



newsDetector



Artificial Intelligence Semester 4

Project **newsDetector**

Proposal

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Context understanding	4
Organization.....	6
Requirements.....	7
KPI's:.....	8
Internal stakeholders:	8
Potential Impact Assessment – 10 Subjects	11
Data Sourcing.....	11
Exploratory Data Analysis (EDA)	15
Research mindset	20
Requirements.....	20
Modeling	21
1. Target variable:	21
2. Should several models be compared? Why yes/no?	22
Evaluation and deployment.....	22
1. Is there a plan for domain knowledge verification? Who can say whether the model works well or not?	22
Will the model be deployed? If so, how?	22
Sources.....	23

Context understanding

The project deals with journalism and healthcare domains. Specifically, the part in which news is shared by individuals or media groups and covid-19 news. Both domains can meet at a point where news is reported or shared through social media. News has been around for centuries but what changed over time is the approach we report or share with others. Before the newspaper, word of mouth was the primary source of news. Then, after the invention of television the news was shared through famous news channels and via mobile phones or other devices, we could access social media platforms and receive news. However, with the evolution of sharing news approaches the quality of news has been affected. Before we used social media platforms to receive news, the news was better quality and excessive cost since it would be shown on television or printed in newspapers but with social media way of obtaining news the quality of news has fallen and this caused what we call now fake news. This led to the question of why we would use social media to get news if this is the case? The answer lies in the simplicity and accessibility of getting news through social media platforms. Not only is social media news can be easily searched for, accessed and it is considered cheaper than other approaches to obtaining news, but it also enables the reader to share his opinion about the news and see other readers' points of view.

Location	Child and Adult Populations	Data Type	2011	2012	2013	2014	2015	2016
United States	Less than age 18	Number	73,916,808	73,712,974	73,591,734	73,593,217	73,653,720	73,699,293
		Percent	24%	23%	23%	23%	23%	23%
	Age 18 and over	Number	237,666,673	240,164,688	242,468,213	244,793,112	247,085,274	249,372,462
		Percent	76%	77%	77%	77%	77%	77%
	Total Population	Number	311,583,481	313,877,662	316,059,947	318,386,329	320,738,994	323,071,755
		Percent	100%	100%	100%	100%	100%	100%

The figure above shows the number of children and adults in the US between 2011 and 2016. In 2012 about 49% of adults in the US get their news from social media which according to the table is roughly about 117 million persons and in 2016 about 62% of adults get their news from social media which is about 154 million persons. In only 4 years the popularity of social media news has drastically increased. About 37 million people started using social media to obtain news as it is easy to get access to and is very quick to spread. However, social media news become popular that fake news has been shared on them for personal or political gains.

Fake news is a broad term and there has been no agreement on a specific definition to define it. However, there is a definition which some researchers believe is to do the job for a very good reason. The definition is (Fake News) "Fake news is a news article that is intentionally and verifiably false". We could derive two important factors of the definition which is first fake news is intentionally written to mislead readers and the second is that the news itself can be verified and manually checked if it is reliable or fake. The primary reason for picking up this definition is because it removes the ambiguity with other related concepts such as sarcastic news which reveals its bias information to the reader.

Fake news from a psychological point of view targets individual vulnerabilities which can be concluded as the following:

1 – Naïve realism: The reader tends to believe that their point of view is correct and other opinions are biased and false information.

2 – Confirmation: The reader prefers to read about news that confirms their existing point of view.

Due to those factors, fake news could be treated by the readers as real news. In addition to that, after news has been formed as real even if it is fake, it is difficult to correct the information.

News in social media has some characteristics which could be utilized to identify whether it is fake or real. First, fake news is intentionally written which makes it difficult to differentiate the truth. Second, the content of fake news is rather diverse in terms of topics and tries to mimic real news structure while twisting the truth. For example, it could be that fake news uses reliable evidence which can be pictures or video along with a reliable source of news, but the content and the message intended to be conveyed to the reader is fake.

