

Creation and detection of fake news with machine learning and artificial intelligence

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CHAPTER 1 INTRODUCTION

1.1 Abstract:

In an era where information is readily accessible to anyone, the proliferation of fake news has emerged as a formidable challenge to the integrity of public discourse and social stability. But what exactly is a fake news? It refers to false information disseminated through any media, aiming to misinform, create scandal, or attract clicks. The proliferation of this news has heavily impacted our world in various ways. Firstly, there is much less trust in the media, as individuals have become more skeptical about the information they encounter and often struggle to discern the veracity of news stories. Additionally, fake news has exerted a significant political influence, shaping public opinion and electoral outcomes according to many experts. Furthermore, the psychological toll of fake news cannot be understated, as exposure to misinformation engenders anxiety, confusion, and cognitive dissonance among individuals. In conclusion, the pervasive influence of fake news poses a grave threat to the fabric of our society, necessitating concerted efforts to combat its proliferation.

1.2 Introduction:

Nowadays, there are over 4.6 billion people who have access to the Internet and various social media platforms. Within this vast number of individuals, there exists a diverse spectrum of people, ranging from children to the elderly, from the wealthy to the impoverished, from the renowned to the ordinary.

Primarily, the advent of the internet and various media channels has facilitated the breakdown of barriers imposed by time, distance, and social boundaries. This has fostered the creation of communities wherein individuals can freely share passions, interests, and valuable information, which is truly remarkable. However, within this remarkable realm, there also exist negative aspects, with one such aspect being the prevalence of fake news.

Fake news, information readily available on the web, can be challenging to discern, particularly for less attentive or less expert individuals. The deliberate dissemination of false or misleading

information has the potential to sway public opinion, erode trust in institutions, and sow discord among communities. The objective of this research is to address this issue by developing methods leveraging artificial intelligence and machine learning to accurately and reliably distinguish real news from fake news.

Furthermore, this research aims to delve into the mechanisms facilitating the creation of fake news, utilizing artificial intelligence to simulate and analyze the tactics employed by malicious actors in generating disinformation. Additionally, this project seeks to bolster the digital ecosystem against the onslaught of disinformation, while also endeavoring to comprehend and analyze the dynamics and motivations driving this detrimental trend.

Another significant goal of this research is to harness the potential of artificial intelligence to unveil the veil of deception surrounding online discourse. By doing so, we aspire to pave the way toward a more informed, resilient, and cohesive society.

1.3 Experimental:

1. **Collection of Data:** Gather a substantial volume of news from various sources and from different types of media, encompassing both authentic and fabricated content. Use web scraping tools to collect a large dataset of news articles or posts from various social media that encompass various topics and points of view. Subsequently, it is crucial to ascertain their veracity and identify any recurring patterns indicative of fake news or common elements frequently found within such articles. This whole process enables the detection of warning signs when analyzing news items. The collection and analysis of these articles will be fundamental for the creation of systems to create and detect fake news, so for all the further steps.
2. **Creation of Fake News:** We should use or program various AI tools or machine learning software to generate fake news articles, while also taking advantage of the article harvesting benefits we discussed above. We can also improve the machine until this software provides

us with articles that are increasingly similar to the real ones, it will also be necessary to check these papers, trying to check if they contain grammatical errors or things that are too far from reality, to do this you could use human annotators who can provide us with feedback.

3. **Detection of Fake News:** In this case, it will be essential to exploit the recurring patterns that we have found and program machine learning capable of identifying these patterns and understanding whether the article is false or true. For this reason, it is necessary to collect a huge amount of news. It will, therefore, be necessary to program machine learning and AI that can recognize, in the most accurate way possible, whether a piece of news is true or false, regardless of whether it is sourced from various outlets such as social media or generated by us. Subsequently, efforts should focus on improving the software so that fake news is recognized more accurately while ensuring that real news is not mislabeled as false. Once again, human feedback will be instrumental in verifying the accuracy of the systems and providing necessary adjustments.
4. **Accuracy measuring:** Measure the overall accuracy of the detection system in correctly classifying news articles as real or fake. In particular, it will be important to compare the news generated by us and verify whether or not the detection software will be able to classify them as false.
5. **Analysis and Interpretation:** Interpreting experimental results within the context of the research objectives is essential, as it allows for the highlighting of insights into the effectiveness and limitations of AI-based fake news detection. It is also crucial to discuss the practical implications of the findings for combating the dissemination of fake news and to outline directions for future research, which may include model enhancements and considerations for real-world applications.

1.4 Theoretical part:

According to Cambridge Dictionary Fake News is defined as “false stories that are created and spread on the Internet to influence public opinion and appear to be true”. In 1903, what can be considered the mother of all fake news was published in Russia. Despite its obvious absurdity, rather than triggering uproarious laughter, it contributed to creating the cultural substrate that led a part of Europe to turn its head in the evidence of what happened in lagers, we can understand from that how ancient the origins of fake news are. However, with the advent of the internet and particularly social media, the dissemination of such news has reached its peak.

1.4.1 Characteristics of Fake News:

Fake news is defined as stories that “describe events in the real world, typically by mimicking the conventions of traditional media reportage, yet known by their creators to be significantly false, and transmitted with the combined goals of being widely re-transmitted and of deceiving at least some of its audience”. Therefore, fake news consists of articles that are entirely false or contain a grain of truth, attempting to emulate or mimic real news and their main purpose is to generate interactions or, in any case, reactions from the reader. Now that we have a clear vision of what fake news actually are, we can proceed to describe the characteristics that this news presents:

- Deception: Fake news intentionally misleads or deceives the public by presenting false or distorted information as factual.
- Sensationalism: Fake news often relies on sensational or exaggerated claims to capture attention and elicit emotional responses from readers or viewers.
- Confirmation bias: Fake news tends to reinforce existing beliefs or prejudices, appealing to individuals predisposed to accept its message without critical evaluation.
- Manipulation: Fake news can be created and disseminated with the intent to manipulate public opinion, influence political outcomes, or undermine trust in institutions.

In the following chapters, particularly in 2.3, the main types of existing fake news will also be analyzed and described in depth, namely: Satire/parody, Fabrication, Manipulation, and Propaganda.

1.4.2 Spread of Fake News:

Unfortunately, one of the many controversial aspects of fake news concerns its spread. Experts liken it to the spread of a virus; just as with the plague, some individuals are more susceptible than others, in the case of fake news, this pertains to those who could more easily fall into these traps, much like a virus spread more rapidly depending on the number of exposed individuals and how many are actually "infected" and believe the story, additionally, it depends on how many of these individuals could further propagate false news. One of the factors that has exponentially increased the spread of fake news is the advent of social media. Their impact on the dissemination of this news has been devastating, as it is much easier for news to spread quickly, all it takes is for one person to share the news on various social networks, and it could quickly reach millions and millions of people.

Obviously, this has had a strong impact on our society, including:

- Erosion of trust: Fake news undermines public trust in traditional media sources, democratic institutions and processes, leading to polarization and skepticism.
- Disinformation: Fake news spreads misinformation, distorting public understanding of important issues and contributing to social discord.
- Political consequences: Fake news can influence elections, public policy debates and political discourse, shaping public opinion and electoral outcomes.
- Social division: Fake news exacerbates social divisions by amplifying polarizing narratives and fostering mistrust between different groups within society.

1.4.3 Fighting Fake News:

Due to the rapid spread of fake news, many researchers and technology giants are collaborating to try to resolve, or at least mitigate this social plague. They are attempting to create mechanisms for identifying fake news. One of the most effective methods among those developed is the content-based fake news detection method, which aims to detect fake news by analyzing the content of the article. This strategy is further divided into several approaches, but we will analyze the two most relevant:

- Knowledge based: Knowledge-based approaches employ a fact-checking method wherein the given claim is compared with external sources to verify the authenticity of the claim. Existing fact-checking methods can be further divided into manual and automatic fact-checking. Manual fact-checking is further divided into two subcategories: expert-based and crowdsourcing. In the first, experts limit themselves to analyzing the content of the news. This approach is not too functional as it requires a lot of work and does not adapt well to the enormous volume of content available on social media. The crowdsourcing approach relies on a large number of readers who scan the news and help verify the accuracy of the articles. As mentioned, manual fact-checking approaches do not scale well with the enormous volume of data, particularly generated through the use of social media. To address this issue, automatic fact-checking techniques have been deployed. Instead of relying on human intelligence, these methods heavily rely on Natural Language Processing, Data Mining, Machine Learning, and Artificial Intelligence.
- Style based: Style-based fake news detection follows the same approach as knowledge-based fake news detection by analyzing the content of news content. However, instead of evaluating the authenticity of the news meaning, this method evaluates the author's intention to mislead the audience. Fake news publishers usually intend to influence large communities by spreading distorted and misleading information. Therefore, this approach aims to identify

recursive stylistic patterns that allow us to clearly identify whether a piece of news is false or not.

