

**POLITICAL DEEPPAKES:  
CULTURAL DISCOURSES OF SYNTHETIC AUDIO-VISUAL  
MANIPULATIONS**

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## **ABSTRACT**

This study analyzes cultural discourses around political deepfakes through media archiving. Deepfakes use deep learning techniques to edit authentic media content and are currently impacting online political communication. To assess the field of discourse around political deepfakes, the study involved the creation of a database of digital media artifacts, including texts and audio-visual documents. The study relies on cultural analytics method to establish the patterns contained in media used to portray political deepfakes and their effects. Deepfakes continue to threaten democracies and erode trust in public institutions. Thus, studies that focus on the discourses around political deepfakes stand to increase and promote literacy about this important subject.

## **DEDICATION**

This thesis is dedicated to  
my mom, Francy,  
who supported me in my graduate school  
journey and inspire me to follow my dreams.

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## CHAPTER 1: INTRODUCTION

The concept of manipulating media can be traced back to the early to mid-twentieth century, where media producers edited photographs and videotapes by manually cutting and splicing film. As technology develops, computer applications for editing are becoming more advanced in producing synthetic video and audio content that appears real. The technological advancements in the audiovisual (AV) area, notably the merger between AV and artificial intelligence (AI), has resulted in the modern phenomenon of ‘deepfakes.’ Deepfakes use sophisticated graphics software to produce forgeries and manipulated videos, such as the one of Mark Zuckerberg on Instagram from 2019 which depicted the Facebook leader “talking about amassing power and control through a nefarious organization called Spectre” (Paris & Donovan, 2019, p.5). According to Instagram, this video has 54.138 views, and it was broadcasted also on Facebook, TV News, and online news (Eadicicco, 2019). It is possible to see the extent of social media’s effects and how the increase in communication channels where news is transmitted creates a media ecosystem for deepfakes to fulfill their objective of deceiving audiences by distorting the truth.

Deepfake technology can manipulate the audio or the images in a video from any type of footage using machine learning. The first appearance of deepfakes in this modern AI sense was in November 2017; a Reddit user uploaded a series of videos about celebrities, such as Katy Perry and Scarlett Johansson, with their faces grafted onto pornographic actors (Paris & Donovan, 2019). Deepfakes are a disruptive technology that challenges notions of authenticity, credibility, verifiability, and misinformation, and

society is only beginning to navigate the political and cultural consequences that modern deepfakes bring. To understand the place deepfakes have in society, this research aims to study the cultural discourses about political deepfakes and how distributed digital media, broadly constructed on the internet, are portraying this new technology.

Alterations to photographs for political purposes precedes deepfakes, a practice that was particularly prevalent in the Soviet Union when Stalin would retouch photographs to erase his political enemies from documentary photographs. At the time when “Joseph Stalin assumed power in 1922 photography had been firmly established – not just in Russia throughout the world – as the language of facts” (Fineman et al., 2012, p. 89). Stalin’s Communist party saw potential in this technology, recognizing that no matter how clumsily executed the editing of a photograph was, any ‘statement’ made in this language could appear as authoritative, factual, and authentic due to the credibility of the political institutions. The potential of these editing techniques allowed Stalin in 1930 to launch the ‘Great Purge’ a political campaign to eliminate enemies of Stalin’s Communist party (Fineman et al., 2012). The falsification of photographs was widespread during the twentieth century; since the last century, editing techniques have dramatically transformed.

The rise of real-time TV media, cable news, high-speed internet, and satellite technology allowed media channels to use photographs as factual evidence and videos as support of the current news. One famous example of AV manipulation is the Rodney King trial. This famous case took place in 1991 Los Angeles, where some police officers beat an innocent man; the case was taken to court, and the police presented a video as part of the evidence for the trial. Strategically, the video played in court was slowed to a

fraction of its original speed to make it appear that Rodney King was moving as if he was refusing the officer's command (Paris & Donovan, 2019, p. 20). This footage used in court was a clever fakery that diminished the attention on the officer's aggression and portrayed Rodney King as a perpetrator refusing to obey the officer's orders. This example shows how AV manipulation has the power to influence institutions and turn an innocent man into a criminal in front of jurors in court and audiences of the news.

From Rodney King's video manipulation to today's deepfakes, it is possible to see that AV manipulation has evolved by utilizing artificial intelligence. Computer scientists have a significant interest in developing the technologies and software behind deepfakes to make them look realistic. While the phenomenon of AI-based deepfakes is relatively new, with the first documented public appearances recorded in 2017, there is already a growing scholarly literature about deepfakes, and the various methods used to produce them. The literature review in this thesis presents results from a systematic review of sources about deepfakes found in databases such as Google Scholar, Scopus, Crossref, and Web of Science, finding that most papers are in STEM, showing that academia's primary interest is the further development (or detection) of the technology.

Few of the sources about deepfakes in the systematic review belong to the area of Humanities and Social Sciences, and most of the sources in this field were focusing on state-of-the-art, literacy, and critical analysis. These findings show that academics in those areas establish ground informing users about deepfakes, answering questions such as "What are deepfakes?", "What are the possible effects?", or "How do deepfakes threaten democracy?" These documents generate debate about what practices scholars should study to recognize deepfakes and mitigate their harmful effects. After reviewing

the scholarly literature, to understand the cultural patterns behind the rise of deepfakes, it is relevant to analyze the mass media channels, especially websites, because it is one of the primary sources of modern culture.

In society, media, culture, and technology are continually co-evolving in a dynamic relationship. This relationship shows that technologies develop in a specific cultural context mediated by the mass media, generating cultural realities and ways to use technologies. In the words of the cultural theorist Jean Baudrillard contemporary culture “is the model for behavior, perceptions, knowledge of the world, sense of self, reality itself” (Murphie & Potts, 2017, pp. 15–16). One example of the intermingling of the technology, culture, and AV media is the Gulf War in 1991; the effects of the political propaganda transmitted by various media channels created a simulacra of the war.