Health care and journalism domains overlap when the news shared on social media is about covid 19. The problem we face with fake news on other topics is not as big as the covid 19 topic. The main reason for that is because it is extremely sensitive to receive biased information about the pandemic which could lead to death cases. For example, some fake news was

published about alcohol being a cure for covid 19, and that led to a high number of deaths in Iran in 2020. Therefore, if we were to create a technology that predicts whether the news is fake or not it has to treat the topic covid-19 differently and high accuracy is required.

Organization

In this project, fake news which we focus on are those shared through online articles with a variety of topics and specifically covid-19 news on Twitter. The following is a list of famous online articles websites:

- 1 - Storify
- 2 - Quora
- 3 - Tumblr

The definition of each organization:

- Twitter is an American microblogging and social networking service on which users post and interact with messages known as "tweets". Registered users can post, like, and retweet tweets, but unregistered users can only read those that are publicly available.
- Storify was a social network service that let the user create stories or timelines using social media such as Twitter, Facebook and Instagram.
- Quora is an American social question-and-answer website based in Mountain View, California, United States. Users can collaborate by editing questions and commenting on answers that have been submitted by other users.
- Tumblr is an American microblogging and social networking website. The service allows users to post multimedia and other content to a short-form blog. Users can follow other users' blogs. Bloggers can also make their blogs private.

Although there are other approaches to spreading news, this project specifically focuses on the social media news approach along with online articles since they share the same characteristics of being easy to access, cheap, and allowing the reader to be interactive by sharing their opinion. Therefore, any social media platform where news is shared, and any online article website can be considered as an organization for this project.

Currently, the data which is being used in the project has information about covid 19 tweets which means as for now Twitter is the primary organization for the project but that could change in future versions of the project if it is kept maintained.

Requirements

To achieve satisfying results for the project it is important to list down the requirements of the project. By having a proper foundation and clear vision it is possible to tackle the problem of fake news in online articles and covid-19 in social media platforms.

The following requirements should be applied to news in online articles:

- 1 – The technology should be able to process text of the article given by the user.
- 2 – The technology should be able to show the user whether the news is fake or real according to the processed text.
- 3 – The technology needs to be predicting with at least 80% accuracy of the time.

The following requirements should be applied to covid-19 news in social media platforms (twitter as of now):

- 1 – The technology should be able to process the tweet, or the body text given by the user.
- 2 – The technology should be able to show the user whether the news is fake or real according to the processed tweet.
- 3 – The technology needs to be predicting at least with 90% accuracy and go with the direction of increasing as much false positives as possible (classifying what is truth as fake) so we make sure we classify as many cases of false information as possible to reduce the number of deaths affected by believing wrong information.

KPI's:

Key performance indicators help achieve faster results and it enables us to the performance of the business and allows us to make critical changes in the execution of the project.

1. The deadline of the project is prior to the 28th of January 2022 since it is possible to work on the project in open program (However the deadline of the challenge was the 21st of November)
2. The internal stakeholders (John, Qin and Niek) need to get updated about the project every now and then.
3. The feedback received from stakeholders with every version shown must be applied and taken into account.

Internal stakeholders:

The internal stakeholders are my artificial intelligence teachers as for this semester, the following is information about each stakeholder:

Machine learning teacher	Zhao,Qin Q.	q.zhao@fontys.nl
Societal impact teacher	Litsenburg,John J.T.M. van	j.vanlitsenburg@fontys.nl
Data analytics & investigative analysis	Schmitz,Niek N.T.A.	n.schmitz@fontys.nl

Those stakeholders must be updated about the project regularly until the final deadline of the project.

External stakeholders:

The external stakeholders are the readers who are interested in obtaining news through online articles or covid 19 news through social media platforms. Those stakeholders should be informed about the technology after it has been deployed.

Goal of the project:

Grasping news through social media is becoming more and more popular. As previously shown in this document, in only 4 years between 2012 and 2016 the number of adults that get their news from social media has increased by 37 million people and we also specified that online articles share some of the same advantages of social media news which can be concluded as easy to access, low cost and allow users to share their opinion and see other readers points of view. With that in mind, it is important to mention that the covid 19 topic is extremely sensitive and should be treated extremely carefully which is why I mentioned that it requires much high accuracy since it might lead to an increase in death numbers.