Thanks to the implementation of these strategies and the advancement of technologies capable of identifying the veracity of news, we are increasingly striving to eliminate the prevalence of false information, or at the very least, we are endeavoring to equip people with methods to easily discern the difference between authentic and fabricated content.

In conclusion, we have comprehended the true nature of fake news and its main characteristics. We have observed its rapid expansion and the efforts made to mitigate this plague. Now, our focus will shift to creation and detection strategies utilizing artificial intelligence and machine learning.

1.4.4 Open Issues:

Despite the collective efforts of various stakeholders, including governments, tech companies, researchers, and civil society organizations, to mitigate the social problem of fake news, it continues to proliferate. This persistence leads to multiple open issues, including:

- **Social Media Amplification:** Social media plays a fundamental role in amplifying and disseminating fake news. Algorithms tend to prioritize content that garners more interactions, particularly the most controversial news, which often achieves significant success and reaches a wide audience. Therefore, there is a pressing need for greater transparency and regulation to ensure that algorithms prioritize accuracy and reliability over virality.
- **Technological Progress:** The rapid advancement of technology, especially in fields such as artificial intelligence and deepfakes, complicates the discernment between true and false news. As these technologies become increasingly sophisticated, machines will be better equipped to create false news that closely resembles reality. Consequently, identifying and debunking these articles becomes progressively more challenging.

- Erosion of Trust: The prevalence of fake news undermines trust in traditional media sources, democratic institutions, and processes. When individuals are exposed to a constant stream of conflicting information and conspiracy theories, it becomes increasingly difficult to distinguish fact from fiction. Particularly on various social media platforms, such news is increasingly frequent, as anyone can publish news without prior verification. This phenomenon makes individuals susceptible to misinformation that aligns with their existing beliefs and preferences.

It will therefore be essential to look for solutions to all these problems before it is too late.

CHAPTER 2 RESEARCH METHODS

2.1 Objective:

The main objective of the study is to carefully analyze and understand the phenomenon of fake news. In order to tackle this project, it will be necessary to analyze several elements that characterize fake news. One of these elements is the investigation into natural language understanding, which will allow us to discern characteristic patterns enabling the identification of false news pieces with greater ease. Moreover, it is crucial to classify and differentiate them by types, such as misinformation, disinformation, and malinformation. Another fundamental aspect to analyze is the psychological impact that this news has on the population, including cognitive biases, social influence, and echo chambers. Understanding and analyzing the various technologies used to create and detect fake news is also imperative. For instance, machine learning will be employed to define models for classifying deceptive and legitimate news articles. Additionally, deep learning architectures will be explored for feature extraction and pattern recognition.

2.2 Data collection:

This segment will be pivotal for the study's objectives and all subsequent research sections. Would be useful to create or use a dataset comprising both true and false articles, coming from different

sources and dealing with different topics. This approach ensures the analysis of a vast array of news articles, each distinct from the others. Establishing selection criteria for news articles is an initial step in dataset construction and involves prioritizing factors such as relevance, diversity, and representativeness of the data:

- **Relevance:** The selected datasets must accurately reflect the dynamics and characteristics of real-world scenarios involving fake news dissemination. This entails considering the sources, topics, and platforms associated with fake news propagation. Prioritizing datasets closely resembling actual instances of fake news enables AI models to train and test on realistic data effectively.
- **Diversity:** A diverse dataset encompasses various forms of fake news, including misinformation, disinformation, and malinformation. Additionally, it should cover a wide array of domains such as politics, health, finance, and entertainment. Incorporating numerous examples enables AI models to generalize across different contexts and types of fake news effectively.
- **Representativeness:** The dataset should aptly represent the prevalence of fake news relative to genuine information. Achieving this requires maintaining an equitable balance between fake and legitimate news articles to prevent biases during model training and evaluation. Additionally, the dataset should span a sufficient timeframe to capture temporal trends and changes in fake news dissemination patterns.

Once the criteria for selecting news articles are established, it becomes essential to determine the sources from which to obtain these articles. Sources of fake news may include social media platforms, news websites, and online forums known for their susceptibility to fake news dissemination.

2.2.1 Datasets of news:

In the realm of fake news detection, numerous researchers are engaged. Consequently, numerous sets of fake news are generated, yet only a fraction of these are actually disseminated. We will leverage these pre-fabricated datasets to gain a deeper understanding of the distinction between fake and real news. Most of these datasets comprise both false and true news, sourced from various channels, thereby proving highly advantageous for our study. However, discerning the suitability of each for our study's objectives will be imperative. Table [1] will delineate the most pertinent datasets for our research.

Dataset	About	Type of News	Content	Total elements
BuzzFace	A dataset regarding news veracity on social media.	Contains a mixture of true and false news.	Facebook posts.	2263 articles.
Emergent	A novel dataset for stance classification.	Contains a mixture of true and false news or unverified.	World and national U.S. news and technology stories.	300 rumored claims and 2595 associated news articles.
FNC-1	A dataset designed specifically for stance detection.	Contains agreed, disagrees, discusses and unrelated articles.	News Articles.	75.385 articles.

Fa-Kes	A Fake News Dataset around the Syrian War.	Contains a mixture of true and false news.	Articles about the Syrian war.	804 articles.
LIAR	A political news dataset.	Contains a mixture of true and false news.	Articles about political statements.	12.800 articles.
PHEME	A dataset for Rumor Detection and Veracity Classification.	Contains a mixture of true and false news or unverified.	This dataset contains a collection of Twitter rumors and non-rumors posted during breaking news.	4,842 articles.

Table [1] Analyze some relevant news datasets.

2.2.2 Tools for creating a dataset of news:

Another method to obtain a news dataset is by leveraging certain tools that enable us to create our personalized news dataset. Table [2] lists and analyzes the most relevant ones for our study.

Tool	Type of tool	Purpose
Scrapy	Web Scraping tool	A Python framework specifically designed for web scraping. You can write custom spiders to crawl websites and extract relevant information, including fake news articles.

Octoparse	Web Scraping tool	A user-friendly web scraping tool with a visual interface.
Beautiful Soup	Web Scraping tool	A Python library that allows you to extract data from HTML and XML files. It provides idiomatic ways to navigate, search, and modify the parse tree of these documents.

Table [2] Analyze some relevant dataset creating tools.

2.3 Fake News Analysis:

This chapter will be fundamental to understanding how to classify fake news, by analyzing their impact, the level, the problems that they can create and the ethical considerations in this regard.

2.3.1 Type of Fake News:

There are mainly four types of Fake news:

- Satire/Parody: Satire relies on humor or exaggeration to ridicule someone, so it constitutes fake news based on entertainment and humorous purposes. We're not particularly interested in this type of news as it's typically so exaggerated and doesn't attempt to pass off as real news but rather aims solely to entertain. A great example of satirical fake news is provided by the website the ONION, known for exclusively publishing parody content. Although it may initially appear as a genuine news source, the absurdity of its articles quickly reveals its intent to elicit laughter from readers. One of the latest published pieces is shown in the image [1]:

POLITICS

What Trump Will Do On His First Day In Office

Former President Donald Trump famously said that he would be “a dictator” on day one if he’s reelected this November. Here is everything that Trump plans to do on his first day in office.

Image [1] An article published by the ONION on a parody of news about Donald Trump.

- Fabrication: Fabrication is what comes to mind when you think of fake news. It appears to be legitimate news, but in reality, it lacks any factual basis. These are news pieces that aim to resemble real news and attempt to deceive the public. In recent years, the proliferation of such news has increased, thanks to the internet. For these reasons, we are highly interested in this type of fake news for our research. An example of this type of fake news is given in image [2]:



12

COMMENTS

f Share

Tweet

BREAKING: Obama's Mother In Law Charged With Larceny And Fraud

MARCH 17, 2017 BREAKING NEWS

Image [2] A Fabrication news about Obama's mother.

As we will notice, this news, unlike the previous one, does not employ irony; on the contrary, it attempts to emulate real news. This is why it becomes challenging to discern whether it is true or false. One of the objectives of this news is precisely to attract readers to click on the article.

- Manipulation: This news usually involves altered photos or videos, with the aim of creating false narratives or deceiving the public. Visual manipulation can have a strong impact, and very often, it is difficult to distinguish true news from false news. An example of manipulated fake news is given by image [3]:



Image [3] An example of manipulation on two images representing Prince William.