From the war in Iraq, media news channels created a simulation that heavily relied on the imagery and information provided by the military (Baudrillard, 1995). The information gathered from the military forces was broadcast worldwide, reshaping war because the Gulf war was no longer an in-site fight but a battle in the media channels. As seen in the Gulf War example, mass media can create discourses that change society’s cultural perception towards a concept or an idea by strategically presenting the information according to a specific agenda, a phenomenon often referred to as framing. As the Gulf war example shows, new media technology developments generate cultural changes that have political ramifications for society.

The introduction of social media and access to the internet in The United States of America has changed how Americans consume news. Currently, people spend several hours scrolling on their phones to watch videos, consume media and news. According to

the Pew Research Center (2019), 72% of Americans use social media, and 67% of Americans report that they read some of their news on these online platforms (Shearer & Gottfried, 2017). These statistics show that Americans have changed their habit of watching the news on the TV to consume news on their phones. This change of the means for news consumption allows the consumers to access the news effortlessly, increasing their chance to encounter ‘fake news’, which “generally refers to a wide range of disinformation and misinformation circulating online and, in the media” (Lewis & Marwick, 2017, p. 44)

The fake news genre is inherently political and has used editing techniques as a fundamental element to fulfill its disruptive purpose of distorting the truth. One of the most common techniques is omitting information in written articles, reshaping discourses contributing to the current political polarization. Since 2017, fake news has moved on from the standard editing techniques to the use of sophisticated software and AI to edit AV content creating deepfakes. The appropriation of these elaborate techniques sets the ground for a new phenomenon like deepfakes. This thesis studies the cultural discourse around political deepfakes using cultural analytics method to examine the patterns that give meaning and established deepfakes culturally, specifically in the context of politics.

## CHAPTER 2: LITERATURE REVIEW

The purpose of this literature review is to establish familiarity with deepfakes, particularly political deepfakes, in the field of social media. This literature review will explore the research around political deepfakes in social studies to understand the definitions' common characteristics across the field. This study will present a definition of political deepfakes that suits the study's purpose based on the review. After that, this research will do a brief historical review of media manipulation from the pre-deepfakes era to the modern deepfakes, including their effects on pornography and politics. Finally, it will be summarized what research has already stated regarding deepfakes and identified what is unexplored in the topic and what leads to the study's research question.

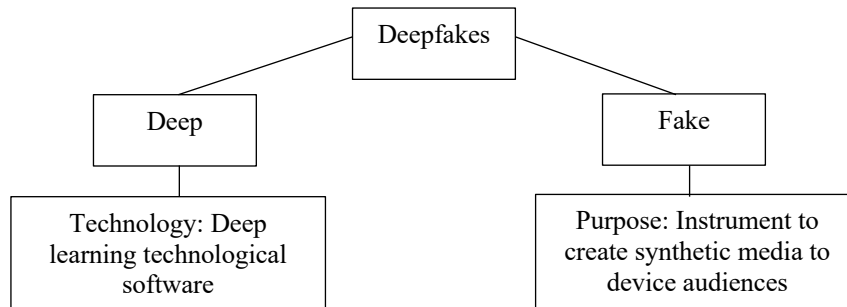
### Deepfakes

The term deepfake is a portmanteau (Wagner & Blewer, 2019; Kietzmann et al., 2020; and Diakopoulos & Johnson, 2020) that converges two academic disciplines, computer science and communication studies. The first part of this colloquialism is *deep*, which comes from the concept of “deep learning,” a branch of machine learning that focuses on a “Machine Learning technique from AI that can be used to train deep neural networks reminiscent of neurons in the brain” (Kietzmann et al., 2020, p. 138). The second part of the term is *fake*, which comes from “fake news” recognized as a genre with features such as “low in facticity, was created with the intention to deceive, and is presented in a journalistic format” (Egelhofer & Lecheler, 2019, p. 99). This way of structuring the definition of deepfakes, as shown in Figure 1, is suitable for this study

since it helps understand deepfakes as a technological tool in a cultural context.

Therefore, combining these two disciplines computer science and communication studies has formed a deepfakes a phenomenon that affects the cultural discourses surrounding the dissemination of news, politics, and the notion of evidence.

*Figure 1. Deepfakes portmanteau*



In order to go further into the definition of political deepfakes, Table 1 was designed to gather and analyze authors’ definitions. The first column contains the most relevant authors’ definitions in the matter of “political deepfakes.” In the second column are the themes that are present in the definition. The themes were based on the two fields that compose the term “deep learning” and “fake news,” so the first theme is the media format, identified with italics. The second theme is the software tool identified with bold, and the third theme is the purpose identified with underline. Finally, the third column contains the names of the authors that provided the definitions. Implementing the portmanteau’s structure to review the definition in the literature on political deepfakes allows highlighting the trending characteristics that define this phenomenon among academic authors.