Problem definition:

The problem we are facing is that with the occurring increment of news graspers through social media and online articles, fake news is spreading more, fake news about covid 19 topic might lead to dangerous consequences and ultimately this could have a negative impact not only on individuals but also on the society.

As mentioned in the psychological point of view that once information has been formed as real in the consumers' mind it is extremely difficult to correct it which is why our project goal is to ultimately automate the process of determining whether the news is fake or real while treating sensitive topic such as covid-19 carefully with high accuracy.

Research question:

In such projects where processing the text is required, the length of the text is a feature extracted in many of the research papers regarding predicting the reliability of news and topics such as detecting spammy messages by bot therefore the following question has been thought of.

- "Does the length of fake and real news matter in covid-19 news?"

Sub-questions:

- Does the length of fake and real news matter in other topics?
- What is the length distribution of fake news and real news for covid-19 and other topics?
- Do authors of fake news post the same fake news multiple times in different websites to spread them the misleading information?
- What are top 10 fake news domains or websites?

Scope:

The scope of the project is an approach to set boundaries to define deadlines and deliverables that would be worked on, and it ensures achieving the goal of the project without delays or overwork.

The deadline for the open program project is the 28th of January 2022, the project must be developed using Python. The deliverables should include a machine learning model that is trained on news data, the proposal of the project, potential impact assessment to society after deploying the technology, and deployed solution of the project or document which describes how to do it. Communication between the project developer and the internal stakeholders is necessary for the success of the project.

Possible benefits:

- Help us to be aware of the reliability of new information we will read on social media or online articles.

As mentioned in the psychological point of view that fake news targets individual vulnerabilities which can be concluded in naïve realism and confirmation factors and we humans have those factors by nature thus it is difficult for us to determine the reliability of new information and further investigation are required. This technology should reduce the necessary work needed to determine the truth of news or can be used to examine whether the investigation matches what the technology indicated.

- Mitigate the encouragement of fake news for personal gain.

Fake news on social media and online articles tend to clickbait a high number of people but with the help of such technology, it is easier for most readers to know beforehand whether the news is fake or real and those kinds of articles will lose their captivation. Therefore, people who seek to gather as many readers as possible will look for real news in social media or online articles for personal gain instead.

- Reduce number of deaths caused by covid-19.

Fake covid-19 news on social media is extremely dangerous to believe, especially when it comes to the recommendation of a cure believed to be the solution. In Iran 2020 the number of deaths has risen due to some believing that alcohol was the cure of corona, and many were hospitalized. The technology will try to have as few false negatives as possible to catch more and more fake covid-19 news and should at least be correct 90% of the time to be beneficial for the community. Therefore, the reader will be certain that if the technology indicates the information as real covid19 news there is still at utmost 10% possibility of the news to be fake and require further investigation but not as much as without the technology. This will lead to a higher number of people believing reliable covid-19 news and less likely to consume something that could kill them.

Potential Impact Assessment – 10 Subjects

The impact assessment regarding newsDetector is in separate document attached with the proposal.

Data Sourcing

I have looked for projects that tackle the same problem of recognizing fake and real news and derived that the following links have provided me with data that I need.

Fake covid 19 news

Access?

The data can be obtained through this link

https://github.com/diptamath/covid_fake_news/tree/main/data

The file name: english_test_with_labels.csv

How was it created?

"Along with COVID-19 pandemic we are also fighting an 'infodemic'. Fake news and rumors are rampant on social media. Believing in rumors can cause significant harm. This is further exacerbated at the time of a pandemic. To tackle this, we curate and release a manually annotated dataset of 10,700 social media posts and articles of real and fake news on COVID-19. "

The information provided above is taken from

<https://arxiv.org/abs/2011.03327>

Note

It was mentioned that if this data helps in research to include the citation

Das, S. D., Basak, A., & Dutta, S. (2021, January 10). *A heuristic-driven ensemble framework for COVID-19 fake news detection*. arXiv.org. Retrieved November 23, 2021, from <https://arxiv.org/abs/2101.03545v1>.

FakeNewsCorpus dataset

Access?

The data can be obtained through this link <https://github.com/several27/FakeNewsCorpus>

There is a sample csv file (250 rows), but the complete dataset contains 9GB of data.

