

Fake News Detector

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Problem Statement

Fake News is false information or propaganda published under the guise of being authentic news.

But how to identify:

Common Sense?

Fact checking?

Rely only on trusted sources?

SOLUTION → Let an app help you distinguish between **FACT** and **FAKE**

Objective:

Train a Machine Learning model to identify if a given news article is reliable or not

DATASET

Origin: kaggle.com
(challenge posted 4 years ago)

Size: 20,800 articles
19,640 after cleaning

Content: author, title, text, label
53% reliable news
47% unreliable news

Topics: politics, sports, entertainment, etc.

"Jerry Seinfeld: I Don't Get the 'Big Deal' About Kathy Griffin Photo, Just a 'Bad Joke'"

"Assange Prints Out Hillary's Emails Confirm Oligarch's Control"

"Margaret Flowers' Retrospective on Running as a Green for the U.S. Senate"

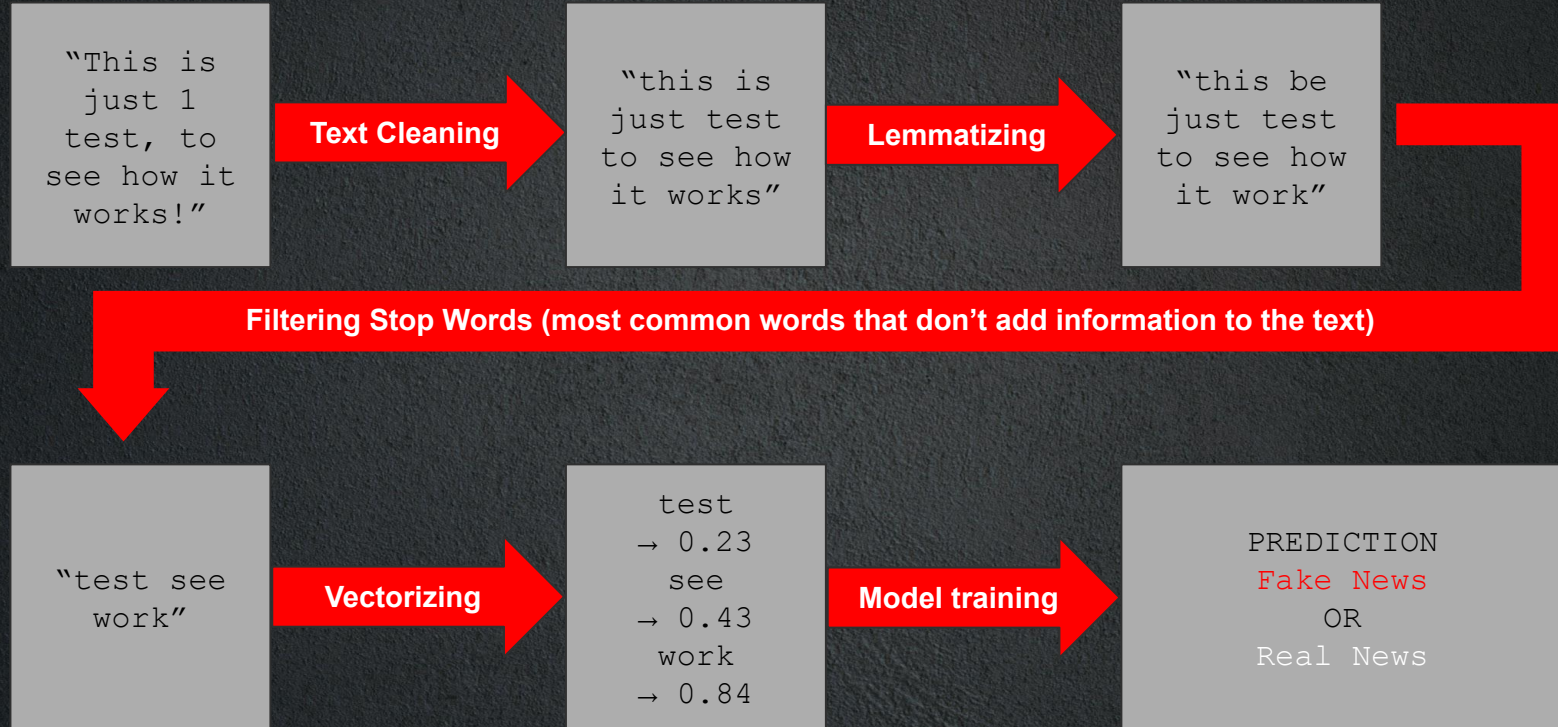
"Mexico Welcomes Possible U.S. Shift on Nafta, but Mistrust of Trump Persists"

