



FAKE NEWS DETECTION

USING

ARTIFICIAL INTELLIGENCE

WHAT IS FAKE NEWS ?

- A fake news is “***a news article that is intentionally and verifiably false***”.
- In simpler words, Fake News are therefore news articles that are intentionally written to mislead or misinform readers but can be verified as false by means of other sources.



ASPECTS OF FAKE NEWS

- Its form, as news article;
- Its deceptive intent, that can be either satirical or malicious; and
- The verifiability of its content as completely or partially false.

WHAT ARE RUMOURS ?

- A rumour is defined as “**a story or a statement whose truth value is unverified**”.
- They refer to information that has not been confirmed by official sources yet and is spread mostly by users on social media platforms.
- Based on the temporal characteristics they are mainly of two types:
 - i) Long Standing Rumours
 - ii) Breaking News Rumours

EXAMPLE

- A real-life example is the single tweet reporting an “**Explosion at white house**” in 2013. Although it was debunked very fast, tweets about it spread to millions of users causing an intense impact and a dramatic plunge in the stock market within only six minutes.



DATA COLLECTION

(FOR ANALYSIS)

- Malicious websites
- Rumours are mostly studied on social media
- Publically available datasets

Feature Extraction

```
graph TD; A[Feature Extraction] --> B[Content-Based Features]; A --> C[Context-Based Features]; B --> D[Lexical]; B --> E[Syntactic]; B --> F[Semantic]; C --> G[User-Based]; C --> H[Network-Based];
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Content-Based
Features

Lexical


Syntactic

Semantic

Context-Based
Features

User-Based

Network-Based

- 
- Content features refers to the information that can be directly extracted from the text, such as linguistic features.
 - Context based approaches are more varied and rely on surrounding information such as user's characteristics, social network propagation features and reactions of other users to the news or post.
 - Toolkits such as Stanford CoreNLP, NLTK are available for content based analysis and extract content based features.
 - Context based features are extracted by considering relevant information surrounding the actual media post or fake news.

Detection Techniques

Classification approaches using AI

Machine Learning

SVM

Random Forest

Decision Tree

Logistic Regression

CRF

Deep Learning

RNN

CNN

Other approaches

Retweet Behaviour

Diffusion Patterns

Computational Fact Checking

And so on.....



ISSUES IN DETECTION

- Lack of Data and datasets available for training the model.
- Issue of Out-Of-Vocabulary(OOV)

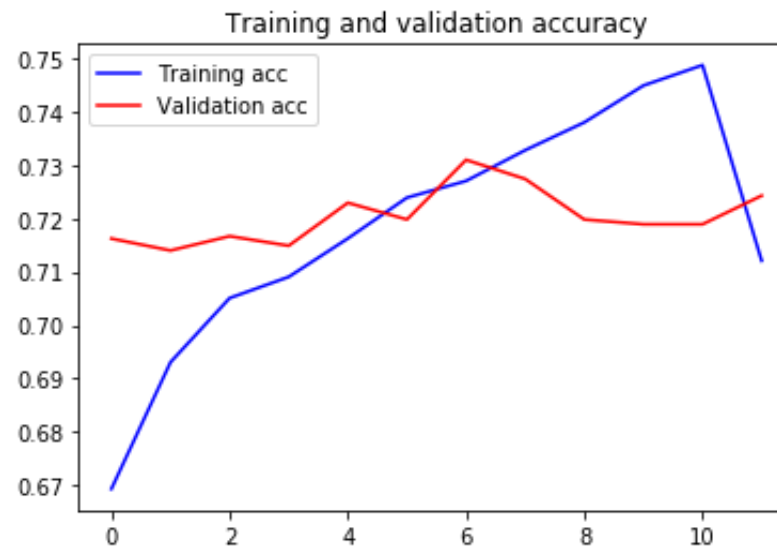
Emerging rumours contain words that are not in the training samples, specially for the hashtags.

MY APPROACH

- I have tried to make a model that classifies tweets as positive or negative based on their impact.
- Here is the model with the dataset:

<https://drive.google.com/drive/folders/14g-YkOcrd0kFSpKjq1yb38SKi9xyai5d>


- Result from my model :





CONCLUSION

- Fake news and rumours have become an integral part of our digital lives. They have already proven to be potentially dangerous in the digital ecosystem as well as outside of it.
- There exists deep learning methods, but they are not much promising.
- Further research is required in this area, as such contributions will definitely play a crucial role in shaping the future of social web.



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