An example of the same image taken from two different perspectives, both were taken at the same time, this allows us to understand how manipulation can completely change the meaning of what we are looking at.

- Propaganda: Propaganda aims to influence people's attitudes toward a specific political cause or ideology. It often employs emotional appeals, misinformation, and distorted narratives. These types of news perhaps have the most significant impact on the internet, and for this reason, they will be highly useful for the purposes of our research. An example of propaganda fake news is given by image [4]:



Image [4] Donald Trump's real Twitter account that published fake Propaganda news.

Even this type of news, unlike the first one we saw, does not attempt to create irony but rather aims to influence people's political thoughts and vision. Fake propaganda news is perhaps one of the most dangerous, as it often tries to instill hatred in readers.

The impact of fake news, particularly in a world where the majority of the population is connected to the internet, can be devastating. From influencing public opinion and exacerbating social divisions to undermining trust in institutions, fake news poses significant threats. Furthermore, the advancement of artificial intelligence has also amplified the volume of fake news accessible on the internet.

2.4 Technology:

This section represents the pivotal experimental phase of the project, arguably the most crucial, as it entails the actual generation and detection of fake news using artificial intelligence and machine

learning. Subsequently, it involves the evaluation and comparison of the obtained results. We will leverage all the elements acquired in the preceding sections, including the fake news dataset and various linguistic patterns, to instruct the machines on accurately discerning fake news. Naturally, it is imperative to minimize errors or maintain an exceptionally low error rate. Additionally, it is crucial to delineate and enumerate the distinct technologies utilized for creation and detection, as they exhibit considerable divergence.

2.4.1 Creation of Fake News:

We will begin working on the generation of fake news. To accomplish this, we will test various artificial intelligences and we will discuss the results obtained.

RolePlay v1:

We will commence by utilizing this AI. To generate fake news, it will suffice to insert a line of text wherein we broadly discuss the desired outcome, as depicted in the image [5].

Choose AI model *

RolePlay v1 Good for RP	GPT 3.5 Fastest	RolePlay v2 Better RP	GPT 4 Turbo Most advanced	OpenGPT RP + General
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Provide the news information *

Include all the key points that need to be covered in the news article

Create a fake news article about Donald Trump's statements about the recent Hamas attack on Israel

Language *

English (English)
▼

▶ Generate

Image [5].

In this research, my goal is to avoid sensationalism and simply focus on verifying the efficiency of artificial intelligence. Therefore, we will not delve into overly strong arguments. In any case this is the result obtained thanks to this AI:

“*Headline 1:* President Trump Denounces Hamas Attack on Israel

Subtitle 1: President Calls for Increased Support for Israel

Excerpt: President Donald Trump has condemned the recent Hamas attack on Israel, calling for increased support for the Jewish state in its ongoing conflict against the terrorist organization.

Body: During a press conference on Monday, President Trump expressed his outrage over the latest terrorist attack orchestrated by Hamas, a Palestinian militant group, on Israel. Trump called the attack "despicable" and "inhumane" and demanded that the international community take a stronger stance against these acts of terror.

The President also emphasized the importance of standing with Israel in its fight against Hamas and other terrorist organizations that seek to destabilize the region. "The United States will always be a steadfast ally to Israel and will continue to provide the resources and support necessary to combat these terrorist threats," Trump stated.”

The obtained result can be deemed satisfactory. While I was expecting some more detail, overall, it appears akin to a genuine article. Perhaps one of the primary issues lies in the portrayal of Donald Trump as president. Thus, upon reading the news, one might discern its fictitious nature, yet a less discerning reader could easily overlook this and be ensnared in the deception.

PostGen.AI:

This artificial intelligence allows us to generate posts, unlike the previous one, which allowed us to obtain a more journalistic result, in fact, the resulting content will be more closely aligned to social media. Artificial intelligence allows us to specify the platform for which we wish to create fake news. Also, in this case we will only need to insert a brief description of the fake news we want to obtain, but also indicate the social media we want to target, as shown in the image [6].

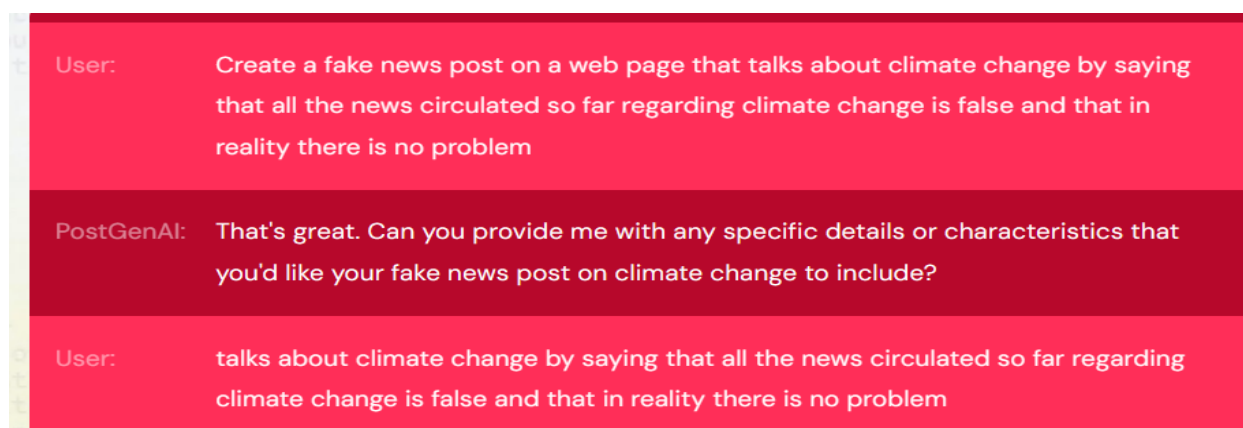


Image [6].

In this case I specified that the post is for a blog, to obtain a more "serious" result than what a Facebook post could be, the output is the following:

“BREAKING NEWS: Shocking Revelations About Climate Change!

Recent studies have uncovered the truth about climate change - it's all a hoax! Contrary to what you've been told, there is no real problem with our planet's climate. The news that has been circulating about rising temperatures, melting ice caps, and extreme weather events is all FALSE information designed to create unnecessary panic.

Scientists have now come forward with evidence that debunks the so-called "facts" about climate change. It's time to stop the fear-mongering and focus on real issues that matter. Don't be fooled by the mainstream media - the truth is finally out!

Stay tuned for more updates as we continue to uncover the real story behind the climate change myth. Share this post to spread awareness and let others know that there is no need to worry about the future of our planet. #ClimateChangeHoax #NoProblemHere”

As we can see, the result bears much resemblance to a blog page. This is evident from the array of hashtags and also in the final part prompting readers to share the post, reminiscent of typical social media content. Despite its less professional appearance, it effectively generates sensationalism. However, it fails to articulate the reasons behind dismissing climate change as a myth and lacks scientific evidence. Consequently, it could be readily identified as fake news. Nevertheless, it still

holds the potential to gain traction and become viral, thereby reaching a wide audience, some of whom may accept its claims as genuine.

GPT 3.5:

Now, let's endeavor to exploit one of the most popular AI, also in this case, we will need to broadly define the topic of our article, as shown in the image [7]:

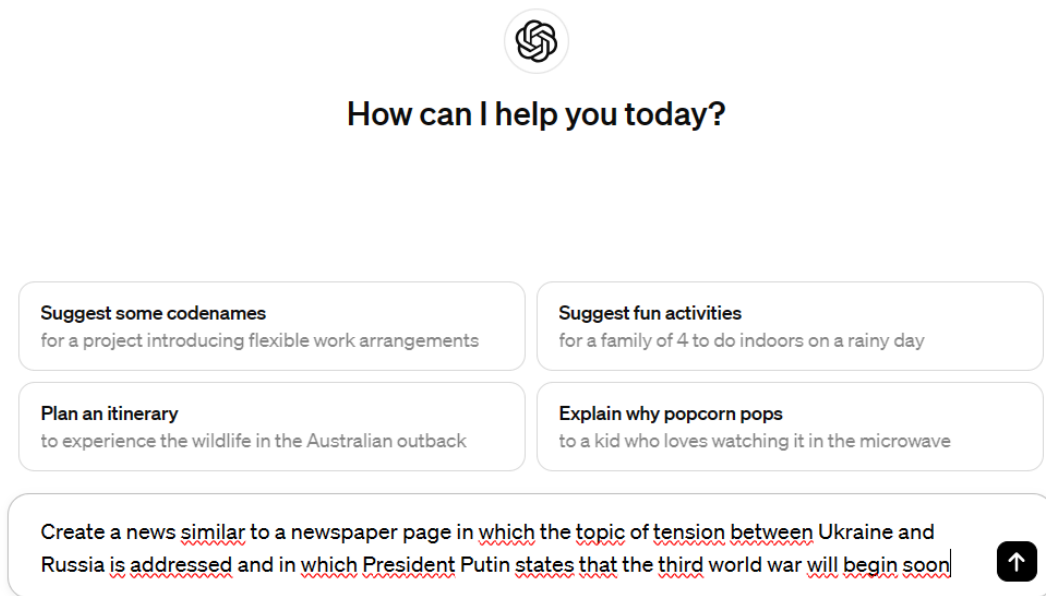


Image [7].

