



# **SOCIAL MEDIA**

## Identifying Misinformation in Disaster Related Posts

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# Project Description

## Problem Statement

While social media has become the first source of information about disasters, this information can be misleading, mistaken, or outright false.

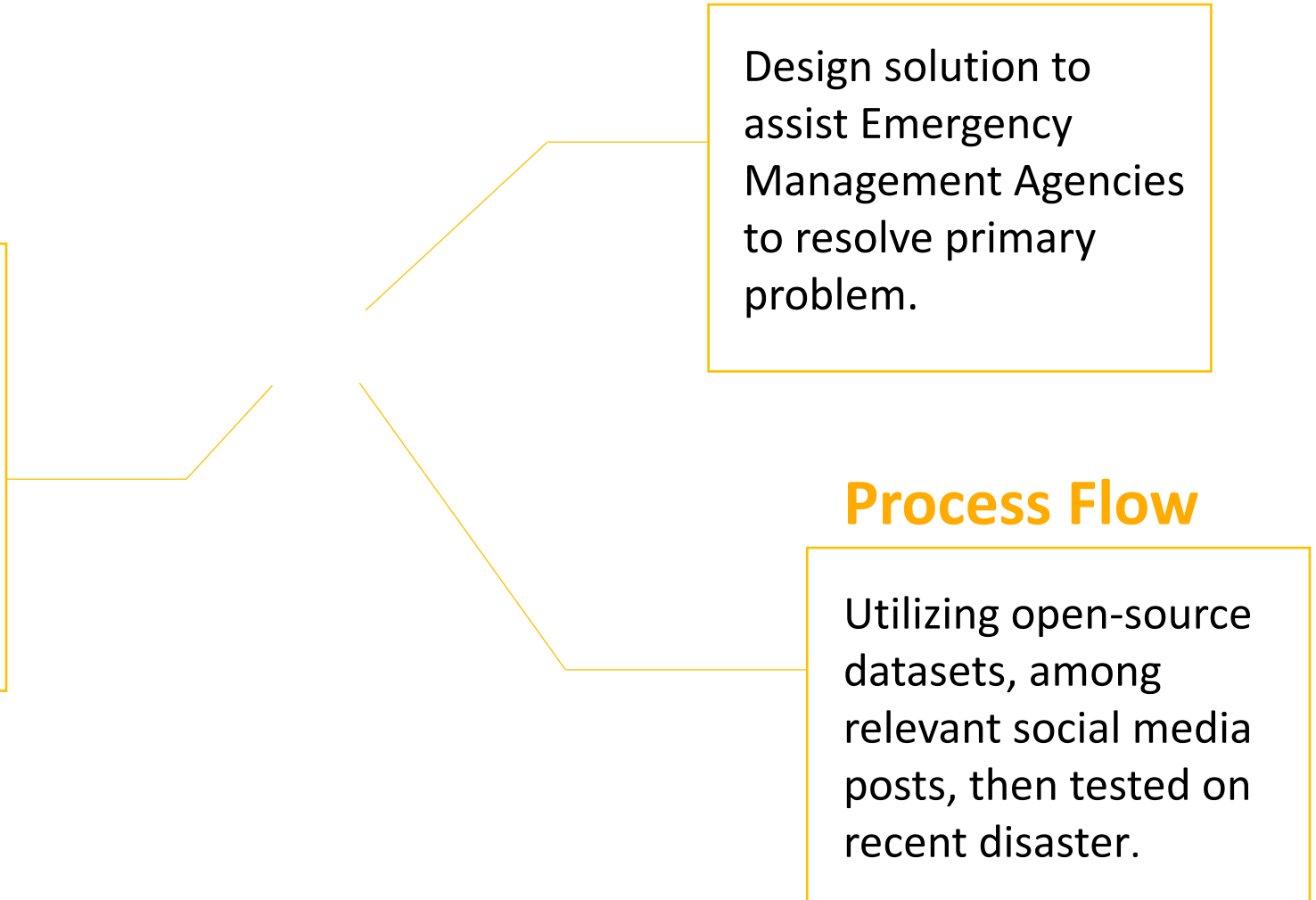
How can emergency management agencies identify incorrect information before, during, and after disasters?

## Desired Goal

Design solution to assist Emergency Management Agencies to resolve primary problem.

## Process Flow

Utilizing open-source datasets, among relevant social media posts, then tested on recent disaster.

