5. Deploy HurriHelp

Data

- 6773 original* tweets
- #Hurricanelan Hashtag
- 10/1/22-10/11/22
- 52% Positive
- 48% Negative
- Spam Users Removed*
- Data Direct from Twitter
- Sentiment from 3 different analyzers

 **David Tomchinsky**
@ChinskyRuns · [Follow](#) 

FREE SUPPLIES for everyone in #englewood
#northport #venice #portcharlotte !!!

TODAY from 11am-3pm

📍 473 S Indiana Ave Englewood, FL

We have food, water, gas, clothes, diapers/wipes, and more!

Please share with anyone who needs relief after #Hurricanelan



2:30 PM · Oct 8, 2022 from Englewood, FL

 7 ·  Reply ·  Copy link

[Read more on Twitter](#)

 **Eugene Ingram Jr**
@HighTechWriter · [Follow](#) 

Bodies flood into #morgues: Overwhelmed #medical #examiners grapple with grim task after #Hurricanelan.

The following media includes potentially sensitive content.

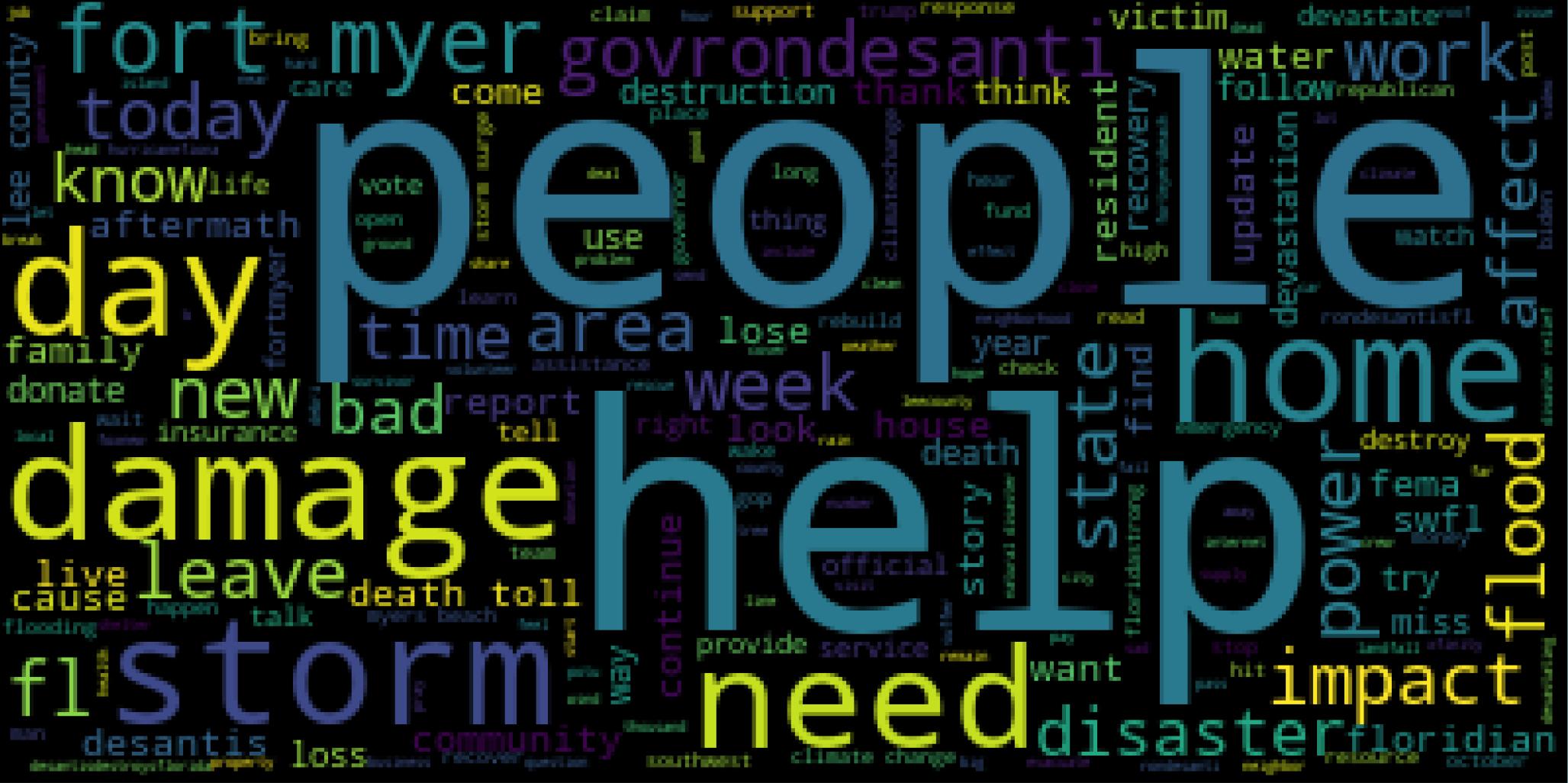
[View](#)

