Group 17

Classification of Fake and Real News

https://github.com/StellaLukasser/AIR

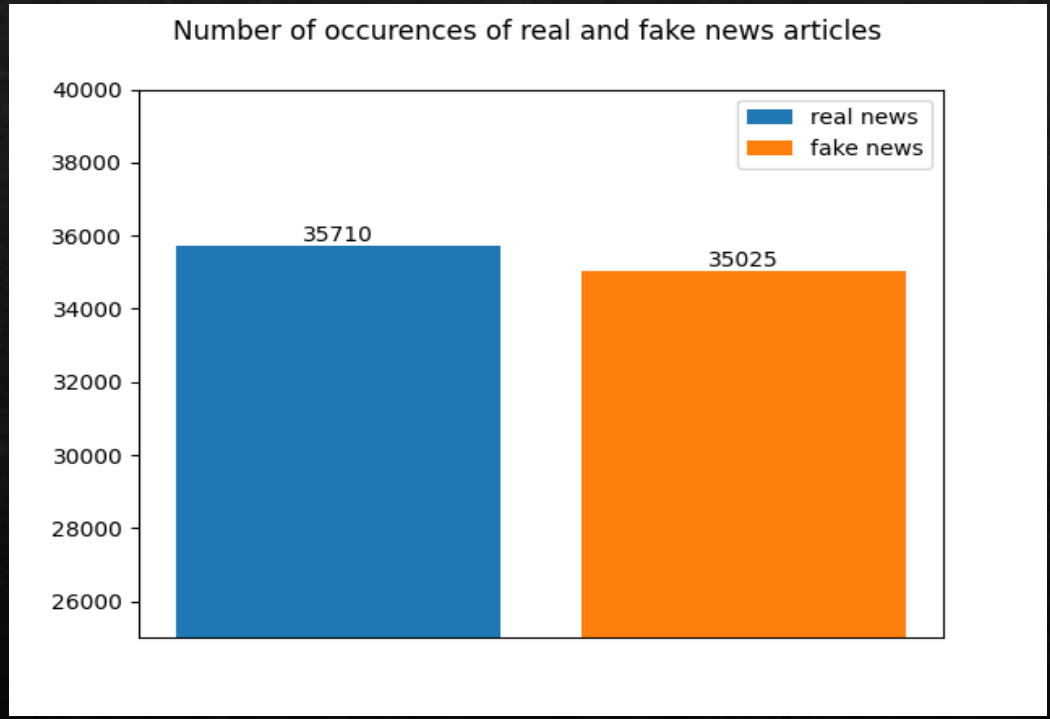
Armin Bodingbauer – preprocessing, model-design, visualization, integration
Nur El-Din El-Rez – model-design, slides
Stella Lukasser – preprocessing, model-design, visualization, integration, slides
Frederik Wagner – preprocessing , integration

Motivation

Is it possible to classify fake and real news articles just based on their titles? How is the performance compared to using the whole news text as input?