Table 1. Overview of themes in deepfakes definitions

Authors Definitions themes		
“deepfakes” to refer to this larger genre of <i>videos</i> —videos that use some form of deep or <b>machine learning</b> to <u>hybridize or generate human <b>bodies and faces</b></u> ”	1, 2,3	(Paris & Donovan, 2019, p. 5)
“This technology can be paired with the target person’s real voice as input, the voice of an <u>impersonating</u> actor, or a fully synthesized voice <u>mimicking the target <b>person.</b></u> ”	3	(Diakopoulos & Johnson, 2020)
“recent advances in <b>deep learning</b> have led to a dramatic increase in <u>the realism of fake content</u> and the accessibility in which it can be created”	2,3	(Agarwal & Farid, 2019)
“Deepfake” is a form of <b>machine learning</b> that <u>creates fake videos</u> by superimposing the face of one person on to the <b>body</b> of another in a new <i>video</i> ”	1,2,3	(Gosse & Burkell, 2020, p. 1)
“Deepfakes are a set of <b>AI algorithms</b> used to <u>synthesize multiple audiovisual</u> products into one manipulated media item ( <i>usually videos</i> )”	2,3	(Yadlin-Segal & Oppenheim, 2021)
“a set of techniques used to <u>synthesis new visual products</u> , for example by replacing <b>faces</b> in the originals.”	3	(Floridi, 2018)
“[These videos refer] to digital manipulation of sound, images, or <i>video</i> to <u>impersonate someone or make it appear that a <b>person did something</b></u> —and to do so in a manner that is increasingly realistic, to the point that the unaided observer cannot detect the fake”	1,3	(Brooks, 2021)
“Deepfakes are an emerging form of disinformation involving <u>doctored multimedia content</u> ”	3	(Ahmed, 2021)
“Deepfakes are the result of technological advances in <b>artificial intelligence (AI)</b> that decrease the cost of <u>producing fake images or video</u> ”	1,2,3	( <i>The Liar’s Dividend</i> , 2020)
“deepfakes which are hyper-realistic <i>videos</i> that apply <b>artificial intelligence (AI)</b> to depict <u>someone say and do things that never happened</u> ”	1,2,3	(Westerlund, 2019)
“The deepfake uses <b>artificial intelligence</b> to <u>synthesize human</u> images on to source <i>video</i> in order to make <u>individuals</u> say or do virtually anything”	1,2,3	(Murray, 2020)
“deepfakes leverage powerful techniques from <b>machine learning (ML) and artificial intelligence (AI)</b> to manipulate or generate <i>visual and audio content</i> with a high potential to deceive”.	1,2,3	(Kietzmann et al., 2020)
“deepfakes”: <i>synthetic videos</i> that closely <u>resemble real</u> videos”	1,3	(Vaccari & Chadwick, 2020)
“Instead, the creation of deepfakes result from feeding information into a computer and allowing that computer to learn from this corpus over time and <u>generate new content</u> ”	3	(Wagner & Blewer, 2019)

Themes: 1. *media format* (italics) 2. **Software tools** (bold) 3. Purpose (Underlined)

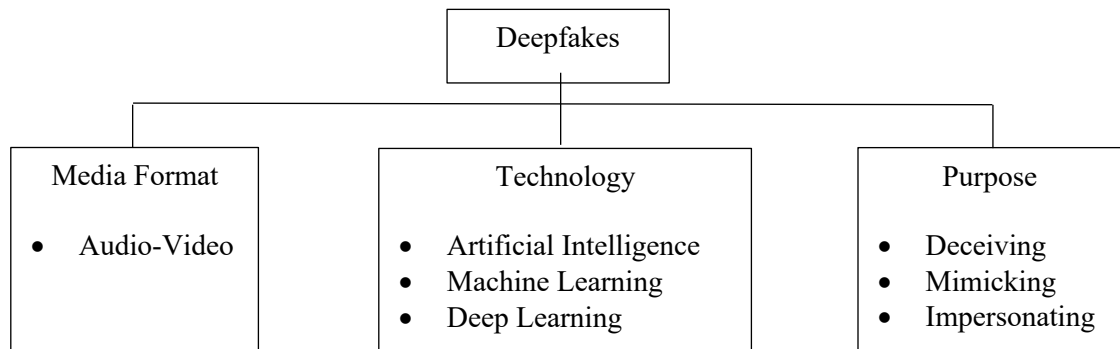
The first theme analyzed in the set of definitions is the audiovisual format in which deepfakes are displayed. From the fourteen definitions presented, eight authors use the word video as part of their definition. This finding is relevant because it establishes a trend concerning the type of media format used by political deepfakes.

The second theme that appeared in the definitions included the technological tools that deepfake creators use to synthesize their content. Most of these tools belong to computer science, particularly AI, machine learning, and deep learning, as mentioned in their definitions (Agarwal et al., 2019; Paris & Donovan, 2019; The Liar’s Dividend, 2020; and Westerlund, 2019). As shown, most of the authors focused on mentioning computer science branches that concentrate on developing programming to generate images based on artificial intelligence. It is appropriate to mention these academic fields in the definitions and not the specific software used because engineers constantly develop and create new AI based video editing alternatives. However, among the best-known software are DeepFaceLab (<https://github.com/iperov/DeepFaceLab>), or DeepNude (<https://deepnude.to/>) (Paris & Donovan, 2019; Brooks, 2021). Progress in computer science allows for the creation of software that is easier to use and more accessible, contributing to deepfakes propagation among audiences with less technological literacy. Most of these automated programs are posted in Reddit forums (e.g. <https://www.reddit.com/r/learnmachinelearning/>) or GitHub repositories (e.g. <https://github.com/deepfakes>).

The third theme refers to the purpose for which deepfakes have been made; the fourteen authors agree that political deepfakes are used to simulate, imitate, impersonate, or mimic a person, as it is shown in Figure 2. Deepfakes work with a corpus of authentic human images to generate content for manipulating what the subjects of content say or do. Along the same lines, the author Murray (2020) stated that deepfake technology “is an alarming example of a type of truth that circulates online; it is representation as a

series of uncanny cuts and crops that mimic trusted voices, facial expressions, patterns of speech, and familiar background environments” (p. 443).

*Figure 2. Characteristics of Deepfakes.*



In essence, the intention behind the use of political deepfakes is to deceive the viewer using synthetic media that resembles an illusion. This illusion merges the authenticity of a human being with the falsity of the message it broadcasts influencing the masses.