How was it created?

The corpus was created by scraping (using [scrapy](#)) all the domains as provided by <http://www.opensources.co/>. Then all the pure HTML content was processed to extract the article text with some additional fields (listed below) using the [newspaper](#) library. Each article has been attributed the same label as the label associated with its domain. All the source code is available at [FakeNewsRecognition](#) and will be made more “usable” in the next few months.

Important remarks about the "TYPES" column:

Type	Description
fake	Sources that entirely fabricate information, disseminate deceptive content, or grossly distort actual news reports
satire	Sources that use humor, irony, exaggeration, ridicule, and false information to comment on current events.

bias	Sources that come from a particular point of view and may rely on propaganda, decontextualized information, and opinions distorted as facts.
conspiracy	Sources that are well-known promoters of kooky conspiracy theories.
state	Sources in repressive states operating under government sanction.
junksci	Sources that promote pseudoscience, metaphysics, naturalistic fallacies, and other scientifically dubious claims.
hate	Sources that actively promote racism, misogyny, homophobia, and other forms of discrimination.
clickbait	Sources that provide generally credible content, but use exaggerated, misleading, or questionable headlines, social media descriptions, and/or images.
unreliable	Sources that may be reliable but whose

	contents require further verification.
political	Sources that provide generally verifiable information in support of certain points of view or political orientations.
reliable	Sources that circulate news and information in a manner consistent with traditional and ethical practices in journalism (Remember: even credible sources sometimes rely on clickbait-style headlines or occasionally make mistakes. No news organization is perfect, which is why a healthy news diet consists of multiple sources of information).

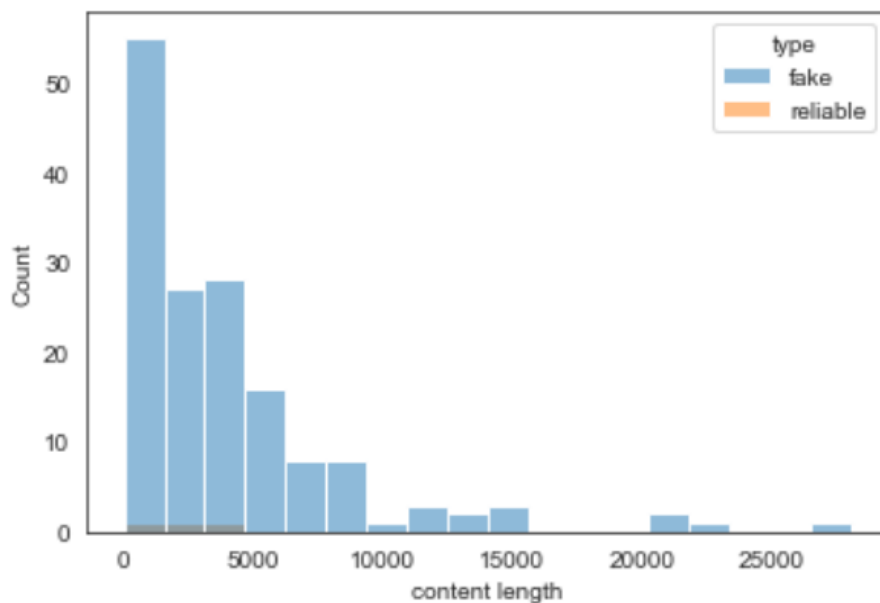
From the above types I have chosen reliable and fake tags as types I would use as real/fake in my research since their description suits the best for the job.

Data Storage

Currently the fake covid 19 news can be stored as csv file, whereas the FakeNewsCorpus dataset requires 9 files to be downloaded as csv.zip then grouped together which is in my opinion a bit hard to store locally therefore I am currently learning about Google cloud service of storing data and accessing it so in the future or next proposal version I will update this part if I would continue with the google drive cloud solution or move to different kind of solution storage.

Exploratory Data Analysis (EDA)

After obtaining the data sets, I downloaded each dataset separately and performed EDA here is the results I derived from analyzing the FakeNewsCorpus dataset (keep in mind I analyzed currently only the sample that was provided in data sourcing part.)