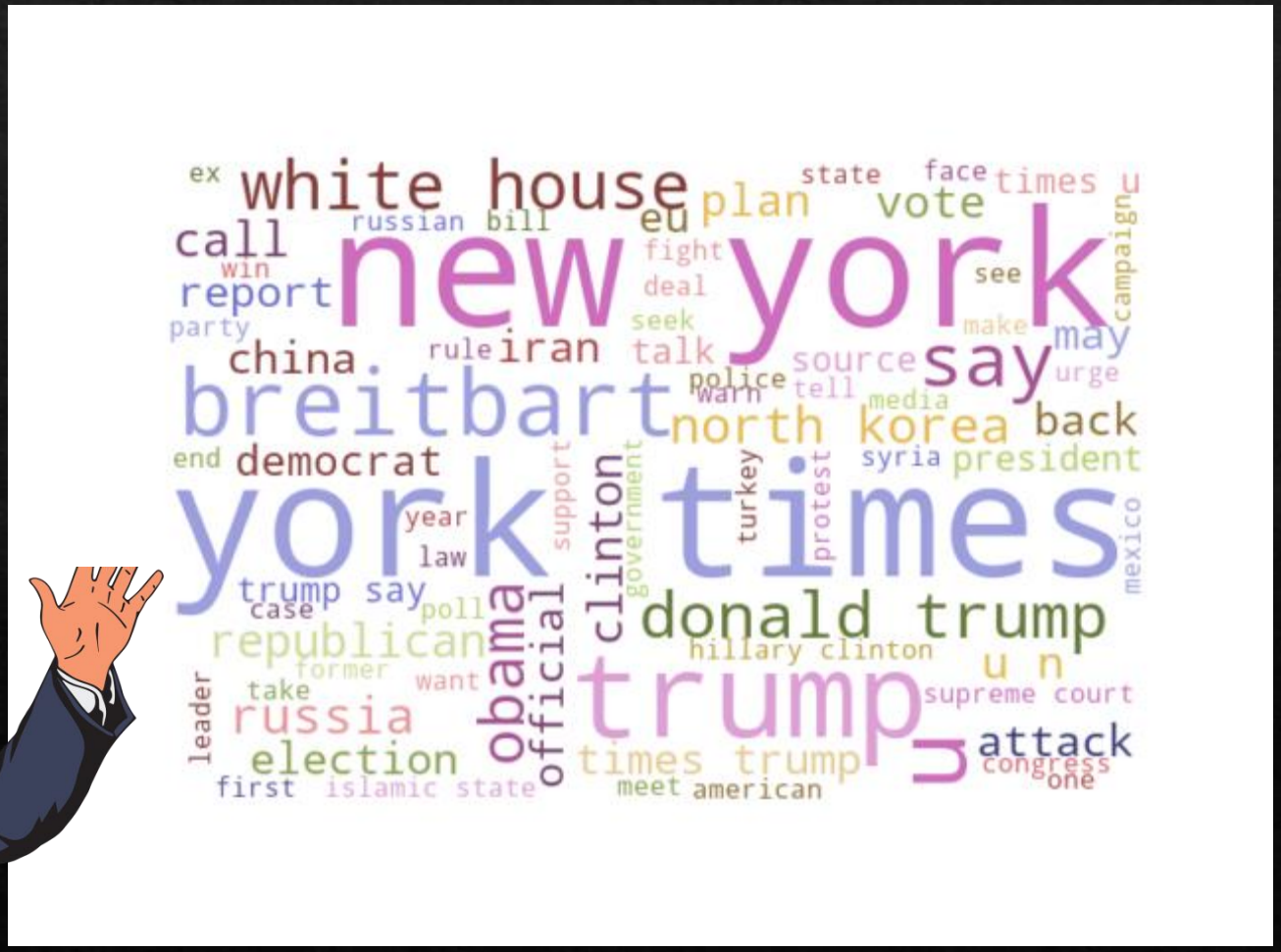
Data Set

- 72,134 news articles
- Real 50.5 %
- Fake 49.5 %
- Merged from Kaggle, McIntire, Reuters, BuzzFeed Political