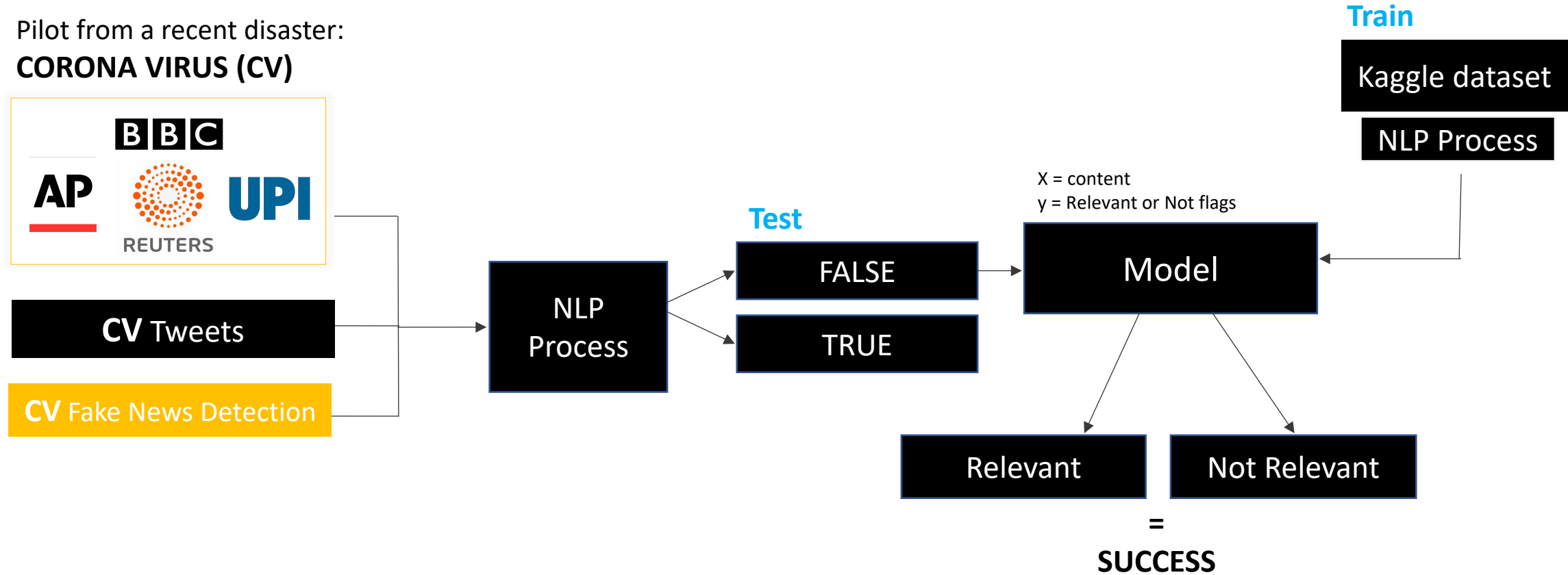


# Why we should care

The very real consequences of fake news stories



# How we set out to solve the problem



# Summary of Model Performance

Baseline Score : 42.7%

Tuned Models	Accuracy Score		Quality Metrics	
	Training	Testing	Precision	ROC_AUC Score
Logistic Regression	82.4%	80.5%	81.7%	86.7%
Random Forest	97.7%	79.2%	81.7%	83.9%
Multinomial Naive Bayes	81.3%	80.1%	82.2%	85.5%
Ada Boost	84.8%	77.8%	77.3%	82.1%
Gaussian NB	74.4%	73.4%	90.2%	72.8%

# Model Predictions

All predictions were computed using Multinomial Naive Bayes

Performance		
	text	prediction
0	Imagine being on a cruise ship that's in the m...	Not Reliable
1	Este sitio web permite rastrear la propagación...	Reliable
2	-le tengo más miedo al tiro bajo que al corona...	Not Reliable
3	#CORONAVIRUS <a href="https://www.theguardian.com/world...">https://www.theguardian.com/world...</a>	Reliable
4	#coronavirus #quarantined #ChinaCoronaVirus #C...	Not Reliable
...	...	...
1655	Maybe #coronavirus??? disease?	Not Reliable
1656	Cruise Giant Carnival Works to Manage Deepenin...	Reliable
1657	This corona virus must b like measles where it...	Not Reliable
1658	Cruise Giant Carnival Works to Manage Deepenin...	Reliable
1659	China's Hubei province reports 132 new coronav...	Not Reliable