Above histogram shows that the average length of characters in fake news tends to be between 0 to 4000 characters.

```
news_sample.groupby('type')[['content length','type']].describe()
```

content length								
	count	mean	std	min	25%	50%	75%	max
type								
fake	155.0	4144.180645	4581.974333	60.0	1041.5	2967.0	5305.0	28053.0
reliable	3.0	2639.000000	2216.676115	258.0	1637.0	3016.0	3829.5	4643.0

In addition, the sample provided is not balanced, it contains 3 reliable news which means anything regarding reliable news currently could not be analyzing due to lack of balancing in the sample.

However, if my proposal got accepted, I would do a second EDA where the analysis would be on the whole data set.

The following is a list of the 3 reliable ones.

	type	content	title	authors	content length
4	reliable	I wish I had done so when our now-adult daught...	Christian News on Christian Post	NaN	258
6	reliable	(Screenshot: YouTube) Andrew, Luis and Kevin P...	Luis Palau Diagnosed With Stage 4 Lung Cancer	NaN	4643
7	reliable	Expand Collapse (Photo: Reuters/Peter Macdia...	Scientists Develop New Method to Create Stem C...	NaN	3016

The following is an example of one of the fake news contents:

Graml, a prominent German historian and associate of the Munich Institute of Contemporary History, who wrote: "Every single Jew was beaten, chased, robbed, insulted and humiliated. The SA tore the Jews from their beds, mercilessly beat them in their apartments and then ... chased them almost to death ... Blood flowed everywhere." [note 9] Is it conceivable that thousands of Jewish children would be have been sent to school by their parents on the morning after that fateful night if the attacks against Jews had been so horrific or extensive? Would any parents have let their children go to school if they had thought there was even the slightest danger of them being attacked by roving gangs of SA men? I think the answer is clearly no! Deplorable things did indeed happen which were bad enough, but the fantasies of modern historians and history writers such as Graml are simply inexcusable.

Really, isn't it silly to compare a 2 day event, immediately shunned by the very one Lendman (and everyone else) blames, to a half-century long Apartheid? Something tells me that there is a group that trumps the Adolf Card and as I have mentioned before, Lendman is a member.

SteveLendmanBlog and IHR (Institute For Historical Review)

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BuehlahHuh?

Did I rub you the wrong way or stroke you just right? Let me know below in the comments section or Email me at buehlahman {AT} gmail {DOT} com

If for some reason you actually liked this post, click the "Like" button below. If you feel like someone else needs to see this (or you just want to ruin someone's day), click the Share Button at the bottom of the post and heap this upon some undeserving soul. And as sad as this thought may be, it may be remotely possible that us rednecks here at The Revolt please you enough (or more than likely, you are just a glutton for punishment??), that you feel an overwhelming desire to subscribe via the Email subscription and/or RSS Feed buttons found on the right hand panel of this page (may the Lord have mercy on your soul).

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Filed under: Jew World Order, Real History Tagged: Adolf Hitler, Apartheid, Crystal Night, Eric Zuesse, Germany, IHR, Ingrid Weckert, Institute For Historical Review, Jews, Kristallnacht, National Socialist Germany, NSDAP, Palestinians, Stephen Lendman, Steve Lendman, Sweetie

Source: <https://buehlahman.wordpress.com/2015/06/20/playing-the-hitler-card/>

I noticed that stop words, punctuation and pattern that (source then followed by a link) was present therefore I cleaned the body of the message to look something like this