In this case I specified that the fake news must look like a newspaper article, the result I obtained is the following:

“Tensions Mount as Ukraine and Russia Lock Horns

Amidst rising tensions between Ukraine and Russia, fears of a potential conflict loom large over Eastern Europe. The recent military buildup along the Ukrainian border has exacerbated concerns of an imminent escalation.

Ukrainian President, Volodymyr Zelensky, has issued statements condemning Russia's aggressive maneuvers, labeling them as provocative and destabilizing. Meanwhile, NATO allies have voiced their support for Ukraine, urging diplomatic resolution to prevent further escalation.

Putin's Stark Warning: "The Third World War is on the Horizon"

In a chilling declaration, Russian President Vladimir Putin has ominously warned of the impending outbreak of a third world war. Speaking at a press conference in Moscow, Putin accused NATO of encroaching on Russia's sphere of influence and stated that Russia would defend its interests at any cost.

"The current geopolitical climate is fraught with tension and hostility," Putin remarked. "If the West continues its aggressive stance towards Russia, it will inevitably lead to catastrophic consequences. The third world war is not a distant possibility; it is a grim reality looming on the horizon."

Global Alarm and Diplomatic Efforts

Putin's dire warning has sent shockwaves across the international community, prompting urgent diplomatic efforts to diffuse the escalating crisis. Leaders from major world powers have called for restraint and dialogue to prevent the situation from spiraling out of control.

The United Nations Security Council is set to convene an emergency session to address the growing crisis in Eastern Europe. Meanwhile, diplomats from Ukraine, Russia, and NATO member states are engaged in high-level negotiations to seek a peaceful resolution to the standoff.

Analysis and Commentary

Experts warn that the escalating tensions between Ukraine and Russia pose a grave threat to regional stability and global security. The specter of a third world war, invoked by President Putin, underscores the urgency of finding a diplomatic solution to the crisis.

Political analysts speculate on the underlying motives driving Russia's aggressive posture towards Ukraine and its implications for the broader geopolitical landscape. As tensions continue to escalate, the world holds its breath, hoping for a peaceful resolution to avert the catastrophic consequences of armed conflict."

The obtained result is among the best. The AI managed to create a perfect article starting from the brief description I provided, analyzing and arguing the issue very carefully, and adding elements that I had not mentioned. In my opinion, although the topic covered is very delicate, this article could easily deceive many readers. Let's see if it will also manage to do so with detection tools.

WhiteCreamAI:

Now let's further test another AI, even here it will also be necessary to provide a brief description of the news we aim to obtain, as depicted in the image [8].

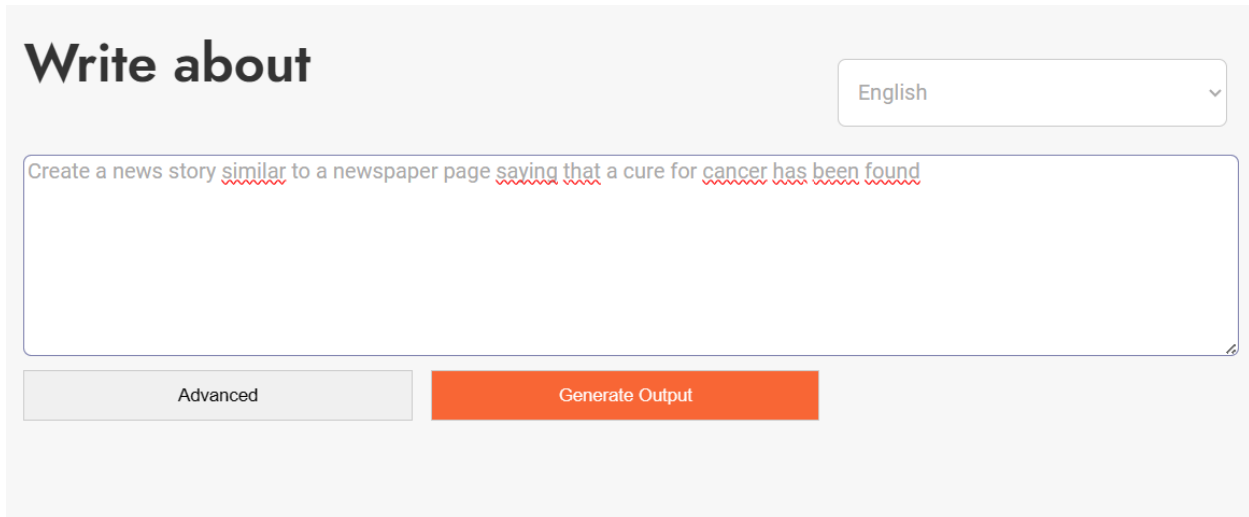


Image [8].

Even in this case I specified that the fake news must look like a newspaper article, the result I obtained is the following:

“Cancer, the dreaded disease that has plagued humanity for centuries, has finally met its match. Scientists at the renowned [Institution Name] have made a groundbreaking discovery that has the potential to change the course of medical history forever. After years of tireless research and collaboration with leading experts from around the world, a team of brilliant minds has developed a revolutionary therapy that has proven to be effective in eliminating cancer cells with unprecedented precision and efficiency. The therapy, known as [Therapy Name], utilizes a combination of cutting-edge technologies that target the specific genetic mutations that drive tumor growth. In a series of clinical trials involving patients with various types of cancer, [Therapy Name] has demonstrated remarkable results. Tumors have shrunk or disappeared entirely in a significant majority of patients, and long-term remission rates are highly promising. The therapy has also shown minimal side effects compared to traditional cancer treatments such as chemotherapy and radiation. The discovery of [Therapy Name] has sent shockwaves through the medical community. Dr. [Lead Scientist's Name], the principal investigator of the research team, expressed his profound joy and

gratitude for the breakthrough. "This is a moment we have dreamed of for so long," said Dr. [Lead Scientist's Name]. "Cancer has been a scourge on humanity for far too long, and now we finally have a weapon that can truly defeat it. This is a victory for science, for medicine, and most importantly, for all those who have suffered from this terrible disease." The announcement of the cancer cure has been met with widespread jubilation and relief by patients, families, and medical professionals alike. Organizations dedicated to fighting cancer have hailed the discovery as a game-changer that will save countless lives. "This breakthrough is a testament to the power of human ingenuity and determination," said [Spokesperson for Cancer Advocacy Group]. "We are eternally grateful to the scientists and researchers who have dedicated their lives to finding a cure for cancer. This is a day that will be remembered in history as a turning point in the fight against this devastating disease." The implications of the cancer cure are far-reaching and profound. It holds the promise of a future where cancer is no longer a life-threatening disease but a manageable condition. It offers hope to millions of people around the world who have been living with the fear of cancer hanging over their heads. As the medical community prepares to implement [Therapy Name] on a wider scale, there is a cautious optimism that this revolutionary treatment will transform healthcare and usher in an era of unprecedented progress in the fight against cancer."

In this case, the outcome is rather poor. The defined concept is not thoroughly explored, particularly regarding the problem-solving approach, everything appears overly generalized in an article that is excessively lengthy. Moreover, it neglects to incorporate specific names but this should be added by us.

Each of the AI tested yielded a more or less positive result, with some delivering more exciting outcomes than others. Nonetheless, all were able to provide us with the desired content. Each tool proved remarkably user-friendly, it only required inserting a brief description of the desired result, and within seconds, the fake news was generated. This process was remarkably simple and swift in achieving the desired output. However, this ease of generation raises concerns: will it be just as

effortless to discern that the generated news is fake? Before delving into this question, let's scrutinize the results obtained by the artificial intelligence in the table [3].