These three themes of video, AI technology, and deception found in the definitions of political deepfakes in academic literature allow determining the object of this thesis. Deepfakes are videos of individuals produced using AI techniques, such as deep learning, to create synthetic media that misleads viewers. Although there are many other ways to edit audiovisual content such as face swapping, rotoscope, speeding and slowing, lookalikes, and recontextualizing (Paris & Donovan, 2019, p. 11), this research focuses on video editing based on sophisticated AI technologies. Consequently, the next section will focus on explaining what technological techniques are used to create deepfakes.

## *Deepfakes in Computer Science*

Deepfakes are technically related to the area of computer vision, a branch of computer sciences. Primarily, deepfakes produce synthetic media by an automated program using AI algorithms to simulate original footage. Computer scientists developed deep-learning to improve the generation of computer-based images. Deepfakes have developed rapidly in terms of technological sophistication and social impact, for example authors such as (Ajder et al., 2019; Kietzmann et al., 2020; and Paris & Donovan, 2019) mentioned in their investigations the deepfake of the president Obama made by Jordan Peele to exemplify an AI based deepfake. The realistic features of deepfakes are due to the combination of sophisticated deep learning techniques and generative adversarial networks (GAN) “have the ability to generate novel images to emulate a given training distribution.”(Elgammal et al., 2017, p. 2) Deepfakes are designed to utilize common characteristics from a collection of existing images to learn and figure out how to simulate other images with those characteristics.

Computer graphics is a computer science field that studies methods to produce a synthetic image employing specialized hardware and software. For example, the company NVIDIA specializes in the development of graphics processing units (GPUs), and it is leading the investigation on “deep learning,” according to Paris and Donovan (2018). The generation of synthetic images has been used to predict and detect cancer in humans (Fakoor et al., 2013), video games (Justesen et al., 2020), and a self-driven vehicle navigation system (Sanil et al., 2020). Computer scientists are also experimenting with more complex neural networks (GAN’s) to lip-sync audio clips into audiovisual

content, creating entirely audio-visual performances of recognizable figures, as in the case of Jordan Peele deepfake of Obama (Craig, 2018).

### *Pre-Deepfakes*

Society has seen technological tools used for misinformation purposes in mass media long before deepfakes. For example, photography has been used to represent the truth in the newspapers and other media channels in the Soviet Union. Therefore, the question that comes up is whether a media object's authenticity is related to its essential qualities. On the contrary, the influence of cultural discourses establishes what is authentic in the words of Alan Trachtenberg (1991):

The conventional idea of photography's infallibility is not a demonstrable truth but a belief, held with the irrational conviction of a myth. The persistence of this popularly belief held idea in the face of counter-evidence makes it especially interesting to historians, for the depth of conviction implies that it answers a cultural need." (p. 18)

This section an example of media manipulation and how it was shaped and formed by the cultural context will be reviewed.

Historically, political leaders have been known for using technology to meet specific objectives. Stalin's communist party is an example where documentary photography's alteration was a tool that positioned Stalin in power for many years. In 1920 Stalin and his party strategically began editing photographs of him to appear alongside his predecessor Lenin (Fineman et al., 2012). Using this strategy, the Russian people could connect his government with the Bolsheviks, who had led the great revolution in Russia (King, 2014). This connection allowed Stalin to influence the people to initiate his plan to unify the Soviet Union and remain dictator. Once Stalin was

established in power, ‘The Great Purge’ (Fineman et al., 2012) begun. This campaign eliminates any photograph, document, image, or text that went against the values of Stalin’s Party.

Recognized figures such as León Trotsky and Nikolai Yezhov were identified as traitors for which they were executed. However, to completely erase them, Stalin’s comrades eliminated all the traitors from any historical record. This campaign was not centralized, but “Orders were followed, quietly. A word in an editor’s ear or a discreet telephone conversation from “higher authority was sufficient to eliminate all further reference -visual or literal- to a victim, no matter how famous she or he had been” (King, 2014, p. 9). The alteration of the documentary photographic archives served the objective of propagating communist values and strengthening the party in power.

Stalin’s Great Purge shows the effects of the recontextualization of facts by editing documentary photography to misinform the audiences. The next section will show how the incorporation of sophisticated technological tools for video editing creates an illusion that reinforces the audience growing disbelief in media institutions.

### *Modern Deepfakes*

In 2017, the portmanteau ‘deepfakes’ became widespread in Reddit where a user uploaded a series of pornographic deepfakes of Gal Gadot and Scarlet Johansson (Paris & Donovan, 2019). After that, people joined to learn how to use deep learning software for synthetically face-swapping female celebrities and the non celebrities into pornographic videos. Users discussed how synthetic audiovisual media can be generated using various techniques such as GANs. These techniques are developed in platforms like GitHub through the collaboration of experienced developers and amateur developers. Deeptrace

(2019) reported that 95,791 members of GitHub were developing accessible apps and platforms for a non-technical audience. For example, DeepNude is an app that enables non-technical users to upload photos of women who are fully clothed and use deep learning to modify images by removing women’s clothes and generating naked parts of their previously covered bodies (Ajder et al., 2019).

Video syntheses techniques focus on three main aspects: individualized simulated audio, background editing, and facial reenactment (Gregory, 2018), see Table 2. Each deepfake uses different tools, and in some cases, creators can combine them to have a more realistic result.