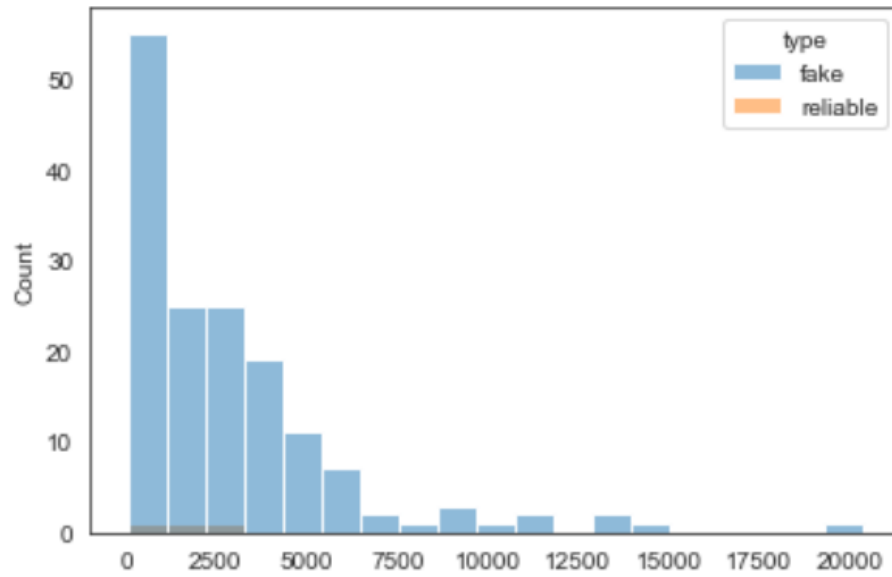
mage destruction actually occur course terrible shame exaggerations especially german historians use condemn people also shame history writers tell us crystal night jews frightened meekly accepted whatever happened watched destruction property resistance contrary true going files subject found many documents report precisely opposite claimed fact many cases jews german neighbors fought together attackers pushing staircases street mobs beaten chased away one case police party officials generally side jews jewish community leaders went police stations next morning asked police investigate damage done synagogues resulting police reports still available files today also contrary told jews directly affected events berlin example teachers pupils city's largest jewish school served entire berlin area appeared classes next morning without noticed anything unusual previous night heinemann stern jewish principal school wrote postwar memoirs noticed burning synagogue way school morning crystal night thought accident al fire arrived school received telephone call informing destruction previous night went classes day first recess take trouble inform entire student body happened note 8 evidence reconciled claim herman graml prominent german historian associate munich institute contemporary history wrote "every single jew beaten chased robbed insulted humiliated sa tore jews beds mercilessly beat apartments ... chased almost death ... blood flowed everywhere" note 9 conceivable thousands jewish children would sent school parents morning fateful night attacks jews horrific extensive would parents let children go school thought even slightest danger attacked roving gangs sa men think answer clearly deplorable things indeed happen bad enough fantasies modern historians history writers graml simply inexcusable really isn't silly compare 2 day event immediately shunned one lendman everyone else blames halfcentury long apartheid something tells group trumps adolf card mentioned lendman member ht stevelendmanblog ihr institute historical review follow buelahman buelahuh rub wrong way stroke right let know comments section email buelahman g l dot com reason actually liked post click "like" button feel like someone else needs see want ruin someone's day click share button bottom post heap upon undeserving soul sad thought may may remotely possible us rednecks revolt please enough likely glutton punishment feel overwhelming desire subscribe via email subscription andor rss feed buttons found right hand panel page may lord mercy soul comment policy please keep comments relevant topic multiple links automatically relegate comment spam section keep mind post 1st time commenters must receive admin approval free reign posts opinions meant foster comment reporting teaching study "fair use doctrine" sec 107 us code title 17 statement fact made implied ads appearing blog solely product advertiser necessarily reflect opinions buelahman's revolt wordpresscom filed jew world order real history tagged adolf hitler apartheid crystal night eric zuesse germany ihr ingrid weckert institute historical review jews kristallnacht national socialist germany nsdap palestini ans stephen lendman steve lendman sweetie '

Clearly the difference is noticeable, and the cleaning process could be improved in the future, but this is what I came up with currently.