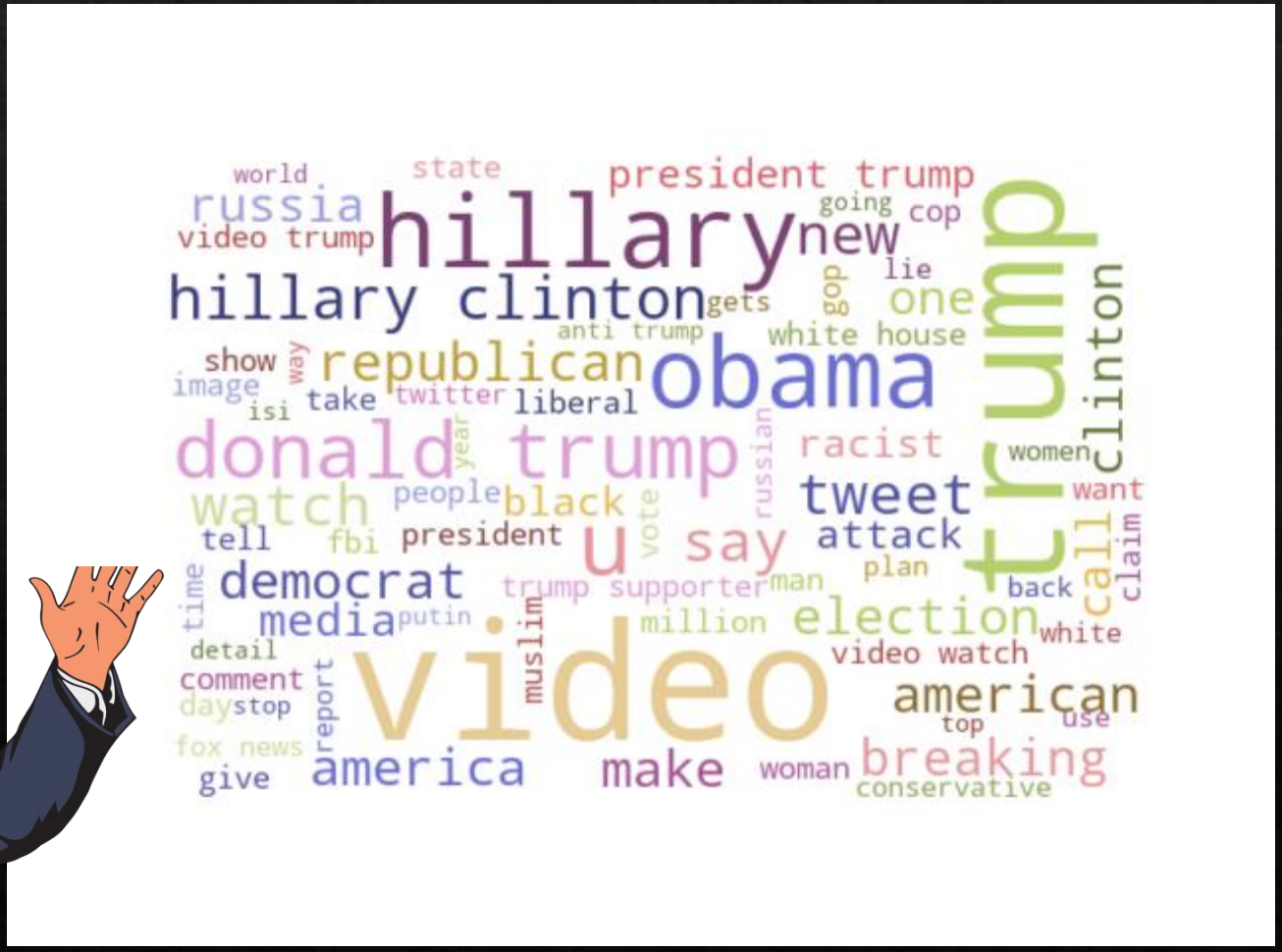


https://www.kaggle.com/datasets/saurabhshahane/fake-news-classification

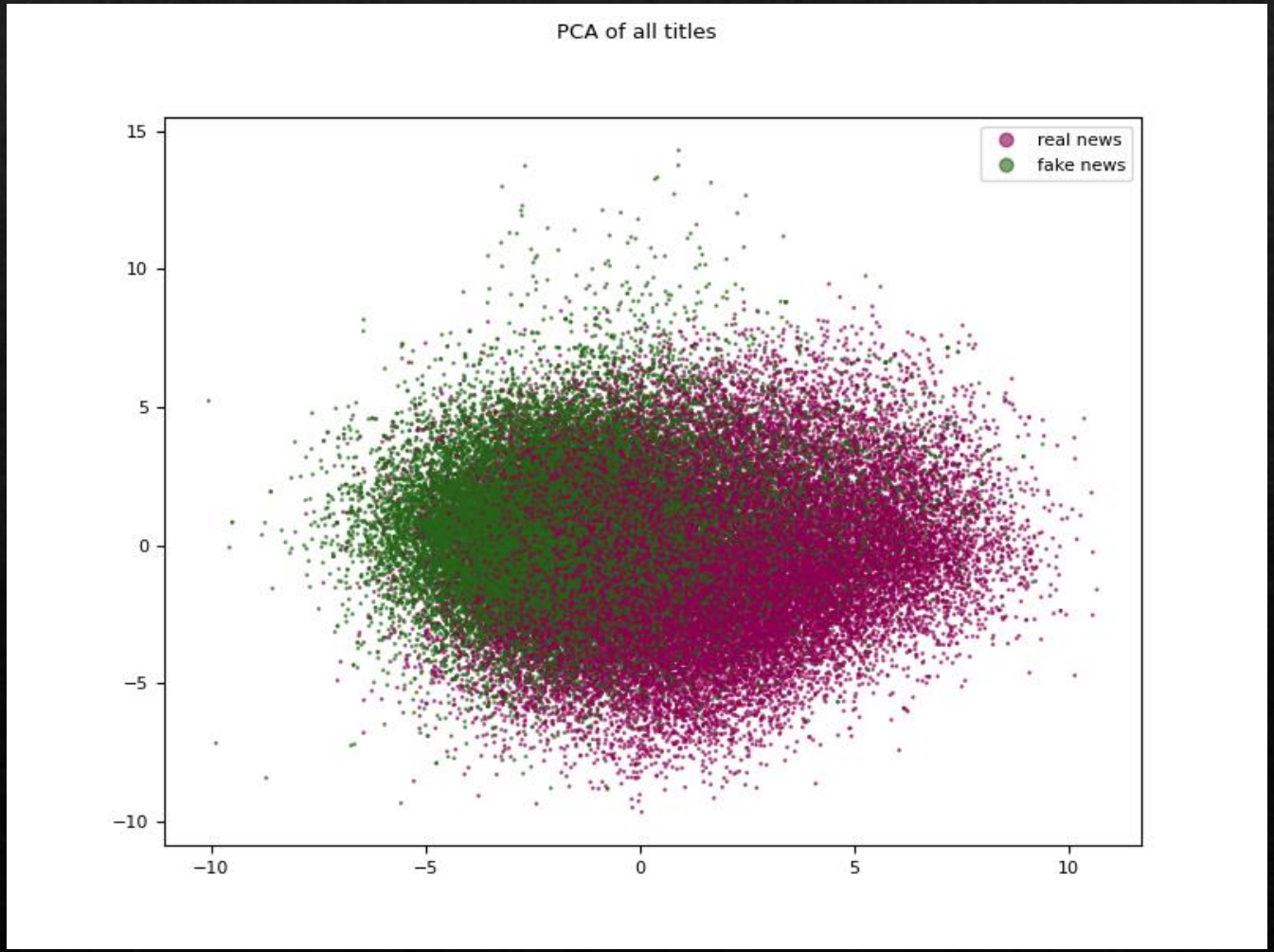