*Table 2. Tools use to create deepfakes*

Uses of Synthetic Media	Description	Tools
Individualized simulated audio	The enhanced ability to simulate individuals’ voices	Lyrebird, Baidu, and DeepVoice
Background editing	Advancing image editing with the potential of seamless modifying elements within video.	Pixelmator, Adobe Cloak, Photoshop, and Premiere
Facial reenactment	Using images of real people as “puppets” and manipulating their faces, expressions and upper body movements.	Face2Face, Deep Video, FakeApp, and FaceSwap
Realistic facial reconstruction and lip sync created around existing audio	Audio tracks of a person	LipSync Obama project.
Real people with exchange of one region, typically a face	A simulation of the face of one person is imposed over the face of another person or in which a hybrid face is produced.	FakeApp, FaceSwap

(Gregory, 2018, p. 7)

The accessible techniques and platforms allow users to make provocative deepfakes threatening former partners, politicians, or any individual who has uploaded photographs to social media. The realistic features of deepfakes make it difficult for a victim to prove the video is fake.

## *Pornographic Deepfakes*

One of the earliest forms of modern deepfakes was connected to pornography. Since the rise of social media, people join Facebook and Instagram and upload many photos that could be manipulated to create a deepfake. Pornography ‘cheapfakes’ (Paris & Donovan, 2019) use amateur manipulation of photos or videos using software and platforms like photoshop, face-swap, or free real-time filter applications, as shown in Table 2, to distribute sexual content without the consent of the individuals. The effects of the porn fakes are described in a TED Talk by law professor Danielle Citron in 2019. Citron tells the story of a girl who was a victim of a cheapfake by her ex-boyfriend, who used all her photos to make a pornographic video. Consequently, people started harassing her over social media and her phone, and at her home and job. According to a 2019 report from Deepttrace, there were already a total of 14,678 of deepfake videos online, of which 96% were pornographic and 4% non-pornographic.

Another example of revenge porn is Rana Ayyub, an Indian journalist blackmailed with a pornographic cheapfake to censor her critiques about the Indian Government (Kristen, 2019). With the video’s release, people started harassing her on the street because she could not prove this video was false. People are vulnerable to this type of cheapfakes because there are accessible tools where individuals without technological training can create synthetic media. As Citron (2019) states, the technology for making deepfakes is available for everyone who has a computer and the internet.

## *Political Deepfakes*

As technology moves forward, the use of deepfakes in politics represents a threat to democracy regarding the notions of authenticity, credibility, verifiability, and misinformation. For political candidates, integrity is a core component of their careers, and it is built on the audiovisual content displayed in mass media channels. For example, in partnership with director Jordan Peele, BuzzFeed produced a video of President Obama warning people about the danger of technology (Craig, 2018). This video shows a realistic impression of Obama's voice, face, and environment. Regarding the content, the speech of Obama is reflective and provocative. It is challenging to assess the falsehood except for a few details in the vocabulary he uses. The realistic impression of Peel's voice of Obama triggers mental images of the danger of the internet and how society should be more vigilant with the content it consumes (Craig, 2018).

Through social media, deepfakes have found a niche that allows them to grow and reach more audiences as "such an atmosphere of sensationalism and desire for information provides the perfect breeding ground for news. The common greed for information enables fake news to propagate and spread" (Becker, 2018, p. 203). Researchers have found that "63% of Americans do not trust the news coming from social media, even though an increasing majority of respondents uses social media to get the news on a regular basis 67% in 2017, up from 62% in 2016 (Shao et al., 2018). The dissemination of information includes authentic news and faked messages causing reputational harm and misattribution to the political institutions.

Now with political deepfakes, history can be rewritten by synthetically resurrecting dead politicians. For example, an artist made a deepfake about President Nixon's speech

on the moon landing (Pangburn, 2019). In this deepfake, the spatial setting is the Oval Office of the President of the United States, which connects with concepts such as democracy, truth, and nation, engaging the viewer by attributes including design and look. The symbol of authority that the Oval office conveys strengthens credibility in the deepfake message. The speech was changed from celebrating the moon landing to the contingency speech in case of a disaster. It is the combination of the signs and speech that allows the creators of deepfakes to make small changes with the technical tools available to lip-sync the discourse and manipulate the message to deceive the audiences.

Deepfakes represent a new vector in this era of disinformation, their development in technological terms is exponential, and every day the results are more realistic. The development of this technology puts pressure on media institutions as well as political institutions for the following reasons:

1. AI software for content manipulation is accessible to the public
2. The dissemination of news through social networks is rapidly increasing.
3. The immense amount of content on the internet makes anyone with a profile on social networks vulnerable to being the protagonist of a deepfake.

Consequently, academic research on this technological phenomenon plays a fundamental role in how society will mitigate the effects of deepfakes. The next section researchers are responding to these crises.

### *Reviewing Deepfakes Research*

In another study that I conducted to understand a what scholars are saying about deepfakes. For that, I assessed a representative sample (N=1049) of sources from four popular electronic databases; Google Scholar, Scopus, Crossref, and Web of Science

(Carvajal & Iliadis, 2020). These electronic databases were chosen because these databases provide access to a comprehensive body of contemporary scholarship. This provided a snapshot of the type of work that is being done in the academic community on deepfakes.

