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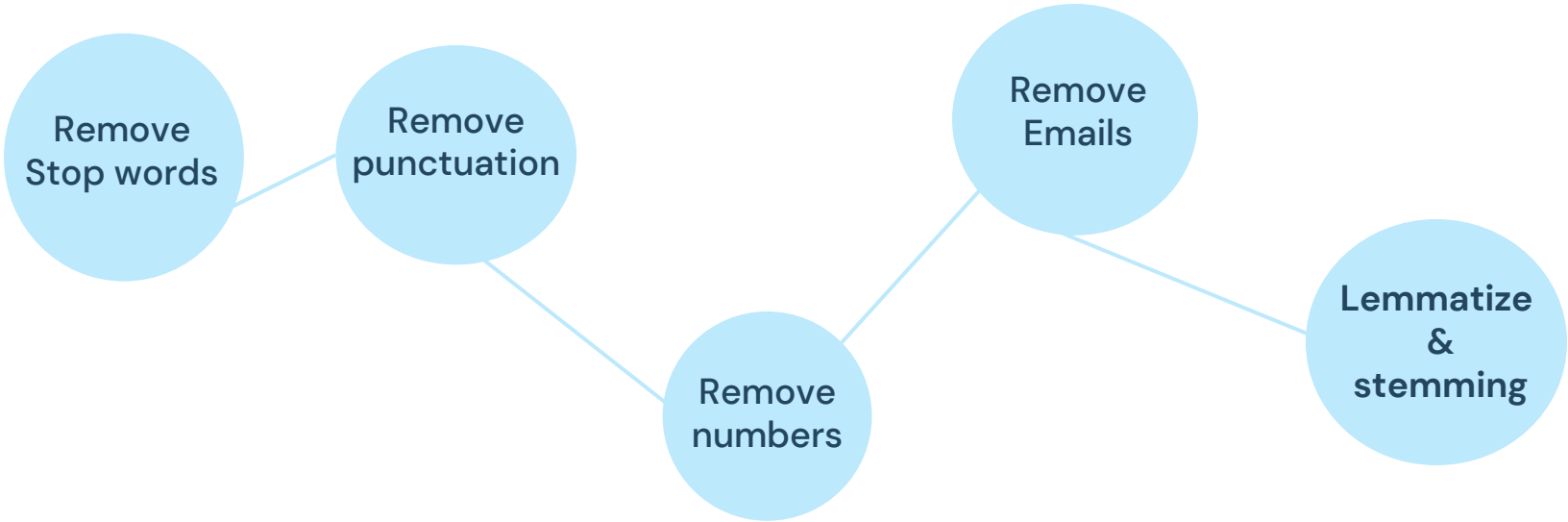
Introduction

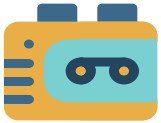
We all see a lot of fake news almost on a daily . Often its purpose is to spread fear and corruption, especially in societies where the level of digital awareness is low.

Workflow

NLP


Remove Stop words
Remove punctuation
Remove numbers
Remove Emails
Lemmatize & stemming

Dataset



News dataset

44k rows

4 columns

#13 01.01.2025

DAILY NEWS

WORLD NEWS TODAY

Economic News

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ECONOMIC NEWS

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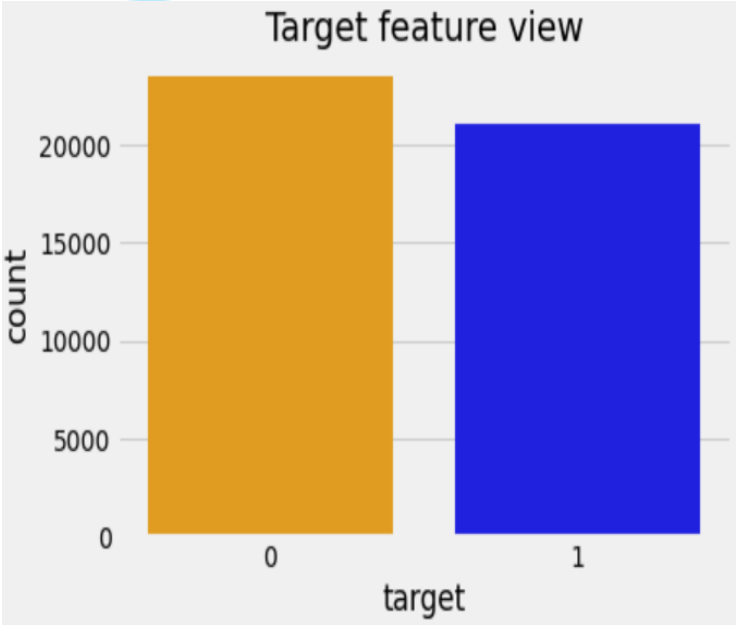
Tools