"Katy Perry Sparks Outrage with Joke Comparing 'Old Black Hair' to Obama"

"AT&T-Time Warner Moves to Expand Corporate, State Control of Media"

"Lindsay Lohan's Strange Recent: Another Telling Sign of a Mind Control Plot"

Getting rid of the noise



Turning words into numbers

TF-IDF is a **measure of originality of a word** by comparing the number of times a word appears in a document with the number of all documents the word appears in. → **the higher the score, the rarer the term**

TF-IDF

Term Frequency

Is the frequency of any "term"
in a given "document"

Inverse Document Frequency

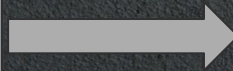
Is constant per corpus and
accounts for the ratio of
documents that include that
specific "term"

Cross-validated Results

Model	Mean Accuracy	Mean Standard Deviation
Random Forest Classifier	0.947	0.003
XGBoost Classifier	0.951	0.004
Passive Aggressive Classifier	0.966	0.003



Passive:
If prediction correct, do nothing



Aggressive:
If prediction wrong, minimally update
the weights to correctly classify

Outlook - Things to improve

1. **Train the model with** more recent examples!

News topics and terms in articles change in relevance over time.

2. **Use more sophisticated** language models **to analyze text!**

Text tagging and transformation with pre-trained models like Googles BERT or GPT2 can improve the features used for modeling

3. **Use Deep Learning** **to achieve better prediction performance!**

Deep learning models can achieve much better results with complex data and huge data sets