Word cloud <Fake>



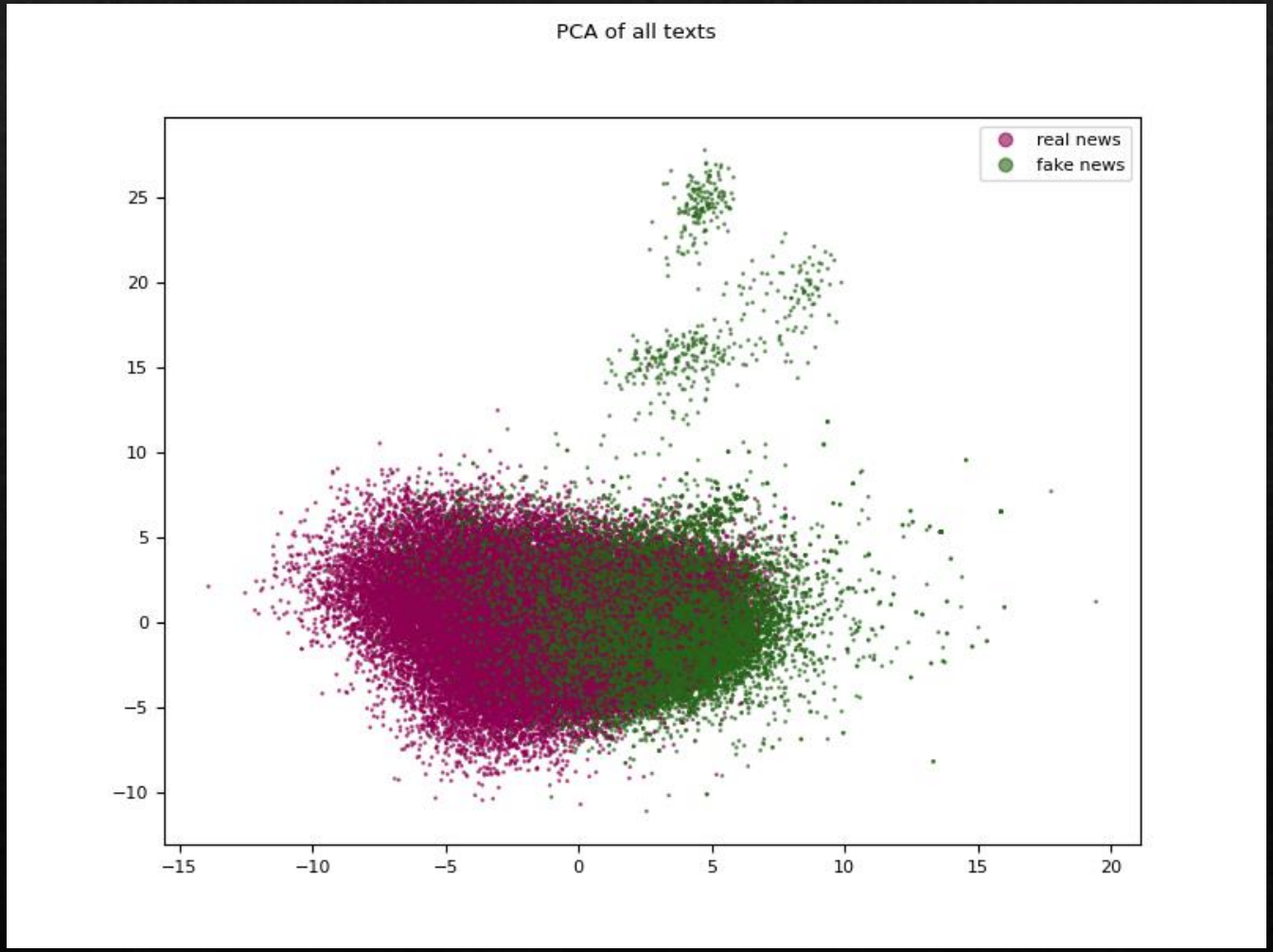
Word cloud <Real>



Distribution of real/fake news by TITLE



Distribution of real/fake news by TEXT



Preprocessing

- Skip short lines (length <= 10)
- Tokenization with NLTK
- Stopword removal
- Stemming