Tool Name	Result Obtained
GPT 3.5	Impressive result, probably the most accurate.
RolePlay v1	Satisfactory result, not so impressive, but still solid.
PostGen.AI	Nice result, even if it is for a blog and not for a journalistic article, but It's still good.
WhiteCreamAI	Probably the least satisfactory result, but still managed to give us something we can work with.

Table [3] Analyze the tools used for the creation of Fake News.

2.4.2 Detection of Fake News:

After generating the fake news using various artificial intelligences, it will be necessary to test the tools' ability to recognize whether the news is true or false. To adequately verify this, we will initiate the testing phase by attempting to ascertain if the artificial intelligence can yield satisfactory results. Subsequently, we will leverage machine learning, to which the previously created datasets will be provided, aiming to attain the most accurate result feasible. The goal is to assess the capabilities and limitations of AI to subsequently develop machine learning models capable of providing the most precise results possible.

GPT 3.5:

We will start by using this artificial intelligence which during the fake news generation phase has demonstrated its ability to provide us with the most convincing results. We will examine whether it

can provide accurate results in fake news detection as well. Initially we will insert the previously generated news and subsequently analyze further fake news not created by us. Finally, we will evaluate the AI's response using real news articles.

We will start by checking whether the AI is able to verify the truthfulness of the news generated via the WhiteCreamAI tool, the result is shown in the image [9].

Based on the information provided, the news seems more like a hypothetical scenario or a piece of fiction rather than a real news report. While breakthroughs in cancer research and treatment are ongoing and highly sought after, the tone and language used in this passage seem overly optimistic and sensationalized. Phrases like "Cancer, the dreaded disease that has plagued humanity for centuries, has finally met its match" and "a revolutionary therapy that has proven to be effective in eliminating cancer cells with unprecedented precision and efficiency" sound exaggerated and lack the cautious language typically associated with scientific announcements. Additionally, the lack of specific details such as the name of the institution, the therapy, or the lead scientist raises doubts about the authenticity of the news. Real breakthroughs in medical science are usually accompanied by detailed information about the researchers involved, the methodology used, and the peer-reviewed studies supporting the claims. Therefore, without further evidence or context, it's challenging to determine the authenticity of this news.

Image [9].

The AI's response is remarkably accurate and precise, offering an explanation as to why the news appears dubious. It analyzes crucial aspects that have either been entirely neglected or only superficially addressed. Consequently, artificial intelligence provides a highly positive and insightful response. However, regrettably, it falls short of delivering a definitive or unequivocal answer to our query, in fact in its concluding remarks, it states, "Therefore, without further evidence or context, it's challenging to determine the authenticity of this news." This implies that despite recognizing the news's weaknesses, the tool still cannot furnish us with a conclusive response, which is a drawback.

To further assess the robustness of the tool, we will input a fake news article not generated by us. Specifically, we will use a parody news article. The outcome is displayed in the image [10].

The news you provided appears to be fake or satirical. It depicts an outlandish scenario in which Treasury Secretary Janet Yellen unveils a plan to boost the U.S. economy by stealing a large diamond. The language used, including references to stealing, black market sales, and specific individuals involved in the heist, seems highly improbable and not in line with the actions or statements one would expect from a government official. Additionally, the tone and absurdity of the scenario suggest that it is likely fictional or satirical in nature.

Image [10].

In this case, unlike the first test, the tool successfully provides us with a confident answer. He also recognizes that the news is parodic, justifying the use of certain terms and the exaggeration of the topic covered. So, the outcome of this test is very positive.

For the final test, we will utilize the AI with real news to ensure the reliability of the tool. The news will be taken directly from the official NBC News website. This article addresses the topic of sending aid packages to Israel and Ukraine. The response is represented in the image [11].

The news appears to be real. It describes specific legislative actions scheduled to take place in the House of Representatives, including votes on aid packages for Israel and Ukraine, security assistance for the Indo-Pacific, and legislation concerning TikTok's parent company. The mention of bipartisan support, the procedural steps involved, and the expected timeline for Senate approval align with typical legislative processes in the United States. However, to confirm the authenticity of the news, it's advisable to cross-reference with reputable news sources or official government announcements.

Image [11].

In this instance as well, the tool fails to provide us with a definitive answer, it tells us that it seems like real news, but without certainty. Nonetheless, it can identify fundamental aspects that typify the news as authentic, aiding our comprehension of its truthfulness. However, we require the AI to provide us with a precise answer rather than mere assumptions.

GroverAI:

This is another artificial intelligence that we can leverage for our study. Unlike the previous one, this AI was created with the exclusive purpose of identifying fake news. Also, in this case, similar to the previous AI, it will simply be necessary to input the article we want to check to verify its

veracity. Here, too, we will first check whether the tool is able to recognize the falsity of one of the previously generated articles, as shown in the image [12].

Text:

"Headline 1: President Trump Denounces Hamas Attack on Israel

Subtitle 1: President Calls for Increased Support for Israel

Excerpt: President Donald Trump has condemned the recent Hamas attack on Israel, calling for increased support for the Jewish state in its ongoing conflict against the terrorist organization.

Body: During a press conference on Monday, President Trump expressed his outrage over the latest terrorist attack orchestrated by Hamas, a Palestinian militant group, on Israel. Trump called the attack "despicable" and "inhumane" and demanded that the international community take a stronger stance against these acts of terror. The President also emphasized the importance of standing with Israel in its fight against Hamas and other terrorist organizations that seek to destabilize the region. "The United States will always be a steadfast ally to Israel and will continue to provide the resources and support necessary to combat these terrorist threats." Trump stated."

Detect Fake News

We are quite sure this was written by a machine.

Image [12].

For this test, we employed the Fake News generated by the artificial intelligence of RolePlay v1, as a result, it provides us with the statement: "We are quite sure this was written by a machine". Also, in this case, the tool doesn't provide us with a definitive answer or offer further details on why the news is false. Additionally, the tool merely informs us that the article was crafted by a machine, yet it does not confirm the news as false. Consequently, we cannot regard the outcome as satisfactory. As done previously, for the second test we will use fake news not created by us, the result is shown in the image [13].

Text:

Hollywood star, Denzel Washington is usually catching some heat through supporters of President Obama after calling his agenda "anti-Christian." Washington talked out about his own Christian beliefs during the 1999 interview. During the interview, he shared his story of how he or she uncovered religion.

As the particular son of a preacher and spending a majority of his time in the church, he grew to become rebellious as a teen. After what Washington calls a personal face along with God, he came back in order to the church in his 20s. "I had this particular tremendous physical and spiritual experience."

Detect Fake News

We are quite sure this was written by a machine.

Image [13].

For this test, I utilized an older fake news article regarding Denzel Washington endorsing Donald Trump for president. Similar to the previous experiment, the tool was able to accurately determine that the news was authored by a machine. However, once again, it failed to provide explanations or at least specify whether the news was indeed fake.

For the final test, we will ascertain whether the tool can recognize authentic news. Similar to the preceding tool, we will employ a news item extracted directly from the official NBC News website. This article discusses the dispatch of aid packages to Israel and Ukraine. The outcome is depicted in the image [14].

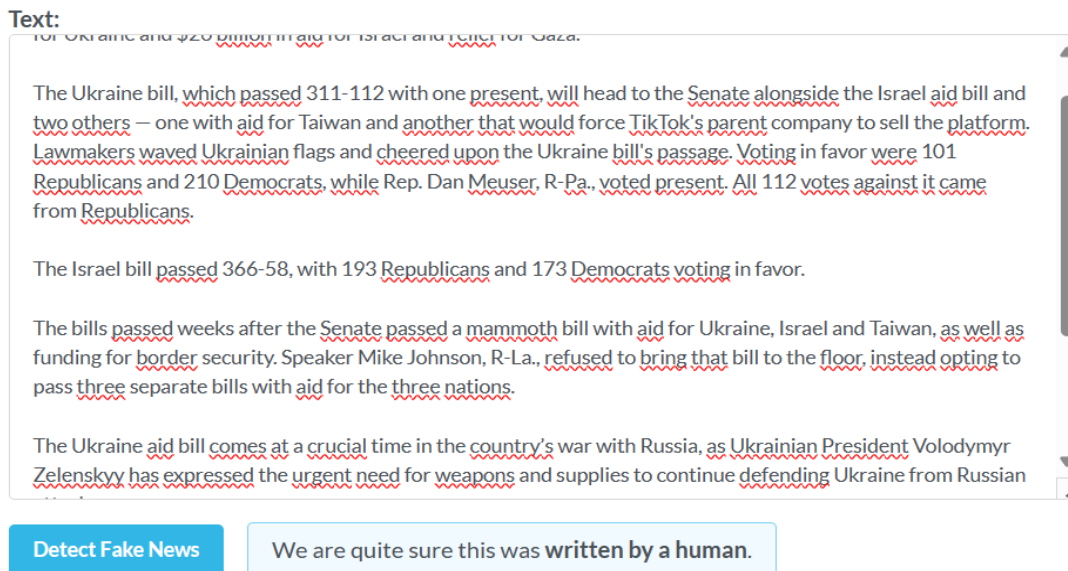


Image [14].