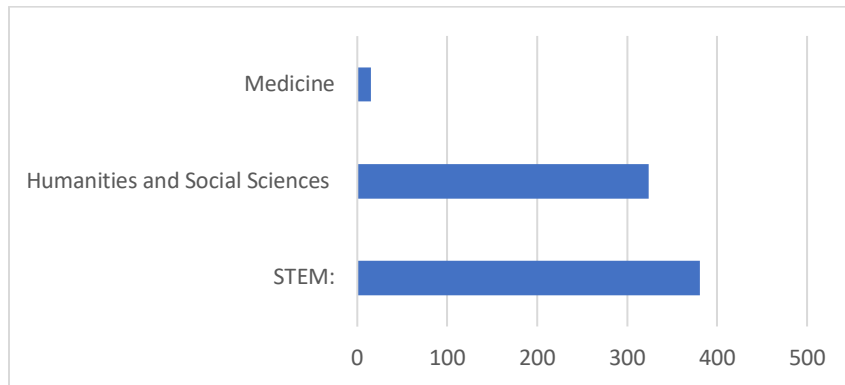
The key terms used to explore the databases were “deepfake” OR “deep fake” AND (“machine learning” OR “image generation” OR “video”). This search yielded potentially relevant journal articles, books, dissertations, and conference papers that were screened for retrieval based on their title and abstract. In that study all the articles were coded in three areas: academic field (STEM, Humanities and Social Sciences, or Medicine), theoretical approach (prescriptive or descriptive), and themes (Automated Program, Review, State-of-the-art, Literacy, Best practices, Public Policy, or Critical analysis). These to determine the field of the published articles, the theoretical approach that academic authors took when addressing deepfakes, and the nature of the output that scholars created to address the possible effects of deepfakes in society.

First, the sources were separated concerning the academic field to which each of them belonged. STEM, Humanities and Social Sciences, and Medicine included all fields related to health (Carvajal & Iliadis, 2020). The articles were then classified according to their theoretical approach that could be prescriptive or descriptive. Since the interest of the systematic review was to understand how academics approached the study of deepfakes, knowing whether a study is descriptive or prescriptive allows the researchers to see if the study of deepfakes is primarily around recommendations or concrete outcomes.

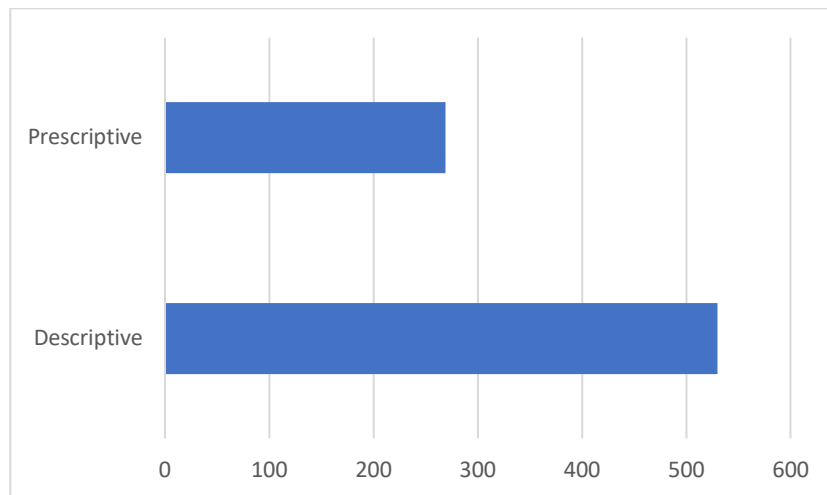
Lastly, these categories observe what types of conversations are happening, whether they are primarily around public knowledge or on practices and technological solutions. The themes were Automated Programs, Review paper, State-of-the-art, Literacy, Public Policy, Best practices, and Critical Analysis. These articles show specific guidelines towards the use or identification of deepfakes.

After classifying the sources in these categories, statistics were created to describe the data. For all electronic database, three-bar diagrams were made (see Figure 3 - to Figure 5) to show the relation between them.

*Figure 3. Academic Filed*

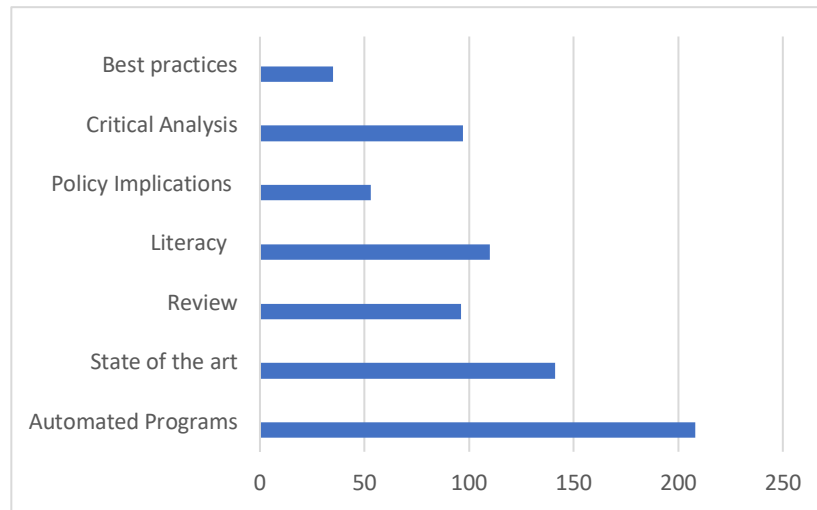


*Figure 4. Theory Approach*



Finally, a total bar chart was made with results from all four electronic databases to have an overview of the approach of published sources concerning deepfakes, (see Figure 5).

*Figure 5. Themes*



The systematic review of the sources through the three set of categories showed some general and preliminary conclusions. First, the largest percent of the articles belong to the STEM area. According to Carvajal & Iliadis (2020) this may confirmed that the academic community is interested in further developing the technology behind deepfakes and may imply that the main focus of researchers is related to the development of automatic programs allowing for advanced and faster responses.

From the 1049 articles, 300 of them belong to the area of Humanities and Social Sciences, and most of the sources in this field were focusing on state-of-the-art, literacy, and critical analysis. This may show that academics in those areas are pursuing a more theoretical discourse than the STEM field's applied discourse. Some social scientists perceived a threat to democracy and the possible effect deepfakes might bring to society.

This research raised a debate about what practices scholars should study to recognize deepfakes and mitigate their adverse effects.