Here is an example before and after processing the text in terms of cleaned text length and content length (before it was processed):

	type	content	title	authors	content length	cleaned text	cleaned text length
0	fake	AWAKENING OF 12 STRANDS of DNA – "Reconnecting...	AWAKENING OF 12 STRANDS of DNA – "Reconnecting...	Zurich Times	1288	awakening 12 strands dna – "reconnecting you" ...	922
1	fake	Citizen Journalist\r\n\r\nby N.Morgan Q has re...	Citizen Journalist	NaN	317	citizen journalist nmorgan q released several ...	227
2	fake	Usa Dollar Tanks On Mnuchin Statement That He ...	Usa Dollar Tanks On Mnuchin Statement That He ...	NaN	10803	usa dollar tanks mnuchin statement wants lower...	7726
3	fake	Clinton–Obama Emails: Key to Understanding Why...	Clinton–Obama Emails: Key to Understanding Why...	John Rolls	14010	clinton–obama emails key understanding hillary...	9921
4	reliable	I wish I had done so when our now-adult daught...	Christian News on Christian Post	NaN	258	wish done nowadult daughters teens two girls e...	191

Then I performed the same analysis and apparently the fake news tend to have between 0 to 2500 length (characters) of key words.



Lastly, I derived that some fake news is duplicated but the main reason for that is not because the author published fake news in different websites, but the website itself updated the article and then the scrapper which was used to create the dataset has captured this fake news in different period of times which means that I would expect duplicated values but that just means that the website has update the date of the fake news.

Here is evidence:

```
dup_fakenews['authors'].value_counts()
```

```
Shahzaib Elahi      3
Firearms Radio Network  1
Earth Heal          1
The Vatic Project   1
Ufo Iconoclast      1
James Rathey        1
Name: authors, dtype: int64
```

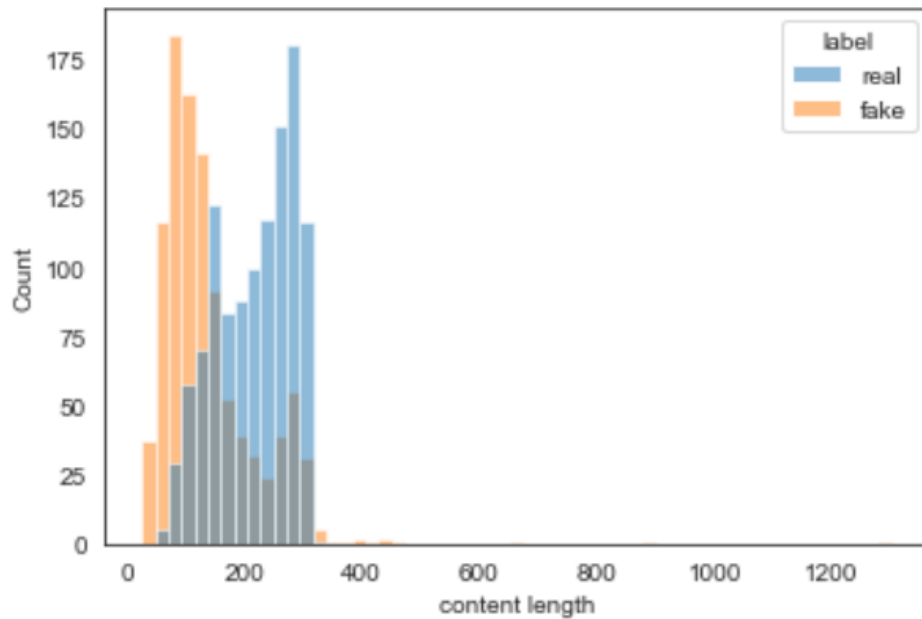
```
complete_news_sample[complete_news_sample['authors'] == 'Shahzaib Elahi']
```

	id	domain	type	url	content	scraped_at	inserted_at	updated_at	title	authors	keywords	met
136	22445	beforeitsnews.com	fake	http://beforeitsnews.com/u-s-politics/2016/11/...	How To Easily Understand The Difference Between...	2018-01-25 16:17:44.789555	2018-02-02 01:19:41.756632	2018-02-02 01:19:41.756664	Teacher Tells Muslim Student Trump 'Is Go...	Shahzaib Elahi		NaN
140	22583	beforeitsnews.com	fake	http://beforeitsnews.com/u-s-politics/2016/10/...	How To Easily Understand The Difference Between...	2018-01-25 16:17:44.789555	2018-02-02 01:19:41.756632	2018-02-02 01:19:41.756664	Warren Buffett Fact Checks Trump By Releasing ...	Shahzaib Elahi		NaN
197	31019	beforeitsnews.com	fake	http://beforeitsnews.com/u-s-politics/2018/01/...	Is There Something Else Going-On Many of Us ha...	2018-01-25 20:13:50.426130	2018-02-02 01:19:41.756632	2018-02-02 01:19:41.756664	Cancer Patient Slapped With \$4,000 Deductible ...	Shahzaib Elahi		NaN