Once again, the tool successfully identifies that the news was authored by a human rather than AI, yet it fails to provide any reasoning in this regard. Although accurate in this instance as well, we cannot categorize the outcome as entirely satisfactory.

Both tools achieved moderately satisfactory results. GPT consistently recognized the truthfulness of the news in all three scenarios and offered explanations that were more or less satisfactory, prompting us to contemplate why the news might appear true or false. Grover also correctly identified all three scenarios, providing correct answers, however never satisfactory explanations, as

it was only able to indicate to us that the news was written by a human or a machine. Regrettably, for our study, this falls short of the minimal result. The two tools are analyzed again in table [4].

Tool Name	Detect our Fake News	Detect a random Fake News	Detect a Real News
GPT 3.5	The tool succeeds in providing highly accurate reasons as to why the news might be false, but unfortunately, it does not offer a completely definitive answer on the matter.	In this case, the AI not only succeeds in providing a concrete answer and explanations on the matter but also manages to recognize the type of fake news it is.	It succeeds in identifying and describing the fundamental aspects of why the news appears real, but unfortunately, in this case as well, similar to the first test, it does not provide us with a definitive answer.
GroverAI	The tool is only able to detect whether the news is written by a human or a machine, but cannot understand whether it is true or false news.	We have the same result as the first scenario.	We have the same result as the first scenario.

Table [4] Analyze the tools used for the detection of Fake News.

2.4.3 Machine Learning for Fake News Detection:

First, to develop the Machine Learning model, I have realized two datasets: one containing fake news and the other containing real news. Both of these datasets will be used to allow the machine learning system to distinguish between real and fake news, these articles set consist of more than 20000 articles. To build this tool, I used four prediction models for greater confidence, if all four models indicate that the news is true or false, I can be virtually certain of the accuracy of the result. Specifically, these algorithms are: Logistic Regression (LR), Decision Tree Classifier (DT), Gradient Boosting Classifier (GB) and Random Forest Classifier (RF).

To fully analyze the effectiveness of our machine, we will check whether it is able to recognize the articles previously created using artificial intelligence as fake news. We'll start with the one made via RolePlay v1; the result is shown in the image [15].

The screenshot shows a Jupyter Notebook interface with the following code and output:

```

def manual_testing(news):
    testing_news = {"text": [news]}
    new_def_test = pd.DataFrame(testing_news)
    new_def_test["text"] = new_def_test["text"].apply(wordopt)
    new_x_test = new_def_test["text"]
    new_xv_test = vectorization.transform(new_x_test)
    pred_LR = LR.predict(new_xv_test)
    pred_DT = DT.predict(new_xv_test)
    pred_GB = GB.predict(new_xv_test)
    pred_RF = RF.predict(new_xv_test)

    return print("\n\nLR Prediction: {} \nDT Prediction: {} \nGB Prediction: {} \nRF Prediction: {}".format(output_label(pred_LR[0]),
                                                                                                     output_label(pred_DT[0]),
                                                                                                     output_label(pred_GB[0]),
                                                                                                     output_label(pred_RF[0])))

```

[468]: news = str(input())
manual_testing(news)

During a press conference on Monday, President Trump expressed his outrage over the latest terrorist attack orchestrated by Hamas, a Palestinian militant group, on Israel. Trump called the attack "despicable" and "inhumane" and demanded that the international community take a stronger stance against these acts of terror. The President also emphasized the importance of standing with Israel in its fight against Hamas and other terrorist organizations that seek to destabilize the region. "The United States will always be a steadfast ally to Israel and will continue to provide the resources and support necessary to combat these terrorist threats," Trump stated.

LR Prediction: Fake News
DT Prediction: Fake News
GB Prediction: Fake News
RF Prediction: Fake News

Image [15].

As shown, all four algorithms classify the news as fake. From this, we can infer that the tool has reached a unanimous decision on the article, leading us to consider the result highly satisfactory. Clearly, the tool will not furnish us with explanations regarding why the news is false, however, our primary requirement is for it to make accurate guesses.

Let's continue with the PostGen.AI fake news, the result is shown in the image [16].

```
[136]: news = str(input())
manual_testing(news)

BREAKING NEWS: Shocking Revelations About Climate Change! Recent studies have uncovered the truth about climate change - it's all a hoax! Contrary to what you've been told, there is no real problem with our planet's climate. The news that has been circulating about rising temperatures, melting ice caps, and extreme weather events is all FALSE information designed to create unnecessary panic. Scientists have now come forward with evidence that debunks the so-called "facts" about climate change. It's time to stop the fear-mongering and focus on real issues that matter. Don't be fooled by the mainstream media - the truth is finally out! Stay tuned for more updates as we continue to uncover the real story behind the climate change myth. Share this post to spread awareness and let others know that there is no need to worry about the future of our planet. #ClimateChangeHoax #NoProblemHere

LR Prediction: Fake News
DT Prediction: Fake News
GB Prediction: Fake News
RF Prediction: Fake News
```

Image [16].

As evident here as well, all four models delivered a satisfactory response. We can also consider this as an excellent result.

Let us proceed with the fabricated news generated through GPT 3.5. The outcome is depicted in the image [17].

Tensions Mount as Ukraine and Russia Lock Horns Amidst rising tensions between Ukraine and Russia, fears of a potential conflict loom large over Eastern Europe. The recent military buildup along the Ukrainian border has exacerbated concerns of an imminent escalation. Ukrainian President, Volodymyr Zelensky, has issued statements condemning Russia's aggressive maneuvers, labeling them as provocative and destabilizing. Meanwhile, NATO allies have voiced their support for Ukraine, urging diplomatic resolution to prevent further escalation. Putin's Stark Warning: "The Third World War is on the Horizon" In a chilling declaration, Russian President Vladimir Putin has ominously warned of the impending outbreak of a third world war. Speaking at a press conference in Moscow, Putin accused NATO of encroaching on Russia's sphere of influence and stated that Russia would defend its interests at any cost. "The current geopolitical climate is fraught with tension and hostility," Putin remarked. "If the West continues its aggressive stance towards Russia, it will inevitably lead to catastrophic consequences. The third world war is not a distant possibility; it is a grim reality looming on the horizon." Global Alarm and Diplomatic Efforts Putin's dire warning has sent shockwaves across the international community, prompting urgent diplomatic efforts to diffuse the escalating crisis. Leaders from major world powers have called for restraint and dialogue to prevent the situation from spiraling out of control. The United Nations Security Council is set to convene an emergency session to address the growing crisis in Eastern Europe. Meanwhile, diplomats from Ukraine, Russia, and NATO member states are engaged in high-level negotiations to seek a peaceful resolution to the standoff. Analysis and Commentary Experts warn that the escalating tensions between Ukraine and Russia pose a grave threat to regional stability and global security. The specter of a third world war, invoked by President Putin, underscores the urgency of finding a diplomatic solution to the crisis. Political analysts speculate on the underlying motives driving Russia's aggressive posture towards Ukraine and its implications for the broader geopolitical landscape. As tensions continue to escalate, the world holds its breath, hoping for a peaceful resolution to avert the catastrophic consequences of armed conflict.

```
LR Prediction: Fake News
DT Prediction: Fake News
GB Prediction: Fake News
RF Prediction: Fake News
```

Image [17].

Despite the fake news generated by GPT, which I deemed the most successful, all four algorithms were able to identify the article as fake. Therefore, we can regard this as a significant success of the tool.

We continue with the latest fake news that we created through artificial intelligence, that of WhiteCream.AI, the result is shown in the image [18].