3:42 AM · Oct 9, 2022 

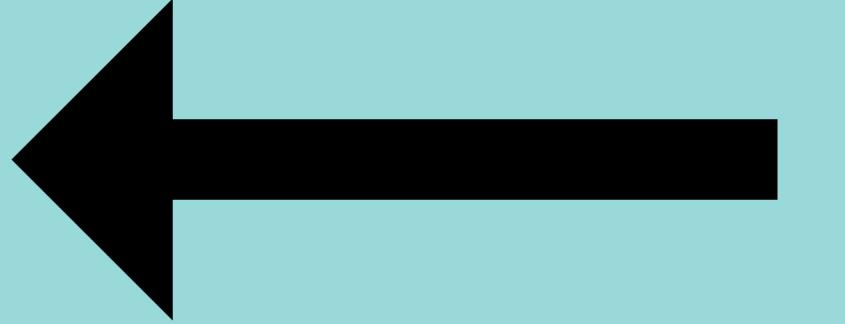
Limitations and Bias:

- No Neural Networks for Classification
- Can't Distinguish Between Different Negative Emotions
- Assumes Target isn't Tweeting Repeatedly
- Very Small Sample Dataset
- Hurricane Ian Only

Negative Most Common Words



A collage of various words related to disaster relief, community support, and recovery efforts. The words are arranged in a grid-like pattern, with some words appearing multiple times in different colors (e.g., 'thank' in green, 'support' in yellow). The colors of the words vary, including shades of green, yellow, blue, purple, and black. Some words have smaller text or icons inside them, such as 'crew' inside the 'fema' word.

