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

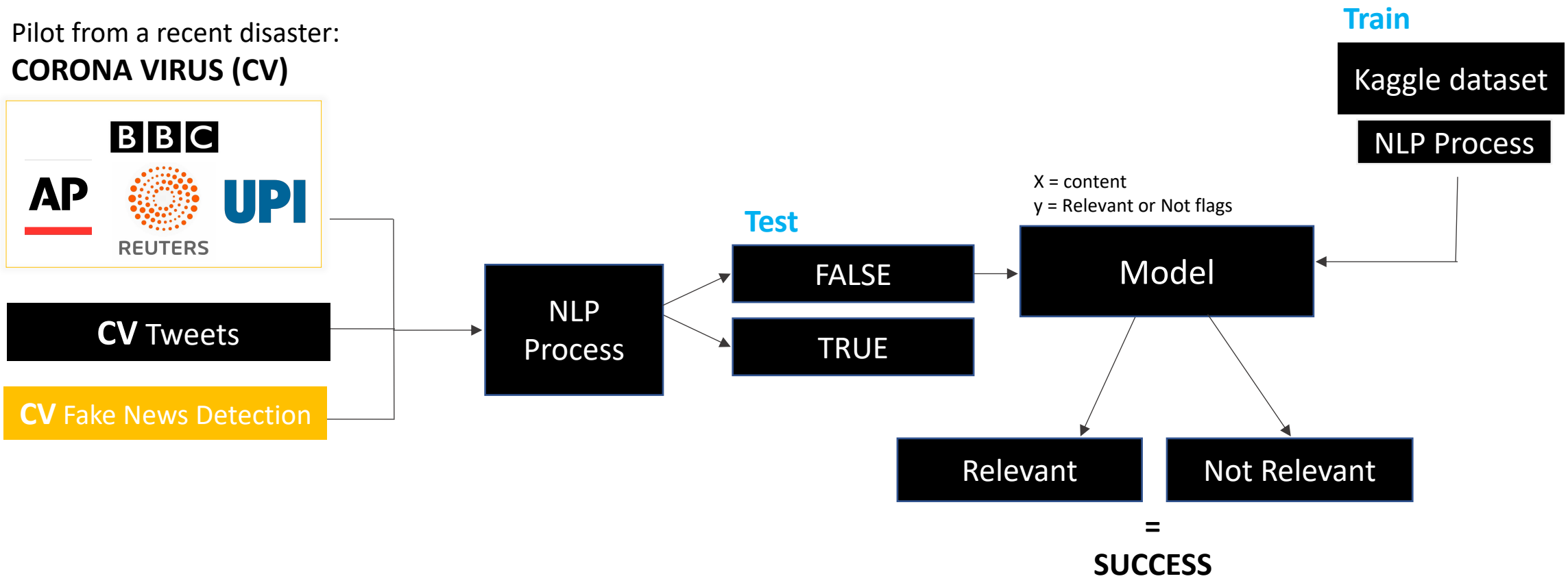
Utilizing open-source datasets, among relevant social media posts, then tested on recent disaster.

Why we should care

The very real consequences of fake news stories

How we set out to solve the problem

Pilot from a recent disaster:
CORONA VIRUS (CV)



Marked as part of the optimization process

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 https://www.theguardian.com/world...	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

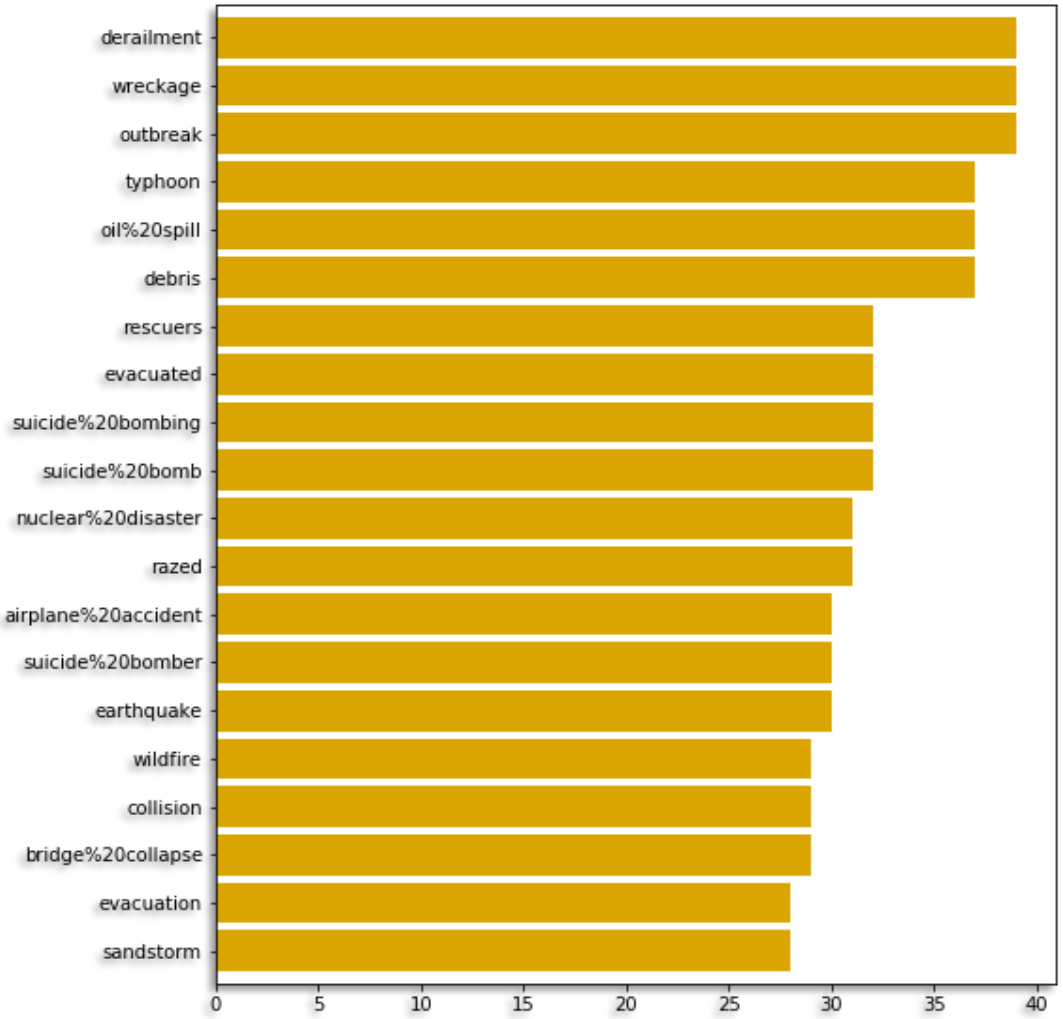
Challenges	Solutions
Kaggle dataset alignment with feeds from 4 Big Int'l News Agencies	Classified as project 2nd phase
Determining threshold for RELIABLE vs NOT RELIABLE tweets	RELIABLE if predictive probability >= 0.5
Optimize accuracy and verifying correlation between train/test sets	We ran 7 models 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