In response to this, the article *Deepfakes: a preliminary systematic review of the literature* (Carvajal & Iliadis, 2020) found that STEM produced 381 articles that in different ways promote the further development of the technologies used to make deepfakes. From the total of the sources 530 have a descriptive approach, implying that deepfakes are a new topic requiring discussion through the observation of models and the prediction of consequence. The lopsidedness in prescriptive and descriptive approaches (descriptive was almost double that of prescriptive) may show that there is a need to increase the production of articles that focus on the technical automation of detecting deepfakes.

There is a need to increase social scientific research regarding the effects of deepfakes to learn and educate people on how to spot them. For example, Vaccaria and Chadwick (2020) explore the contribution of deepfakes to online disinformation. Through an online survey in the United Kingdom, 2,005 respondents participated in a research, and the authors found that the most common effect of watching deepfakes was skepticism. The authors suggest that future experiments should disentangle whether deepfakes entails skepticism or cynicism in different circumstances. However, this type of research is what is needed to mitigate the negative effects of this technological phenomenon.

From the systematic analyses of sources, STEM research is growing rapidly compared to research in Humanities and Social Sciences as shown in Carvajal & Iliadis, 2020 study. Research in social sciences must increase their studies to design instruments

that empower the viewers to face cases like the one in Gabon (Ajder et al., 2019). In 2019 the President of Gabon, who was absent from public life due to health issues, with the support of his government, released a ‘fake-video’ of him delivering a New Year’s message. The military sphere was outraged by the video, and initiated a coup against the president, based on the impression that the government was hiding something about their president. Subsequent analyses of the video could not prove it was a fraud and since then the president has been making public appearances, regardless of his health situation. Deepfakes represent a major threat to the trustworthiness of our democratic system due to fast circulation among people.

### *Summary*

From this literature review, several aspects have contributed to deepfakes having a space in society. Initially, the manipulation of audiovisual content has been a technique used in different historical contexts, as shown during the Soviet Union. With rudimentary techniques, the editing of documentary photographs fulfilled the objectives proposed by Stalin and his party; this set a precedent for the effects and effectiveness of fake media publication. However, technology advancements regarding social media and tools have significantly impacted and sped up media content manipulation. The introduction of digital cameras and the introduction of software such as Adobe Photoshop allowed edits to photos to be more detailed and realistic, making manipulating the content imperceptible to the human eye.

Computer science engineers use artificial intelligence to create software that can collect information from a corpus of photographs to create synthetic content. Engineers have taken the editing of multimedia content to another level, making it more realistic.

This realistic synthetic media could be achieved because computer science engineers' primary focus is developing deep learning and the generation of synthetic images.

Although this technology can be used for humanity's benefit, it has become popular for creating deepfakes. That is why social scientists should be encouraged to investigate the effects of AI deepfakes on cultural terms and how to decrease the impact of their effects.

Most of the Scholarly authors, as shown in Table 1, that have investigated this topic from a social science perspective agreed that the hyper-realistic quality that deepfakes can achieve represents a threat to individuals and democracy. Specifically, three categories have been created that identify harms from deepfakes: “(1) harms to viewers/listeners (i.e. those who watch or listen to deepfakes); (2) harms to subjects (i.e. the targeted subjects of deepfakes as well as those who are auxiliary to the intended target); and (3) harms to social institutions (i.e. the domain in which a deepfake operates)” (Diakopoulos & Johnson, 2020). Based on these three categories this study decided to focus on political deepfakes that have the potential to harm social institutions related to “candidates and campaigns that are the subjects of deepfakes (reputational harm and misattribution), and the integrity of elections (undermining trust)” (Diakopoulos & Johnson, 2020, p. 2).

In conclusion, this literature review has shown that society is in an era of post-truth environment where the media have lost part of their institutional legitimacy. As a consequence, political deepfakes have found a niche to spread and fulfill their objective of deceiving audiences by distorting the truth. Social scientists must study the possible effects of deepfakes to create policies to control and mitigate the damage caused by this phenomenon.

## *Research Questions*

After understanding the characteristics that constitute the media ecosystem to which deepfakes belong, some questions arise about who gives authenticity/value to media artifacts such as photographs or videos. Photographs and videos are commonly presumed to be identical copies of reality due to their technical characteristics. However, it has been shown that media institutions give authenticity to the media content, as in the example of the ‘Great Purge’ during Stalin’s regimen (Fineman et al., 2012). An important meta-question that arises concerning deepfakes is why deepfakes discourse focus on reviewing the effects of deepfakes on society, not the effects of this technology’s media framing. It is necessary to put aside a deterministic technological logic that believes technology determines society's structure and begin to research the cultural context around political deepfakes. For example, authors such as Brooks, (2021) and Yadlin-Segal & Oppenheim, (2021) using qualitative research methods aim to understand the discourse around political deepfakes constructed through global media coverage and how the framing influences the solutions proposed to mitigate the impact of deepfakes. It is from a global perspective that practical solutions can be created.

Along the same lines, when investigating academic sources and identifying where research in deep learning and synthetic media is heading, it was possible to identify that STEM scientists propose an applied discourse with the clear objective of developing technology. On the contrary, researchers in social sciences propose a theoretical discourse that makes conclusions based on hypothetical scenarios from which partial solutions are generated. It is the internal discourse of each field that guides the research’s progress and keeps the fields separated. So, the questions that arise are: What would be

the research findings if scientists from both disciplines work together? Or If research is done combining qualitative and quantitative research methods, will it be a better approach to understand deepfakes?