Cancer, the dreaded disease that has plagued humanity for centuries, has finally met its match. Scientists at the renowned [Institution Name] have made a groundbreaking discovery that has the potential to change the course of medical history forever. After years of tireless research and collaboration with leading experts from around the world, a team of brilliant minds has developed a revolutionary therapy that has proven to be effective in eliminating cancer cells with unprecedented precision and efficiency. The therapy, known as [Therapy Name], utilizes a combination of cutting-edge technologies that target the specific genetic mutations that drive tumor growth. In a series of clinical trials involving patients with various types of cancer, [Therapy Name] has demonstrated remarkable results. Tumors have shrunk or disappeared entirely in a significant majority of patients, and long-term remission rates are highly promising. The therapy has also shown minimal side effects compared to traditional cancer treatments such as chemotherapy and radiation. The discovery of [Therapy Name] has sent shockwaves through the medical community. Dr. [Lead Scientist's Name], the principal investigator of the research team, expressed his profound joy and gratitude for the breakthrough. "This is a moment we have dreamed of for so long," said Dr. [Lead Scientist's Name]. "Cancer has been a scourge on humanity for far too long, and now we finally have a weapon that can truly defeat it. This is a victory for science, for medicine, and most importantly, for all those who have suffered from this terrible disease." The announcement of the cancer cure has been met with widespread jubilation and relief by patients, families, and medical professionals alike. Organizations dedicated to fighting cancer have hailed the discovery as a game-changer that will save countless lives. "This breakthrough is a testament to the power of human ingenuity and determination," said [Spokesperson for Cancer Advocacy Group]. "We are eternally grateful to the scientists and researchers who have dedicated their lives to finding a cure for cancer. This is a day that will be remembered in history as a turning point in the fight against this devastating disease." The implications of the cancer cure are far-reaching and profound. It holds the promise of a future where cancer is no longer a life-threatening disease but a manageable condition. It offers hope to millions of people around the world who have been living with the fear of cancer hanging over their heads. As the medical community prepares to implement [Therapy Name] on a wider scale, there is a cautious optimism that this revolutionary treatment will transform healthcare and usher in an era of unprecedented progress in the fight against cancer.

LR Prediction: Fake News
 DT Prediction: Fake News
 GB Prediction: Fake News
 RF Prediction: Fake News

Image [18].

In this case, as well, we achieved an excellent result; all four algorithms correctly recognized the fake news. We can describe the machine learning test as fully satisfactory, as our tool consistently identified the correct result in all four scenarios. However, we will delve deeper into this topic in the conclusions.

For our final test, we will assess whether machine learning can accurately recognize a news item sourced from the internet as authentic. For this experiment, we will once again utilize the same news item as before, extracted directly from the official NBC website. Specifically, the news pertains to the topic of sending aid packages to Israel and Ukraine. The result is displayed in the image [19].

```
news = str(input())
manual_testing(news)
```

The House on Saturday passed a \$95 billion package that includes two long-awaited bills with \$60.8 billion of aid for Ukraine and \$26 billion in aid for Israel and relief for Gaza. The Ukraine bill, which passed 311-112 with one present, will head to the Senate alongside the Israel aid bill and two others – one with aid for Taiwan and another that would force TikTok's parent company to sell the platform. Lawmakers waved Ukrainian flags and cheered upon the Ukraine bill's passage. Voting in favor were 101 Republicans and 210 Democrats, while Rep. Dan Meuser, R-Pa., voted present. All 112 votes against it came from Republicans. The Israel bill passed 366-58, with 193 Republicans and 173 Democrats voting in favor. The bills passed weeks after the Senate passed a mammoth bill with aid for Ukraine, Israel and Taiwan, as well as funding for border security. Speaker Mike Johnson, R-La., refused to bring that bill to the floor, instead opting to pass three separate bills with aid for the three nations. The Ukraine aid bill comes at a crucial time in the country's war with Russia, as Ukrainian President Volodymyr Zelenskyy has expressed the urgent need for weapons and supplies to continue defending Ukraine from Russian attacks.

LR Prediction: Real News
 DT Prediction: Real News
 GB Prediction: Real News
 RF Prediction: Real News

Image [19].

The machine successfully identified the article as genuine. We can deem the result extremely satisfactory. Clearly, the tool can be improved, especially since the machine's prediction probability is not foolproof. However, by incorporating additional articles into the dataset, we can anticipate increasingly notable results. Nevertheless, it was optimal for our study. However, it will be necessary to analyze the entire experimental section in the conclusion.

Now, as a final test for machine learning, let's take some recent news articles published by foxnews.com and attempt to ascertain whether our tool can discern its veracity. In this case, I will only display the specific scenarios or cases in which our machine makes errors. Let's begin with a news story concerning Elon Musk and Robert De Niro. The result is displayed in the image [20].

```
news = str(input())
manual_testing(news)
```

X owner Elon Musk blasted actor Robert De Niro on his social media platform Friday after the "Heat" star compared former President Trump to infamous dictators Adolf Hitler and Benito Mussolini. Musk replied to a clip of De Niro's statements from MSNBC's "11th Hour with Stephanie Ruhle," stating that Trump's policies "bore no resemblance" to those of both dictators and declared that the actor's latest anti-Trump tirade "makes no sense." During the segment - which aired on MSNBC Thursday evening - De Niro declared that Trump "can't be anywhere near the office of the presidency," and called him "sick" and "narcissistic." "There's not one redeeming thing in him I can see ever. Ever," he said. He also explained to Ruhle what he would say to voters who are holding their nose to vote for him in the 2024 presidential election: "I don't understand it. I don't, I don't think they understand how dangerous it will be if he ever, God forbid, becomes president. I don't think they really understand." He continued, comparing the former president to some of history's worst figures. "And historically, from what I've seen, even in Nazi Germany, they had it with Hitler. They don't take him seriously. 'He looks like a clown. Acts like a clown.' Mussolini. Same thing. These guys, I don't know why, they look like clowns." "But it would be chaos beyond our imagination," De Niro said, contemplating the idea that Trump could win the White House again. Once the clip hit X, Musk felt the need to speak out. He replied, "Well, Trump was actually already president for 4 years and his policies bore no resemblance to those of Hitler, so this makes no sense." He also pointed out an example of Trump's policies that the twentieth century dictators wouldn't have pursued, stating, "In fact, with the Abraham Accords, he made some progress towards peace in the Middle East, which was definitely not high on Hitler's agenda." De Niro's anti-Trump rhetoric has been a staple of his public persona in recent years. The actor, who played the villain in Martin Scorsese's 2023 crime drama "Killer of The Flower Moon," compared Trump to his character at the Cannes Film Festival last year, saying they both have a "feeling of entitlement" that drives their evil actions. "It's the banality of evil, and we see it now with - I'm not going to say the name because that guy is stupid," he said, elsewhere adding, "It's like with Trump -- I had to say it," he added. "There are people who think he could do a good job. Imagine how insane that is." One of De Niro's most famous anti-Trump outbursts happened on stage during the 2018 Tony Awards, where he clenched his fists and told the audience, "I'm gonna say one thing: F--- Trump! It's no longer down with Trump, it's f--- Trump!"

LR Prediction: Real News
DT Prediction: Fake News
GB Prediction: Real News
RF Prediction: Real News

Image [20].

With this news, we can observe a noteworthy aspect: three of our models classify the article as genuine, whereas the Decision Tree Classifier (DT) algorithm categorizes it as false, this is a very particular situation, fortunately, I am certain of the veracity of this news. However, it underscores the fact that even our machine is not infallible. Anyway, it is a positive note that three models successfully identified the news as false.

We proceed with another news item, once again sourced from foxnews.com. The outcome is depicted in the image [21].

A viral video of President Joe Biden's chief economic adviser, Jared Bernstein, appearing to struggle to explain how monetary policy works has raised new questions about the administration's handling of the economy. Bernstein, who chairs the White House Council of Economic Advisers, was interviewed for a new film called, "Finding the Money," a documentary made by advocates of Modern Monetary Theory (MMT) – a controversial line of economic thought. One of MMT's central tenets is that government budget deficits don't matter for countries like the U.S. that borrow money in their own currencies. Proponents argue this means the government should use tax and spending policies to manage the economy and address inflation instead of the central bank's monetary policies. "The U.S. government can't go bankrupt, because we can print our own money," Bernstein says in the video. He was then asked by the interviewer, "Like you said, they print the dollar, so why does the government even borrow?" Bernstein's reply seems to indicate uncertainty – at best – about monetary policy. "Again, some of this stuff gets – some of the language and concepts are just confusing. The government definitely prints money, and it definitely lends that money by selling bonds. Is that what they do? They sell bonds, yeah, they sell bonds. Right? Since they sell bonds, and people buy the bonds, and lend them the money," Bernstein replied. "A lot of times, at least to my ear with MMT, the language and the concepts can be kind of unnecessarily confusing but there is no question that the government prints money and then it uses that money to, um, uh ... I guess I'm just, I can't really, I don't get it, I don't know what they're talking about. . . . It's like, the government clearly prints money, it does it all the time, and it clearly borrows, otherwise you wouldn't be having this debt and deficit conversation. So I don't think there's anything confusing there." Bernstein's jumbled response about monetary policy sparked criticism of the Biden administration's economic policies on social media. FOX Business spoke to federal budget and economic specialists who weighed in on the exchange. Maya MacGuineas, president of the Committee for a Responsible Federal Budget (CRFB), told FOX Business, "What you have there is a serious, credible, economist – Jared Bernstein – trying to be polite about a nonsensical economic fairytale that can't even be called a theory. MMT is forever being reinvented by its defenders who use made-up excuses for why you don't have to pay for anything." "First, both Jared and the MMT crowd are great reminders of why limited government is so important," Norbert Michel, VP and director of the Cato Institute's Center for Monetary and Financial Alternatives, told FOX Business. "Fortunately, the people in the administration (and Congress) do not actually 'run the economy,' they only enact policies that affect people, and the people have a chance to elect new politicians every couple of years." "Second, the MMT crowd, no matter what they say, pretends that the government can just print and distribute money without consequence, but history has already proven that kind of policy leads to inflation, and, depending on how the money is distributed, massive cronyism," Michel added. "In the real world, there are always rent seekers and resource constraints." He was confirmed as the chair of the CEA on a 50-49 vote by the Senate in June 2023. The confirmation vote was largely along party lines, with all Democrats voting in favor except for Sen. Joe Manchin, D-W.V., who joined Republican senators in opposing Bernstein's confirmation to the role.