# Solution Demonstration



## INPUT

Enter social media post

Enter social media URL

## OUTPUT

This post is Reliable

This post is NOT Reliable

# Constraint Resources | Limitations

## Challenges

Kaggle dataset alignment with feeds from 4 Big Int'l News Agencies



Determining threshold for RELIABLE vs NOT RELIABLE tweets



Optimize accuracy and verifying correlation between train/test sets



## Solutions

Classified as project 2<sup>nd</sup> phase

RELIABLE if predictive probability  $\geq 0.5$

We ran 7 models and tuned the parameters to optimize accuracy score

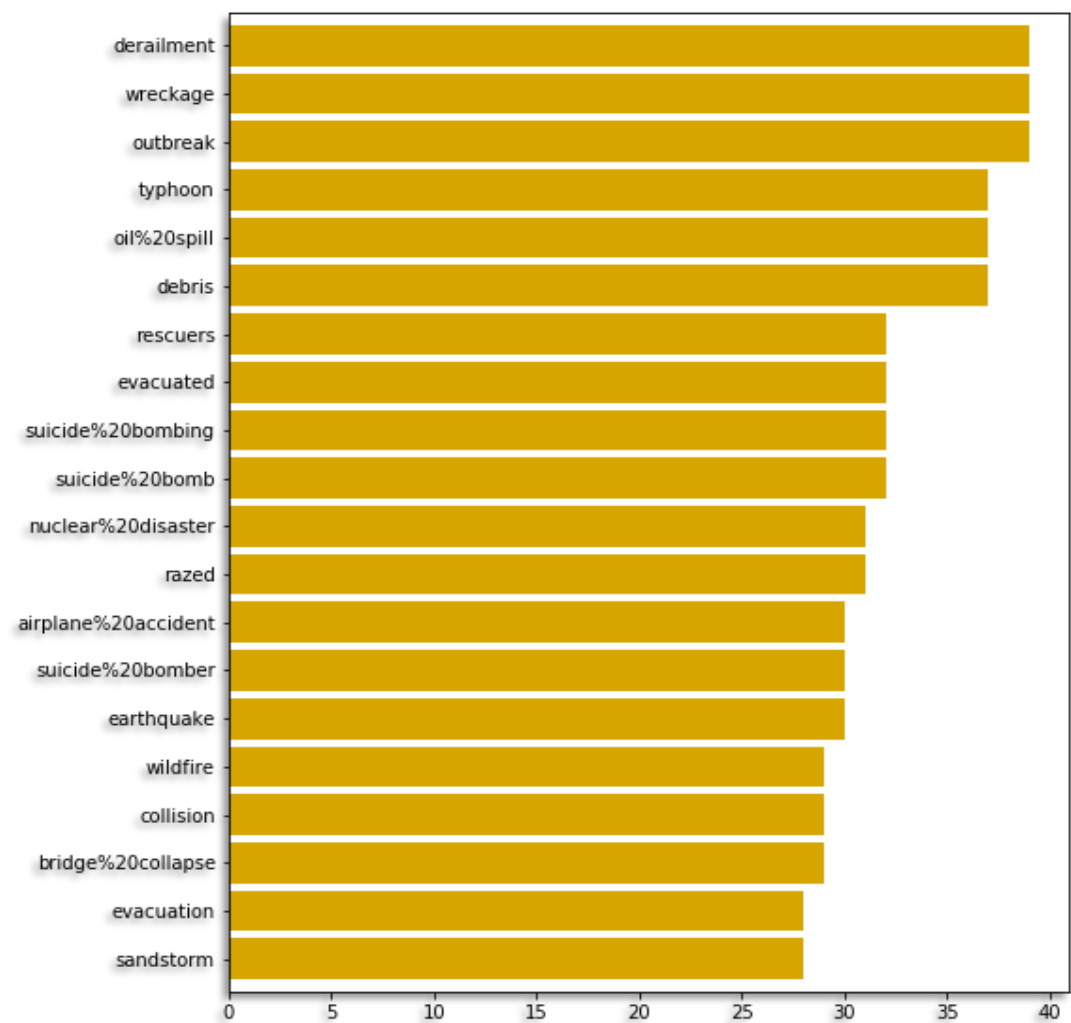


# Next Steps & Recommendations

- ❑ Test our model though reports extracted from news agencies: BBC, Reuters, etc.
- ❑ Setting up rules for metrics validation
- ❑ Attempt unsupervised modeling on the 'unreliable' labeled data, to gain further insight on patterns to improve overall model quality
- ❑ Extension to other mainstream platforms like Facebook, Reddit
- ❑ Apply global translation on all posts for further alignment
- ❑ App implementation on Flask for Real User Experience

# Appendix

Top 20 keywords indicating Relevancy



Top 20 keywords indicating Irrelevancy