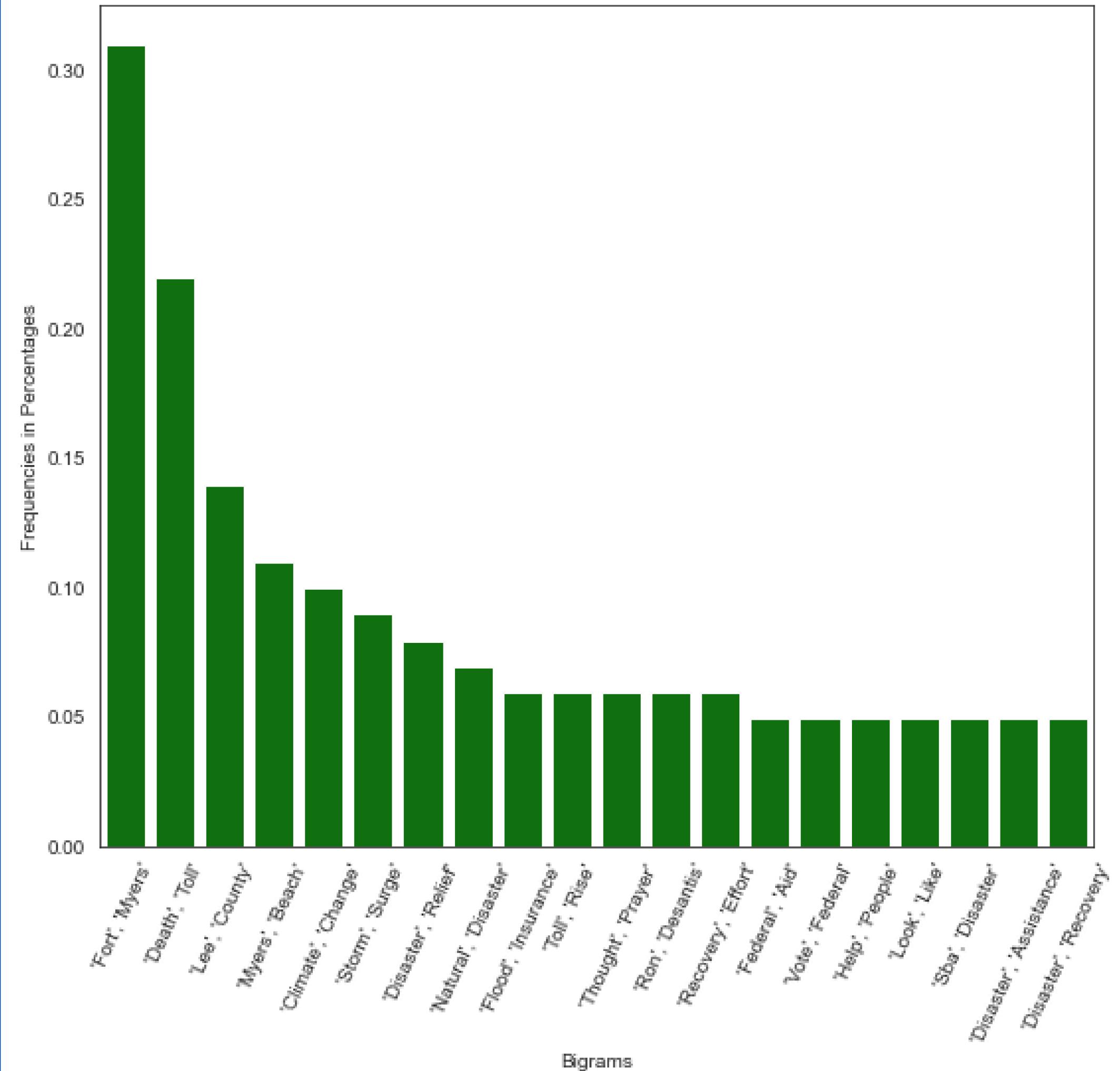


Positive Most Common Words

Negative Most Common Two-Word Combinations

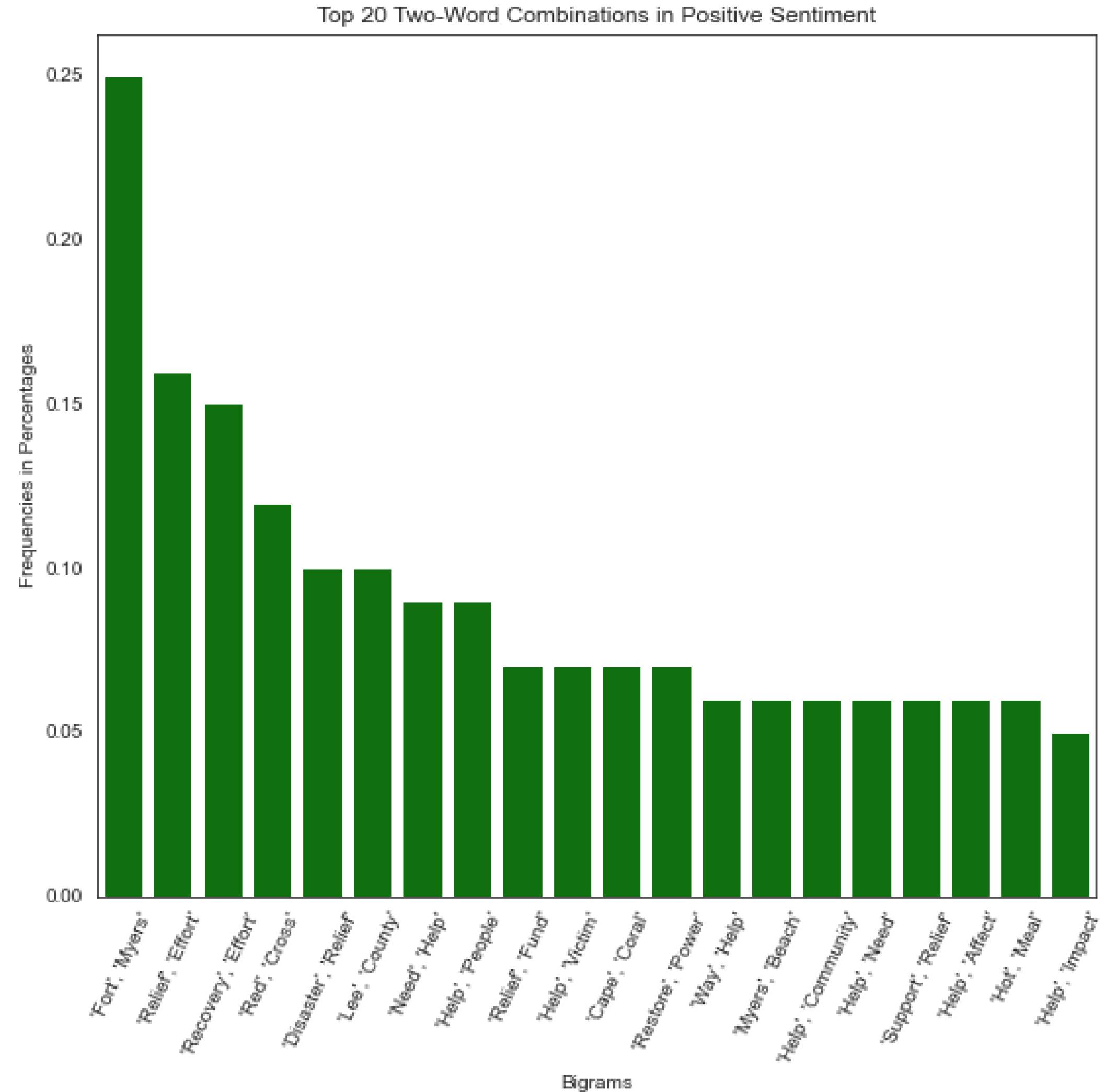
- Places: Fort Mayers, Lee County, Myers Beach
- "Disaster"
- "DeSantis"
- Monetary

