Data Science on Fake News

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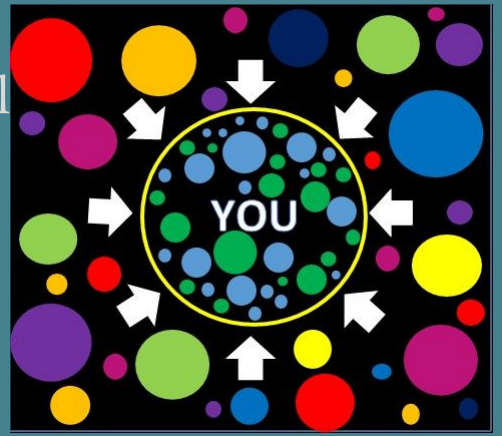
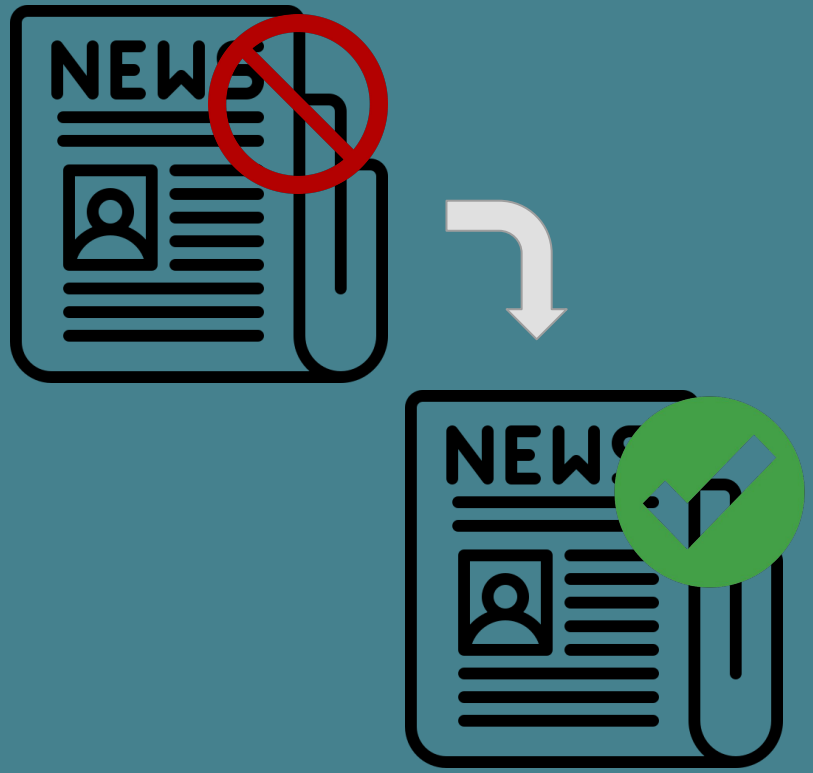
Overview

- There are vast amounts of information shared on a wide variety of digital platforms
    - Easily accessed, created and shared
- Misinformation and disinformation is poses a threat to democracy
    - Reinforces polarizing viewpoints
    - Generates mistrust in persons and institutions
    - Destabilizes society
- Develop tools to detect fake news to ensure we are well informed
- Use twitter data with labelled fake and real news



Data-Driven approach on Detecting Fake News

1. Data collection
2. Data preprocessing
3. Exploratory data analysis (EDA)
4. Feature selection
5. Model selection
6. Model training and testing
7. Classification



Impact of Data-Driven Approach

Speed → Faster the automation and detection, less harm fake news causes

Consistency → Decisions made based on patterns not on personal opinions

Cost-Effective → Compared to traditional fact-checking, expensive and time consuming

Overall, well-informed citizens

Dataset Overview

- Canadian Institute for Cybersecurity Truth Seeker Dataset 2023
  - https://www.unb.ca/cic/datasets/truthseeker-2023.html
- 134,198 records and 60 fields
- Features and target variable (fake = 0, real = 1)
- Data quality:
  - Data is clean (no missing values nor duplicated entries)