LR Prediction: Fake News
 DT Prediction: Fake News
 GB Prediction: Fake News
 RF Prediction: Fake News

Image [21].

This represents another unique scenario, as all four models categorized the news as false, whereas it is, in fact, a genuine article. It's quite unusual that every algorithm got the prediction wrong, fortunately, this is a scenario that occurs rarely.

Let's proceed with another news piece sourced from foxnews.com, specifically regarding Joe Biden and his son Hunter's business activities in Ukraine. The details are depicted in the image [22].

dence." But according to the indictment, Smirnov gave "false derogatory information" to the FBI despite "repeated admonishments that he must provide truthful information and that he must not fabricate evidence." The indictment says Smirnov told an FBI agent in March 2017 that he had a phone call with Burisma's owner concerning the firm potentially acquiring a U.S. company and making an initial public offering (IPO) on a U.S.-based stock exchange. In reporting this conversation to the FBI agent, Smirnov said Hunter Biden was a board member of Burisma, though this was publicly known. Smirnov is accused of having told the FBI for the first time in June 2020 about two meetings he had four to five years earlier, where executives associated with Burisma supposedly admitted they hired Hunter Biden to "protect us, through his dad, from all kinds of problems." During this meeting, the indictment alleges, Smirnov said the executives paid \$5 million to each of the Bidens while Joe Biden was still in office. The indictment alleges Smirnov falsely claimed the Bidens were paid so that Hunter Biden, with his dad's help, could take care of a criminal investigation being conducted by then-Ukrainian Prosecutor General Viktor Shokin into Burisma. The indictment alleges this information given by Smirnov in June 2020 was a fabrication. Prosecutors say Smirnov did have contact with Burisma executives in 2017, but when Joe Biden was out of public office and had no ability to influence U.S. policy and after the Ukrainian Prosecutor General had been fired in February 2016. The indictment alleges Smirnov transformed his "routine and unextraordinary" business contacts with Burisma in 2017 and later bribery allegations against Joe Biden after expressing bias against him and his presidential candidacy. Smirnov is accused of repeating some of his false claims during an interview with FBI agents in September 2023, while changing other bits of information and promoting a new false narrative after claiming to have met with Russian officials. If convicted, Smirnov faces a maximum of 25 years in prison. House Oversight Committee Chairman James Comer and GOP Sen. Chuck Grassley were approached by a whistleblower last summer who alleged the FBI was in possession of a document – an FD-1023 form, dated June 30, 2020 – which explicitly detailed information provided by a confidential source alleging Biden, while serving as vice president, was involved in a multimillion-dollar scheme with a foreign national in exchange for influence over policy decisions. The source told Fox News Digital the confidential source was used by the FBI for "at least several years," dating back to the Obama administration, before the FD-1023 form, and was "found to be highly credible" by the FBI. House Republicans demanded the FBI turn over the document, but FBI Director Christopher Wray refused a request from Comer and Grassley last summer for the public release of the form because the bureau "claimed it would jeopardize the safety of a confidential human source who they claimed was invaluable to the FBI." Wray was at risk of being held in contempt of Congress and eventually brought the FD-1023 form to Capitol Hill for House lawmakers to review in a secure location. Fox News Digital first reported on the contents of the document. An FD-1023 form is used by FBI agents to record unverified reporting from confidential human sources. The form is used to document information as told to an FBI agent, but recording that information does not validate or weigh it against other information known by the FBI. Comer said the FBI's FD-1023 form is not being used in the impeachment inquiry against the president.

LR Prediction: Real News
 DT Prediction: Fake News
 GB Prediction: Real News
 RF Prediction: Fake News

Image [22].

This scenario represents a significant concern, as two of the algorithms produce predictions divergent from the other two. Consequently, I cannot definitively determine the veracity of the news, so it is unclear which algorithm is inaccurate in its prediction. However, this situation further underscores the fallibility of algorithms.

In this final experimental part, we noticed by analyzing a very large quantity of news and inserting as examples only the scenarios in which the algorithm actually made a mistake or presented particular situations, that a 70% prediction probability may not be adequate. It becomes evident that exponentially expanding the dataset is essential for achieving increasingly accurate results.

Nonetheless, the preceding segment concerning our generation of fake news performed optimally.

This observation highlights that the machine tends to err more in recognizing real news by mislabeling them as false.

2.4.4 Conclusion:

The experimental phase of the project was highly intensive. We began by generating fake news using AI, then proceeded to detect it using other forms of artificial intelligence, ultimately developing a machine learning capable of recognizing fake news. The process of generating fake articles yielded surprising results; all four tools provided satisfactory outcomes, albeit with varying degrees of success. For example, the articles created using GPT 3.5 were particularly brilliant, while others also demonstrated the potential to deceive less attentive readers. However, the detection phase using artificial intelligence was not entirely successful. While GPT often yielded positive results, they were not consistently excellent. In contrast, GroverAI was particularly disappointing, highlighting the lack of countermeasures against the generation of fake news. This study underscored the need for improvements in both detection tools and the capabilities of artificial intelligence. Initially, I anticipated different results in this regard, but the analyzed data made me realize the seriousness of the issue. Fortunately, machine learning appears capable of addressing this significant problem. All generated articles were correctly labeled as fake news, which is a positive

development. However, extensive testing has revealed that the machine is not infallible and tends to make errors, the prediction rate is around 70%, not that high unfortunately, but by expanding the dataset we can increase this probability and significantly decrease the possibility of mistakes. I expect that continuous advancements will be made to improve detection, eventually leading to automatic and highly accurate detection with minimal error rates.

CHAPTER 3 SUMMARY

Numerous aspects are explored in this research, ranging from the concept of fake news to its generation and detection. As stated in the abstract, in an era where information is readily accessible to anyone, the proliferation of fake news has emerged as a formidable challenge to the integrity of public discourse and social stability. This research underscores the veracity of this statement, as we have observed that while there exist multiple theoretical strategies to combat fake news, the reality proves markedly different. The objectives of the study encompassed a comprehensive understanding of the phenomenon of fake news articles, alongside an analysis of the feasibility of their creation and detection through various tools. The research reveals that creation is relatively straightforward yet highly effective, whereas detection, employing not only artificial intelligence but also machine learning, ultimately emerged as the most complex and yielded fewer results. Through this analysis, it becomes apparent that the situation is indeed intricate and necessitates proactive measures to counteract this phenomenon. The assertions made in the abstract at the outset of our study are thus profoundly validated. However, in any case, the experimental segment of this study is notably comprehensive. It commences with the establishment of a dataset comprising a vast array of real and counterfeit news, crafted through the utilization of various tools discussed in the research, the use of this facilitated the development of the machine learning. We proceeded to leverage diverse artificial intelligence, enabling us to effortlessly generate high-quality fake news by simply providing a succinct overview of the intended article content. The final phase revolves around detection, initially, we evaluated the artificial intelligence I managed to exploit, albeit with

limited success. Subsequently, we concluded the experimental phase by constructing and deploying a machine learning model which also thanks to the use of the dataset which we talked about previously, allowed us to obtain good results. Through a final experiment involving the analysis of a vast amount of news, we have also highlighted the weaknesses and fallibility of the algorithm. It is undoubtedly necessary to make improvements also in this regard.

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