**Fake News Detection**

**Team Members:**

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**Goals and Objectives:**

**Motivation:**

Fake news has become a potential threat to the socio-political fabric and has been resulting in chaos and public unrest. Fake news can be in wide variety of categories like in politics (show false infographics in order to bias a particular political entity), religion (to start a chaos between different communities), health (to spread false information to promote or demote certain products from particular companies) or to overthrow governments (by creating and spreading). Most of the fake news is spread through social media since it has the potential to reach wide audience across various communities and countries. We wish to grade any information that is passed through social media through Natural Language Processing Techniques by comparing the articles with authentic parallel sources (if corresponding sources are available). The topic being discussed in the articles will be extracted and are searched for relevant sources. After gathering relevant sources corresponding to the same topic, we would compare the texts and find out the dissimilarity between the articles. Based on this dissimilarity grading will be awarded to the articles. Based on the grade, users can decide for themselves if they are reading authentic content.

**Significance:**

Articles and information that flow through social media hold the power to convince people and make them believe what they’re reading is accurate and valid. It is very important to validate this information before it reaches the vast majority of people. We can only stop fake information at its root before it spreads. To do the above mentioned, no human is capable of doing this all and keep an eye out on all the information on the web and for that reason we need to develop an NLP model to authenticate this information and that’s exactly what we’re trying to do.

**Objective:**

To gain insights on the content of fake news and draw comparisons with respect to real news. Use these insights to build a deep learning model to predict the nature of news and classify it as fake or real.

**Features:**

BERT (Bidirectional Encoder Representations from Transformers) is a recent paper published by researchers at Google AI Language.

BERT contains a Transformer, an attention mechanism that learns contextual relations between words (or sub-words) in a text. In its vanilla form, Transformer includes two separate mechanisms an encoder that reads the text input and a decoder that produces a prediction for the task.

As opposed to directional models, which read the text input sequentially (left-to-right or right-to-left), the Transformer encoder reads the entire sequence of words at once. Therefore, it is considered bidirectional, though it would be more accurate to say that it’s non-directional. This characteristic allows the model to learn the context of a word based on all of its surroundings (left and right of the word).

**Visualization:**

**Workflow Diagram**

**Diagram

Description automatically generated**

**References:**

1. <https://www.analyticsvidhya.com/blog/2019/12/detect-fightneural-fake-news-nlp/>

2. <https://medium.com/analytics-vidhya/fake-news-detection-usingnlp-techniques-c2dc4be05f99>

3.[https://www.researchgate.net/publication/335191041\_A\_Machine\_Learning\_Approach\_to\_Fa ke\_News\_Detection\_Using\_Knowledge\_Verification\_and\_Natural\_Language\_Processing](https://www.researchgate.net/publication/335191041_A_Machine_Learning_Approach_to_Fa%20%20%20%20ke_News_Detection_Using_Knowledge_Verification_and_Natural_Language_Processing)

4. [https://arxiv.org/pdf/1901.09657](https://www.researchgate.net/publication/335191041_A_Machine_Learning_Approach_to_Fake_News_Detection_Using_Knowledge_Verification_and_Natural_Language_Processing)