Reddit Content Analysis

Group 22

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Motivation

Analyze recent activities in r/conspiracy subreddit

- Topic Clustering
  - Comparison of TFIDF and Word Embeddings
  - Presentation of Clusters as Word Clouds
- Community Analysis
  - Track activity of users
  - detect Throw-Away accounts
- Sentiment Analysis
  - Detect positive/negative/neutral sentiment of
    - submissions
    - comments

Data and Methods

Data Crawling

- PRAW Library
  - 1k latest/hottest submissions
  - unique authors
  - comments
- OpenAI
  - Word Embeddings
- Hugging Face
  - Sentiment analysis

Methods

- TFIDF
- Word embeddings
- K-Means clustering
- Mannwitneju significance test
- General preprocessing
  - spell correction
  - stopword removal
  - punctuation removal
  - lemmatization

Results: Topic Clustering

Submission to Vector via average pooling of

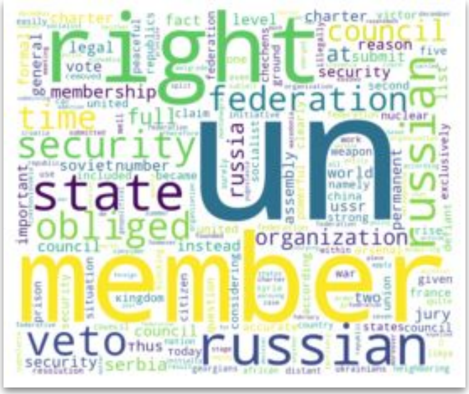
- TFIDFs (TfidfVectorizor)
- Word Embeddings (OpenAI text-embedding-ada-002 model)

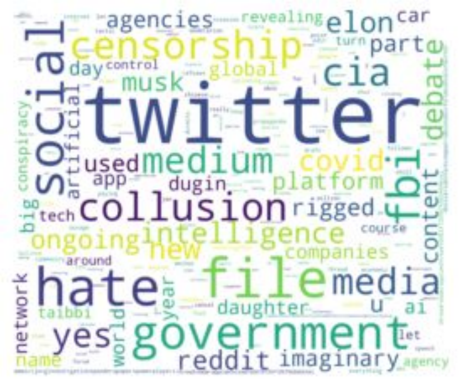
Clustering with K-Means (k = 30)

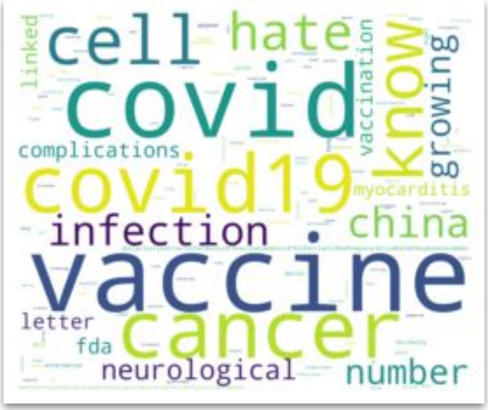
- Averaging pairwise cosine similarities within clusters
- Averaging over cluster similarities

