



Classifying Fake News on Twitter: A Machine Learning Approach

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CONTEXT OF THE PROBLEM :

Fake News

- News, stories or hoaxes created to
- deliberately misinform or deceive readers
- Isn't simply “made-up” news
 - Clickbait, propaganda, hoaxes, satire or parodies, misleading headlines, even sloppy and biased journalism can be considered as fake news



CONTEXT OF THE PROBLEM :

The widespread circulation of fake news in the PH.

- "Fake news has increased, multiplied, diversified, more pervasive than ever"
- "[Fake news] has greatly influenced the way media platforms operate, the public's perception of information, and even how governments confront its proliferation."



SIGNIFICANCE OF THE STUDY :

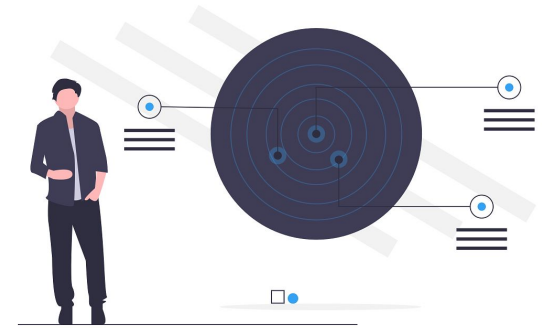
Implications of Fake News

- People are aware of fake news and consider it as a serious problem
 - Misuse of influence
 - Rising disinformation and misinformation of political campaigns
 - Propaganda tool



OBJECTIVES OF THE STUDY :

- To efficiently classify news posts if its fake or not
- To be able to apply the appropriate ML algorithms and methods taught in class
- To analyze and identify factors that contribute to the spread of fake news
- To identify trends in spreading fake news posts in social media
- To help spread awareness in choosing what to believe in social media such as Twitter



DATA-DRIVEN SOLUTION:

Binary Classification

- Classifying tweets as either REAL or FAKE
 - Only two classes



Potential Datasets

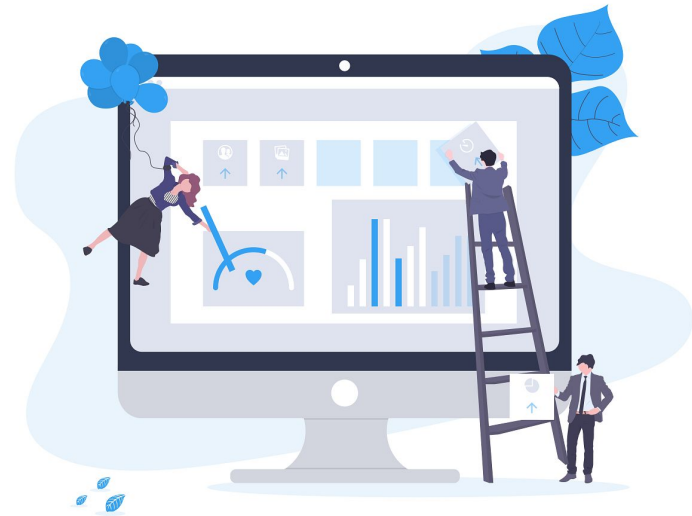
- FakeNewsNet Dataset
 - <https://github.com/KaiDMML/FakeNewsNet>
- PHEME dataset
 - https://figshare.com/articles/PHEME_dataset_of_rumours_and_non-rumours/4010619
 - https://figshare.com/articles/PHEME_dataset_for_Rumour_Detection_and_Veracity_Classification/6392078
- Augmented dataset of rumours and non-rumours for rumour detection
 - <https://zenodo.org/record/3249977#.XdNNiDlzaAw>
 - <https://www.zubiaga.org/datasets/>



DATA-DRIVEN SOLUTION:

Potential ML Algorithms

- Naive Bayes Classifier
- Neural Network
- Support Vector Machine
- Random Forest Classifier
- Logistic Regression Classifier
- Natural Language Processing (NLP)
 - <https://ieeexplore.ieee.org/document/8620051>



DATA-DRIVEN SOLUTION:

Potential Further Studies

- Fake News Detection on Videos
- Fake News Detection on Images



RELATED LITERATURE :

- Automatically Identifying Fake News in Popular Twitter Threads (Buntain and Golbeck, 2018)
https://www.researchgate.net/publication/321257431_Automatically_Identifying_Fake_News_in_Popular_Twitter_Threads
- Fake News Identification on Twitter with Hybrid CNN and RNN Models (Ajao, Bhowmick, and Zargari, 2018)
<https://arxiv.org/ftp/arxiv/papers/1806/1806.11316.pdf>
- Can Machines Learn to Detect Fake News? A Survey Focused on Social Media (Silva, Alvez, and Garcia, 2019)
<https://scholarspace.manoa.hawaii.edu/bitstream/10125/59713/0273.pdf>
- The Detection of Fake Messages using Machine Learning (Looijenga, n.d.) https://essay.utwente.nl/77385/1/Looijenga_BA_EEMCS.pdf
- Combining Machine Learning with Knowledge Engineering to detect Fake News in Social Networks-a survey (Ahmed, Hinkelmann, and Corradini, 2019)
<http://ceur-ws.org/Vol-2350/paper10.pdf>
- Hybrid Text Classification Method for Fake News Detection (Kaur, Boparai, and Singh, 2019)
<https://www.ijeat.org/wp-content/uploads/papers/v8i5/E7622068519.pdf>
- Fake News Detection on Social Media Using Geometric Deep Learning (Monti et al., 2019) <https://rlgm.github.io/papers/34.pdf>
- Classifying Fake News Articles Using Natural Language Processing to Identify In-Article Attribution as a Supervised Learning Estimator (Traylor et al., 2019)
<https://ieeexplore.ieee.org/document/8665593/metrics#metrics>
- Deep Learning Algorithms for Detecting Fake News in Online Text (Girgis, Sherry & Amer, Eslam & Gadallah, Mahmoud 2018)
https://www.researchgate.net/publication/328694360_Deep_Learning_Algorithms_for_Detecting_Fake_News_in_Online_Text/citation/download
- Fake News Detection: A Deep Learning Approach (Thota, Tilak, Ahluwalia, and Lohia, 2018)
<https://scholar.smu.edu/cgi/viewcontent.cgi?article=1036&context=datasciencereview>

RECAP:

Fake Tweets Classifier

- Fake News Classifier
 - To combat the widespread circulation of fake news
 - To analyze and identify factors that contribute to the spread of fake news
 - To identify trends in spreading fake news posts in social media
 - To provide awareness for people regarding what they see online
- Binary Classification Problem
 - Naive Bayes Classifier, Neural Network, Support Vector Machine, Random Forest Classifier, Logistic Regression Classifier, Natural Language Processing (NLP)