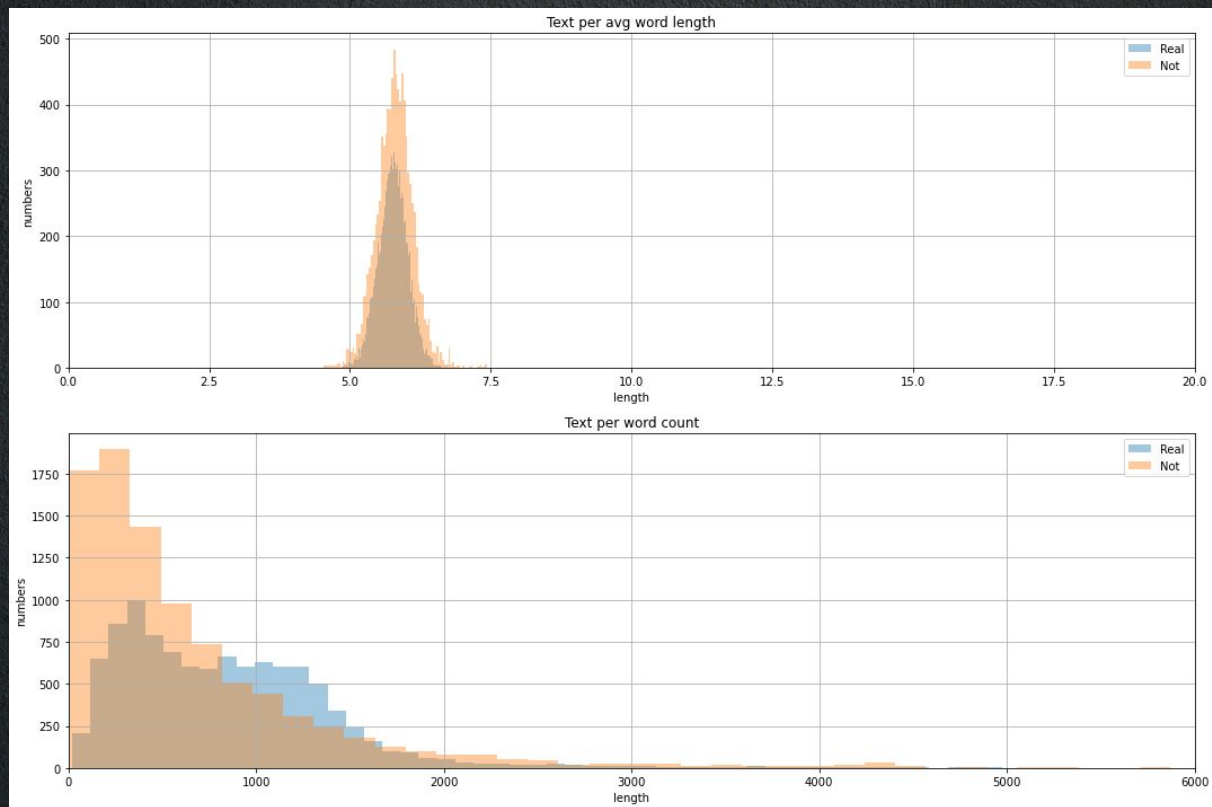
Demonstration

Thank You!

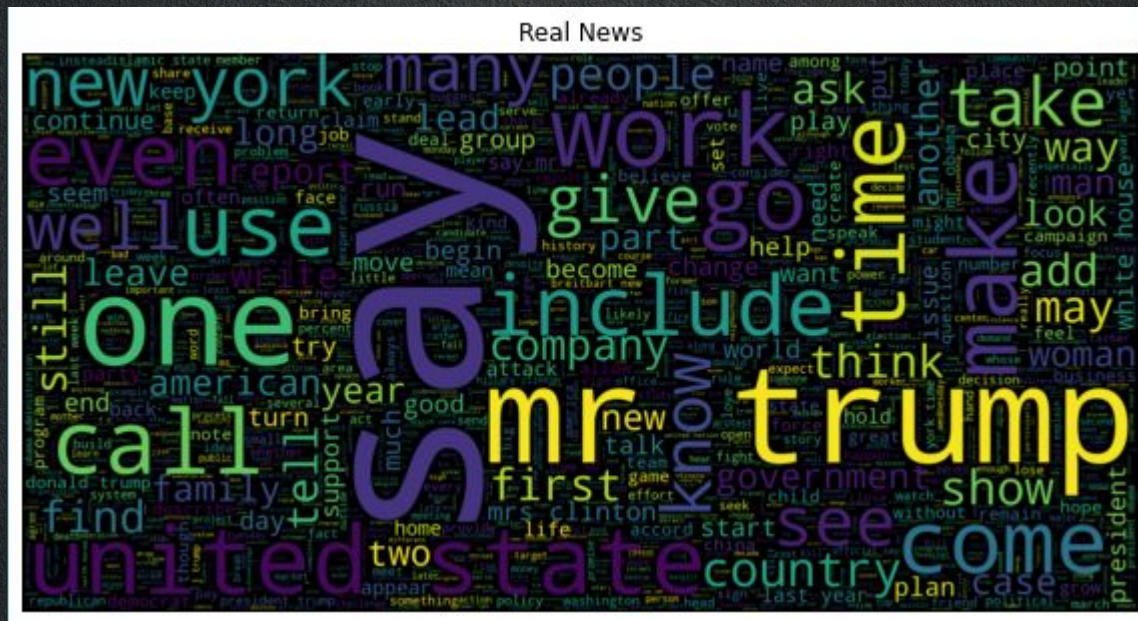
https://github.com/TobHeg/Final_Project_Ironhack_Dec2021

Appendix

EDA



EDA



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