TFIDFs: **8.36 %**

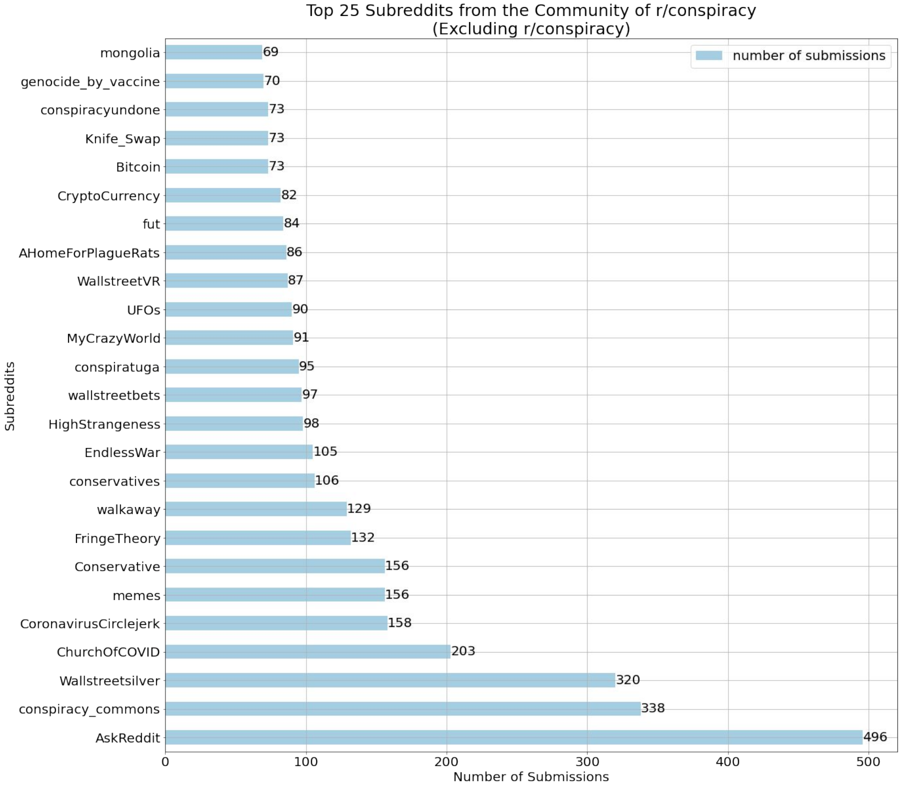
Word Embeddings: **97.10 %**







Results: Community Analysis / Throwaway Analysis



Throwaway Account(TA) Def.:

First Submission of the Redditor was in the observed Subreddit (r/conspiracy).

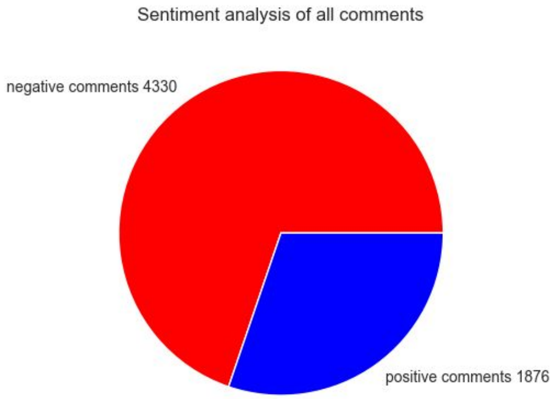
Results:

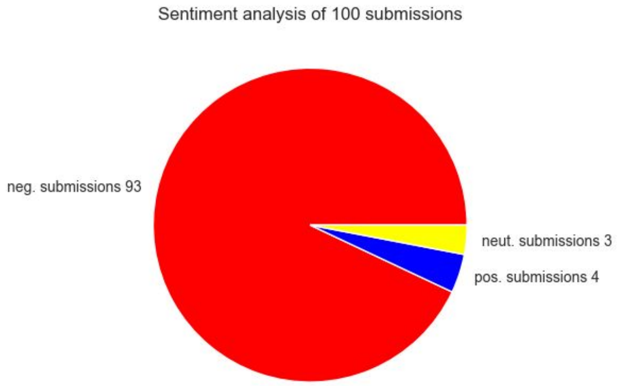
38.57% of our user base potentially used throwaway accounts.

There was no significant difference in user-activity when comparing normal users and TAs with MWU-Test.

Results: Sentiment Analysis

- Analysis of the comments from the top 100 submissions with the most comments





Conclusion

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Data collection framework allows variety of analyses
Word Embeddings working better than TFIDF
Found activity behaviour and sentiment

Future work

adapt data collection framework for more precise retrieval

Limitations/Biases

- find best k for Clustering
- obtain adequate word embeddings
- more precise preprocessing (e.g. remove links)
- PRAW retrieval limits
- OpenAI retrieval limits