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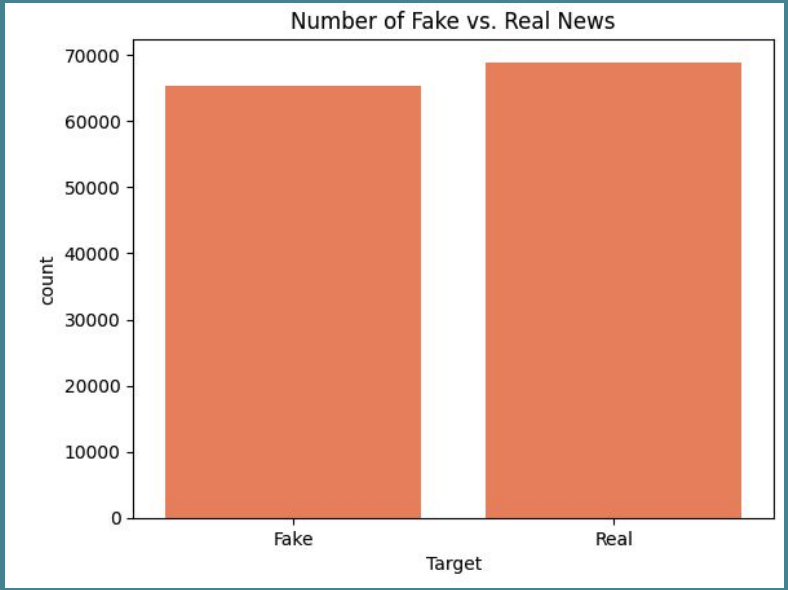
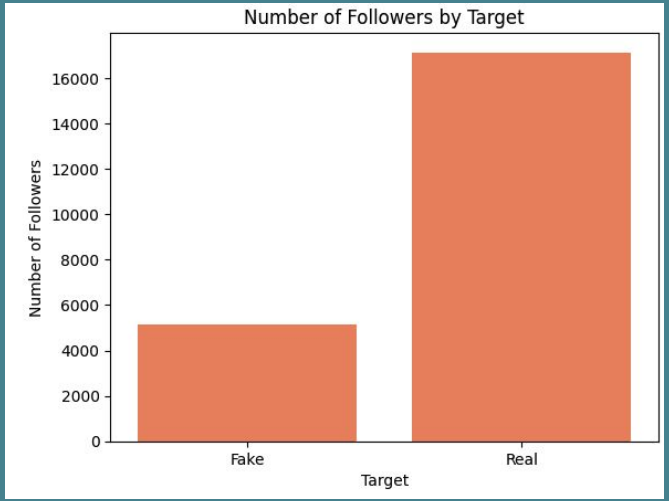
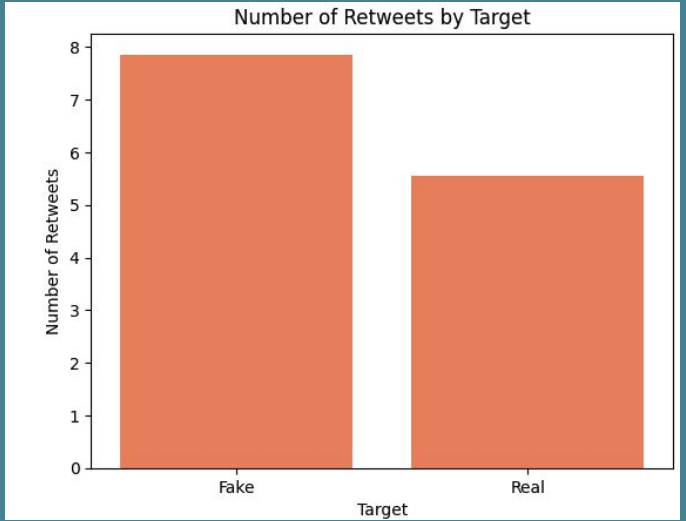
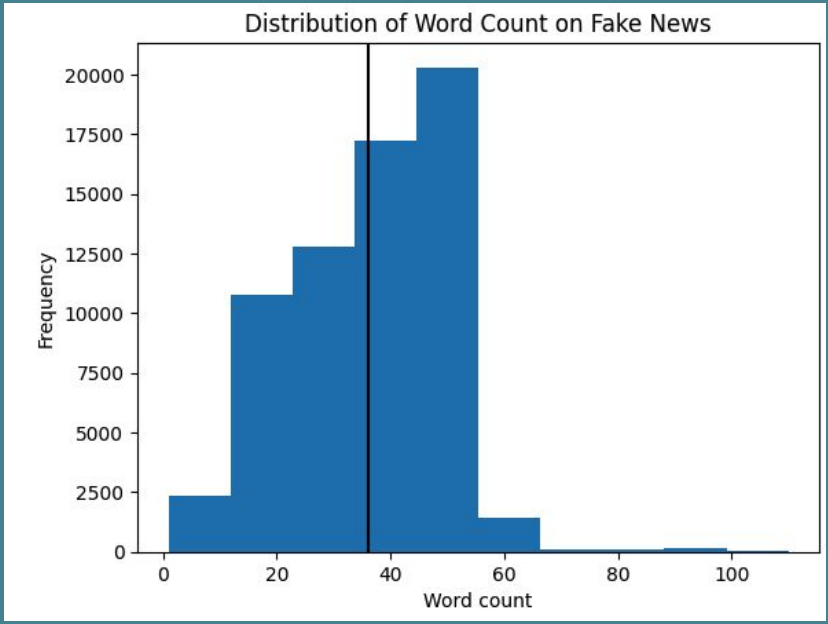
Preliminary EDA