Top 20 Two-Word Combinations in Negative Sentiment



Positive Most Common Two-Word Combinations

- Places: Fort Myers, Lee County, Cape Coral, Myers Beach
- "Help"
- Basic Needs



Modeling Goals:

1. Discern Negative Tweets
2. Only Reply to Negative Tweets

Methods

1. Remove: Emojis, Stopwords, Numbers, Punctuation
2. Split Data:
 - * 80% 5,418 rows training
 - * 10% 678 rows testing
 - * 10% 677 validation
- 1.8 Different Algorithms
2. Choose Best Performance
3. Analyze Results

Metrics

Precision

True Flagged

—
All Flagged

Model Types

- Random Forest
- XGBoost
- Naive Bayes
- Catboost

Vectorizers

- Frequency
- TFIDF
(term frequency inverse document frequency)

Results

**Catboost With Term Frequency
Precision: 80%**

HURRIHELP: A HURRICANE HELP TWITTERBOT



MsStaceyL Bracey

@thebraceygroup · [Follow](#)



Ron DeSantis decided to play god with [#immigrants](#)' lives by flying them to [#MarthasVineyard](#). This opened the [#Karma](#) door for [#Hurricanelan](#) to cause devastation to the people of [#Florida](#). People died bc of his [#evil](#) actions. [#KarmalsReal](#) [#HurricanelanUpdate](#) [#HurricanelanRelief](#)

5:45 PM · Oct 3, 2022

"Hi! I'm HurriHelp, a hurricane helper bot. Here's some resources: National Disaster Distress Helpline (1-800-985-5990), for more info: <https://www.fema.gov/disaster/4673>"



HurriHelp Needs Better Filters

Problem



Future Work

- Emotion Detection to Isolate "Sad" Tweets
- Topical Filters to Remove Unrelated Tweets
- Larger Data Set
- Scalability for Other Hurricanes
- Prototype Running
- Twitter Exodus => What's Next?

- HurriHelp NOT Ready for Deployment
- FEMA to Concentrate on Spreading Disaster
- Insurance Information
- Checkin On Fort Meyers and Lee County
- Beware Four Ds of Doom in Tweets

Reccomendations



The Four D's of DOOM: Most Common Most Negative Words

"DISASTER"
3rd most common, 86%



"DAMAGE"
4th most common, 82%



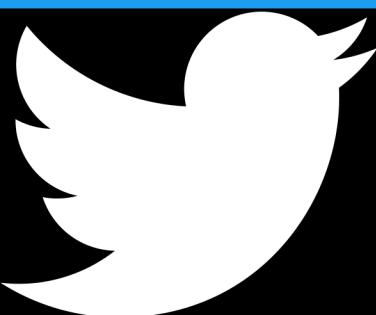
"DEATH"
11th most common, 88%



"DeSantis"
16th most common, 74%



Thank you



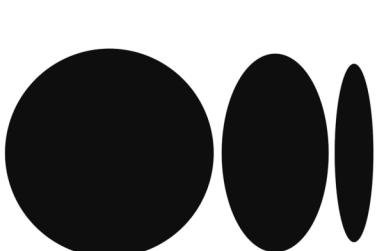
@Hurri_Help



github.com/casanave



linkedin.com/in/louis-casanave-78057aa0/e



medium.com/@ls.casanave