Regarding the second dataset which mainly focused on fake covid 19 news tweets:

The dataset is roughly balanced about 1k fake news and 1.1k real covid news which means that conclusion on this EDA analysis would be relevant.

tweet				label				
	count	unique	top	freq	count	unique	top	freq
label								
fake	1020	1020	@factgasm2 No, it's a reflection of this Covid...	1	1020	1	fake	1020
real	1120	1120	CORRECTION: We noticed an error in our update ...	1	1120	1	real	1120



The text of the tweet has not been processed yet however fake news usually tend to be between 100 and 200 characters in a tweet. Whereas 250 up to 350 characters tend to be real covid-19 tweets.

Research mindset

This research applies different ICT research methods which will be mentioned next in addition to reasoning why.

Lab - Data analytics

In this research I have collected data from different sources, I did an initial exploratory data analysis on both datasets and the conclusions I have derived from are mentioned in the EDA part of this proposal.

Field - Document analysis

In this research I have mentioned where the sources of data would be coming from but the information, I provided there was mentioned in documents in which I provided a citation.

Requirements

Non-functional requirements:

- The model can have its parameters tuned and adjusted.
- The model can clearly output results that are interpretable to the end users.
- The model should be created in python.

Functional requirements:

- The model can accept whether the user would like to get results based on options like covid-19 tweets or other website articles.

Modeling

1. Target variable:

- **A label that can either be fake or real.**

Therefore, the problem at hand is a classification problem.

The problem at hand is a classification problem but it also in the natural language processing part which means that the data must be prepared appropriately first then the choice of model as has been advised for natural language processing problem models could be as the following: -

- **Recommended for text data:**
 - MultinomialNB (documentation link https://scikit-learn.org/stable/modules/generated/sklearn.naive_bayes.MultinomialNB.html)
 - SGDClassifier (documentation https://scikit-learn.org/stable/modules/generated/sklearn.linear_model.SGDClassifier.html)
- **General classification model that proved to be quite accurate:**
 - Random forest
 - Decision tree

2. Should several models be compared? Why yes/no?

Yes, the above models all solve classification problems, but some are general, and some are recommended especially for natural like processing and having a multitude of models will enable the possibility of creating reliability chart where the performance of the models are shown which then would enable us to select the best performing model as final model of choice that proven to be most reliable.

Evaluation and deployment

1. Is there a plan for domain knowledge verification? Who can say whether the model works well or not?

Currently I am not able to contact an expertise that would verify for me the knowledge I gained through researching in domain knowledge part but if I met them, I would ask if the knowledge I collected more less accurate or not and ask for what would be an acceptable evaluation accuracy, precision or recall that they would expect a model in that domain to perform. Obviously, the more the better but a model can never be 100% accurate otherwise this indicates that the model has been overfitted and would certain not perform well if deployed.

In addition, for further verification, we could conduct a survey where users of the model test if news is fake or real then use the model through web application and confirm whether the model was correct in their case or not.

Will the model be deployed? If so, how?

I believe a website solution would work by creating an API (application public interface) to the AI and fetching the results to the end user via frontend. The backend could be created through technologies like Flask (documentation <https://flask.palletsprojects.com/en/2.0.x/>), which will have to communicate with the model. The frontend on the other hand, will take the either the selected option of covid-19 tweets or article from website and the content of the news from the user and pass them to the backend then the results obtained from the backend should be forwarded to the front-end and then displayed to the user whether the content along with the selected option resulted in informing them that these are fake news or real news.

Is there a feasibility deduction?

Currently the dataset I collected regarding fake covid-19 news is in 2021 period while the dataset regarding other news were taken from various timelines, but it was scraped in 2018 therefore all data in FakeNewsCorpus is between 2018 and behind in time. This could mean that in coming years this project to be updated with new data regarding the FakeNewsCorpus, otherwise there is a chance for it to be outdated.

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