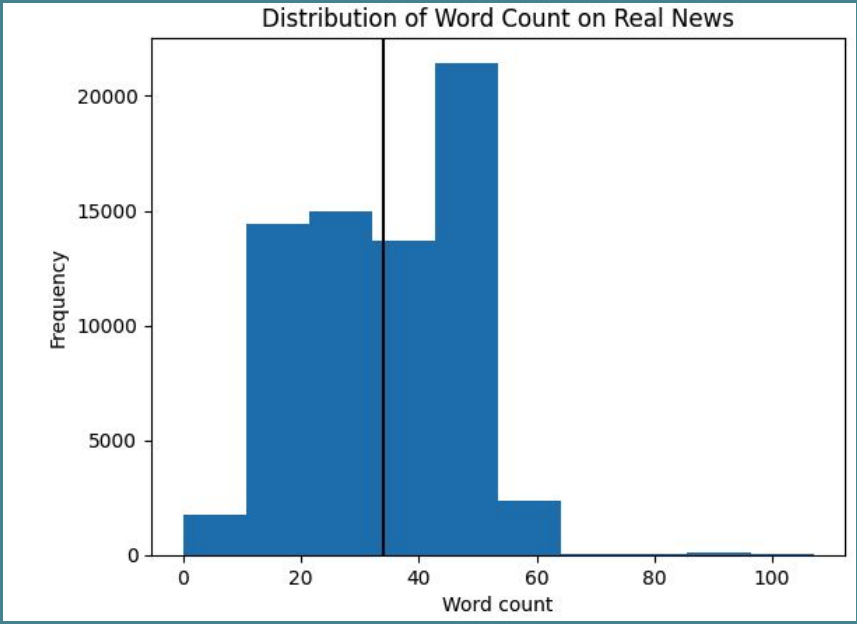






Preliminary EDA





Next Steps

- Approach 1: predict fake vs real news based on given features such as length of statement, influence score, credibility, number of followers
- Approach 2: use sentiment analysis
  - Determine the emotion attached to each statement to see if more negative or positive emotions are a good indicator for fake vs real news
- Compare accuracy scores