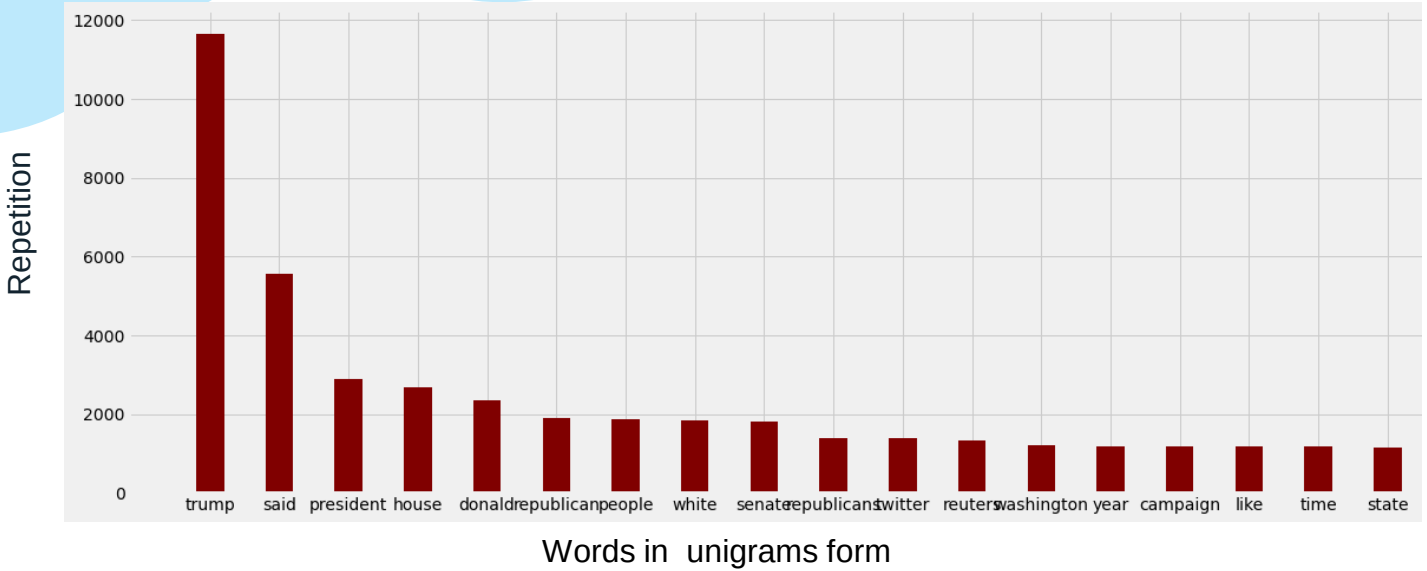
- Python, Jupyter notebook
- NumPy, Pandas
- Matplotlib, Seaborn and wordcloud
- Sklearn
- NLTK and gensim
- Regular Expressions
- Ngrams