Methods

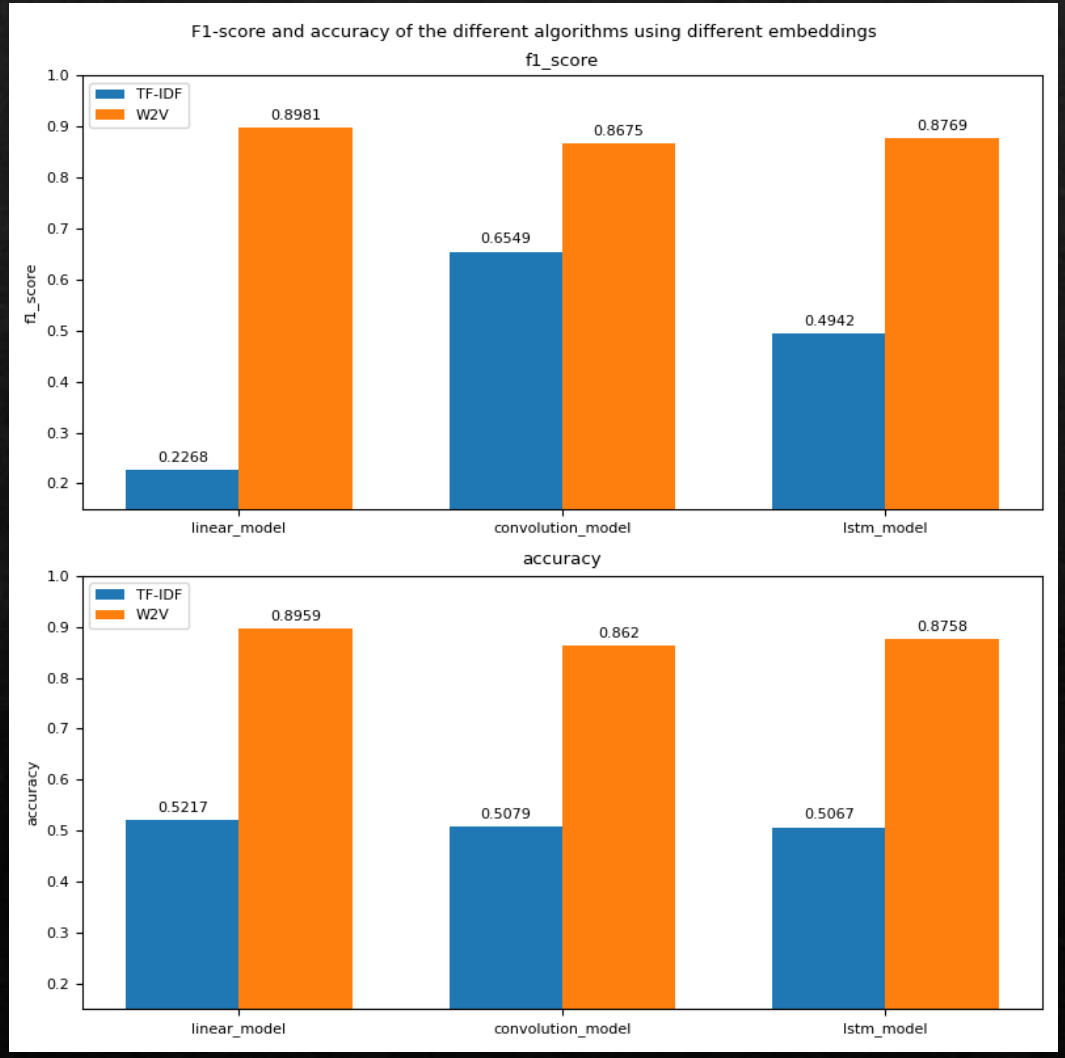
Word Embeddings

- TF-IDF
- Word2Vec

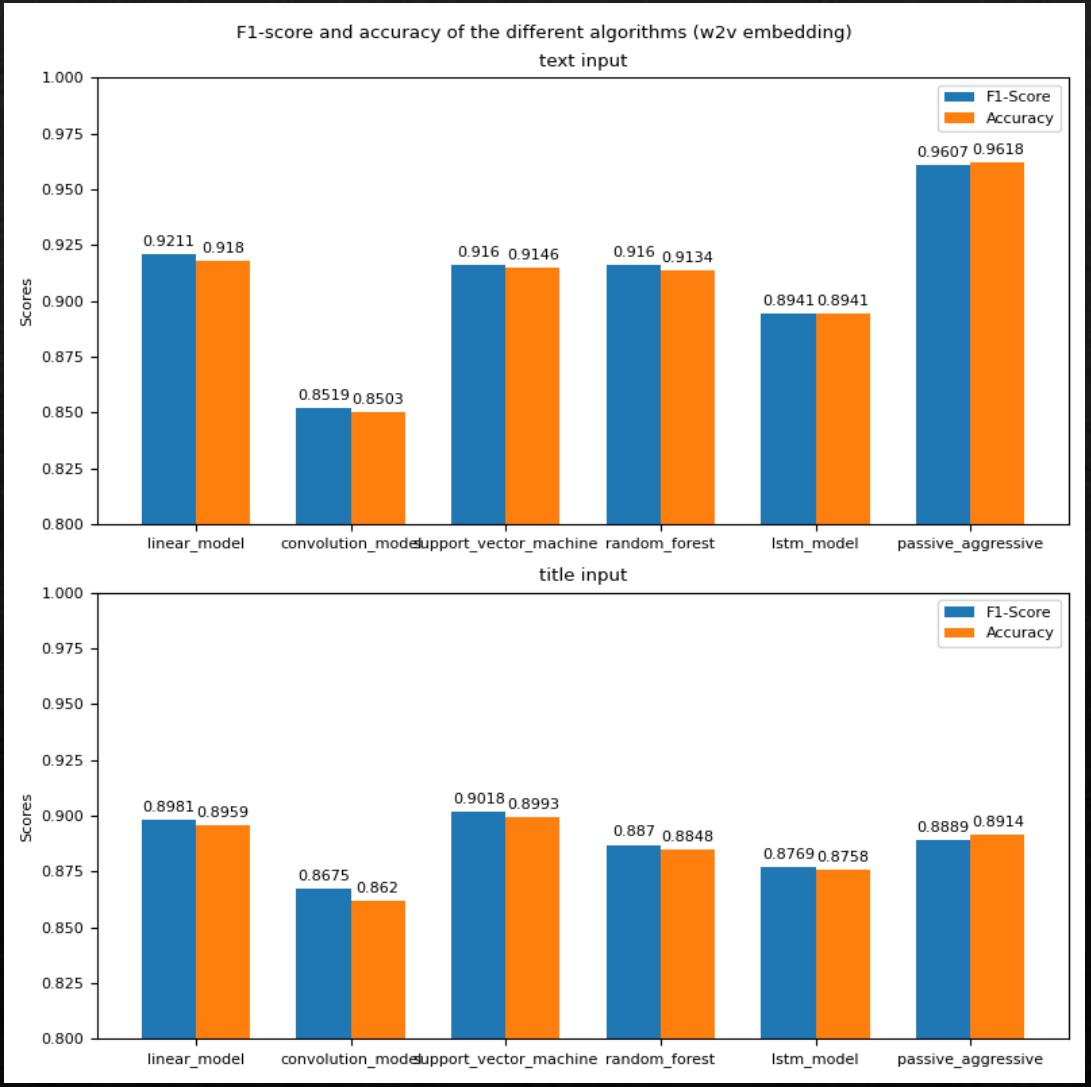
Models

- Linear Regression
- Convolutional model
- Bidirectional LSTMs
- Support Vector Machines
- Random Forests
- Passive Aggressive Classifier

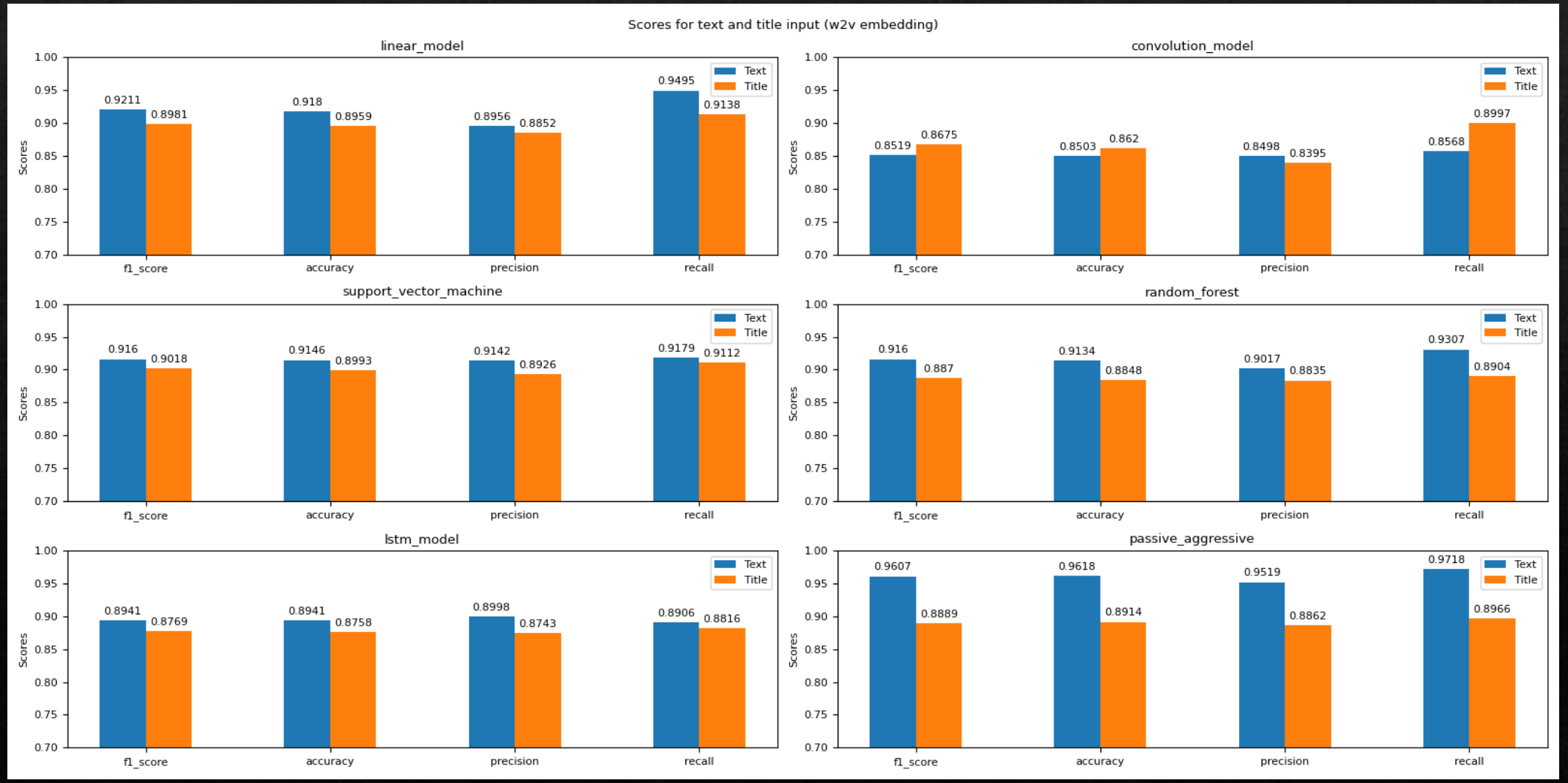
Comparing word embeddings



Comparing different models



Performance comparison TEXT and TITLE



Conclusion

- Overall classification on text better performance
- Performance difference negligible for most tasks
- Difference only significant for passive aggressive classifier

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