EDA

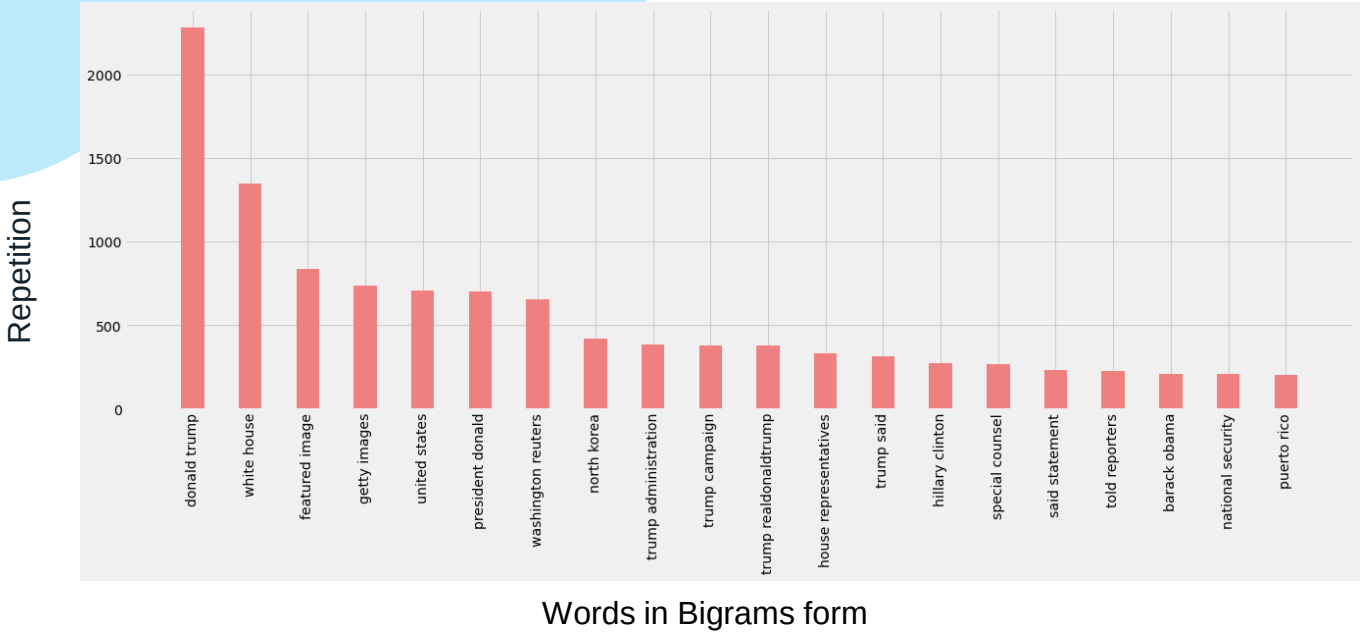
Fake and real counts



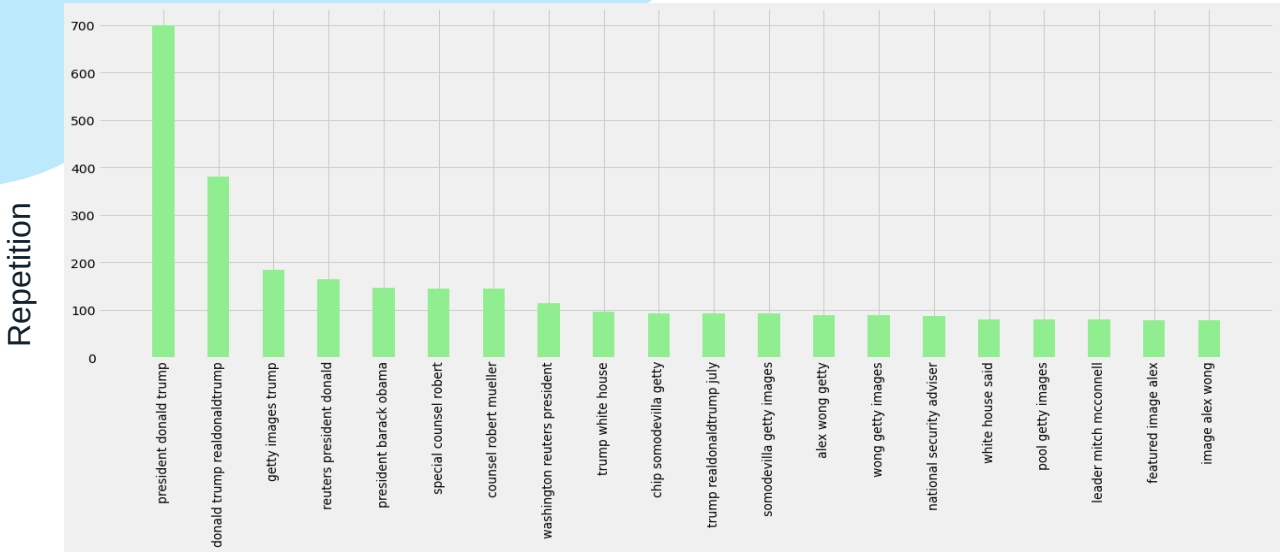
Unigrams Counts



Bigrams counts

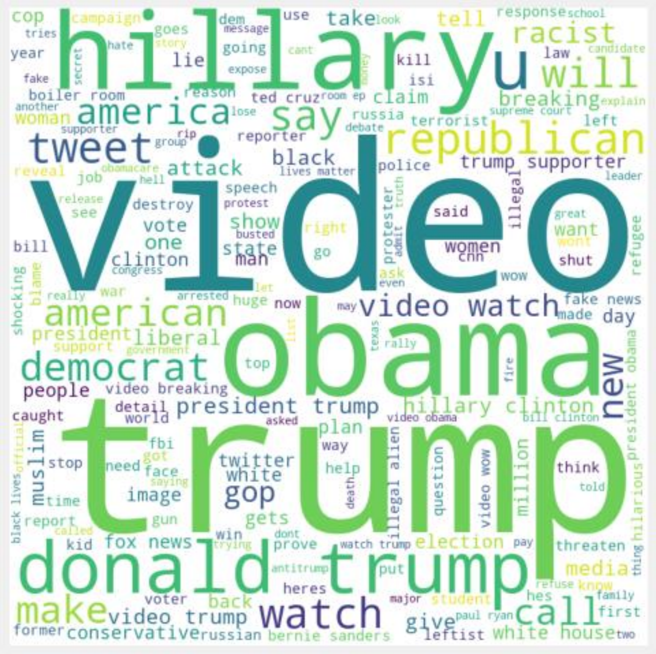


Trigrams Counts



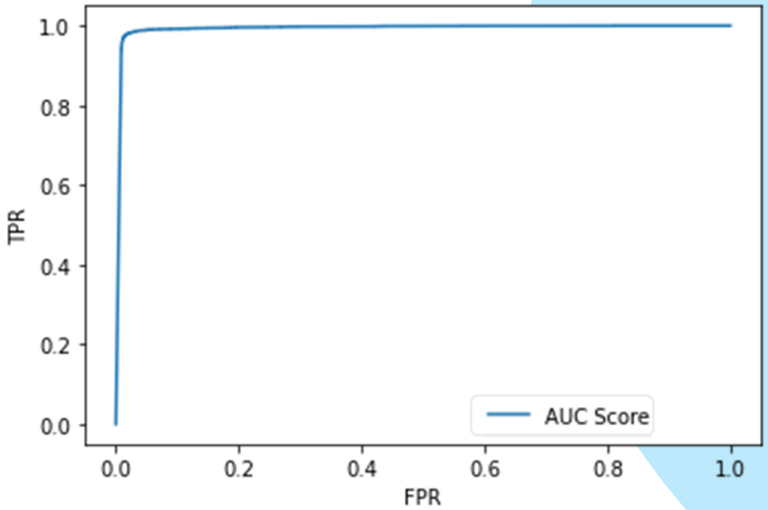
Most common words in real news

Most common words in fake news



Classification

Classification using naïve bayes models

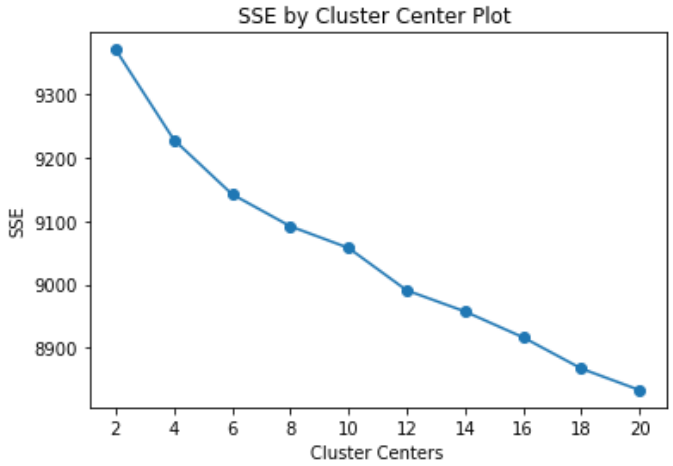


Accuracy Score	
0.95	**MultinomialNB** Baseline model
0.965	**BernoulliNB**
0.98	**BernoulliNB** After Tuning
0.978	**BernoulliNB** Testing

Topic Modeling

What is the optimal number of topics ?

K-means



LDA

Hyperparameter Tuning

10 Topics

LDA using different libraries

Bag of word

TF-IDF model

LDA

Count Vectorizer

LDA

Conclusion

- In this project we built a model that predict fake and real news by using classification technic
- The best score was 98%
- Our best method in topic modeling was LDA

Thank You