*What's missing?*

Research on deepfakes and their effects on mass media are very recent, the first studies dating from 2018 (Britt & Joan, 2018), and there are also many domains to be investigated. The literature review, suggests that it is necessary to continue investigating the effects of framing in political deepfakes, particularly analyzing synthetic resurrection deepfakes that can rewrite history. To analyze this phenomenon, we will use ~~the~~ cultural analytical and discourse analysis methods to set the ground for a progressive approach to the study of deepfakes.

### **CHAPTER 3: RESEARCH QUESTION**

The analysis of deepfakes can be done from different perspectives; for instance, the quality of the deepfake, the process of making the deepfake, and the effects deepfakes have on their audiences. This study is guided by one research question that explore how digital artifacts contribute to covering the cultural discourse around political deepfakes.

R1: How is the issue of political deepfakes covered among media on the internet?

## CHAPTER 4: METHODS

### Digital Humanities

Arguably, for many years, the research in humanities was printed-based, but after the widespread adoption of computing, the field has experienced the effects of digital media processes. Researchers, using computers, were able to process large amounts of texts, or text corpora, more efficiently compared to traditional ways of studying handwritten sources. An early example of this is a pioneering digital humanities study of Thomas Aquinas texts from 1949, “when the Jesuit scholar Roberto Busa, working in collaboration with IBM, undertook the creation of an automated approach to his vast Index Thomisticus, a computer-generated concordance to the writings of Thomas Aquinas” (Burdick et al., 2012, p. 5) .

In 1990, Professor Jeffrey Scharp of MIT recognized that the worldwide web's emergence allowed the social scientists to rethink the approaches to the analysis of cultural objects (Burdick et al., 2012). At that point, books were not the only available object of study; other media became accessible such as images, videos, and other cultural objects that had not been investigated as often as the print-based material. Digital media objects are commonly known for their ability to “link, connect, join, and translate between forms, to break and re-make boundaries, including those between genres and forms, text and practice, and between different media streams holding various forms of sense data” (Berry, 2012, p. 106). In essence, books became one more medium available for analysis among the constellation of media constantly growing in the digital spectrum.

The contribution of digital humanities to social science research is the evolution of the traditional research model based on printed sources to the study of digital objects. Currently, social science investigations are based on interdisciplinary groups of researchers proposing innovative approaches to study the traditional questions of the field such as ‘How is meaning constructed in social circumstances?’ a driving question for symbolic interactionism in the early 20<sup>th</sup> century, and cultural studies in the latter half of the century. Also, ‘How do discourses become cultural symbols?’ and ‘What patterns or behaviors are derived from a particular cultural practice?’ from a comprehensive perspective based on a large sample of cultural objects. As a result, it is achievable for researchers to advance beyond the confines established by research through printed sources (Burdick et al., 2012).

This brief introduction to digital humanities helps to give a context on the new methodologies that are being used in the field of social sciences to do research. Digital humanities have opened the door for other methodologies such as cultural analytics to studying cultural objects.

### Cultural Analytics

In 2007, Professor Lev Manovich established the term ‘cultural analytics’ to the use of computational methods, visualization, and large datasets to explore historical and contemporary cultures. In Manovich’s words (2020):

“The existing work on analyzing and visualizing large-scale cultural data I saw happening across a number of fields was creating a new research paradigm—but it did not have its own name. I felt the need for a term that can refer to computational analysis of patterns and trends in contemporary digital culture (as

opposed to only historical culture) and can cover analysis of all kinds of media (as opposed to only texts).” (p.16)

Researching extensive archives of cultural objects disrupts the traditional format of “selective samples” as the paradigm inherited by a historical and statistical study where the approach was reductionist. Studying large databases from Manovich’s approach has allowed researchers to focus on diversity, variability, and the difference between many artifacts.

Cultural analytics as a method is concerned with the study of historical objects made by professionals and in cultural objects made by a broader audience in the digital spectrum. Manovich (2016) stated that this method “is interested in everything created by everybody” (p.8). The study of culture focusing on text sources made by professionals leaves out many aspects present in media such as photography, video, and audio made by amateurs. This method effectively reoriented the paradigm of digital humanities by including vernacular sources that allow studying the complexity of cultural systems that occur in non-scholarly spaces. It should be noted that this is possible thanks to the fact that globalization and digitization took place and are taking place in parallel in the world (Manovich, 2020). Because more people were uploading large amounts of data to the internet, there was more diversity in terms of information sources, which caused cultural phenomena to expand. That is why it is more accurate to map this media ecosystem that is constantly expanding through large datasets.

Datasets include representations of different cultural objects such as texts, images, videos, audio, 3-D shapes, recordings of the human body and movements, and many other things (Manovich, 2020). This compilation of objects are data representations of a

cultural phenomenon, and to create data representations it is essential to follow three steps described by Manovich (2020):

1. Set the boundaries to approach a cultural phenomenon.
2. Select the data objects created by professional creatives or social network users that best represent the study's cultural phenomenon.
3. Choose the characteristics, attributes, metadata, or features that serve to the research goals.

Each of the stages contributes to creating a structured representation of digital cultural data that a computer can analyze. The advantage of using these three steps to build datasets is that they help the researcher see the limitations of existing studies and discover other aspects of the artifacts that represent the cultural phenomenon of interest.

### Metadata

Digital artifacts datasets help researchers analyze cultural phenomena by scoping, choosing an object, and choosing their characteristics (Manovich, 2020, p. 123). Scoping means setting the boundaries for a specific cultural phenomenon; choosing an object refers to objects born-digital or digitalized artifacts. Each field assigned a particular term to refer to the ‘characteristics’ of the data, but cultural analytics use the term features or metadata.

The metadata, as Manovich (2020) stated, is the characteristics that already existed in each of the artifacts, for example, “name, birth year, death year, nationality” (p.15). The metadata can be found in different artifacts, from document files, images, and videos to spreadsheets and websites. The purpose of observing the metadata is to

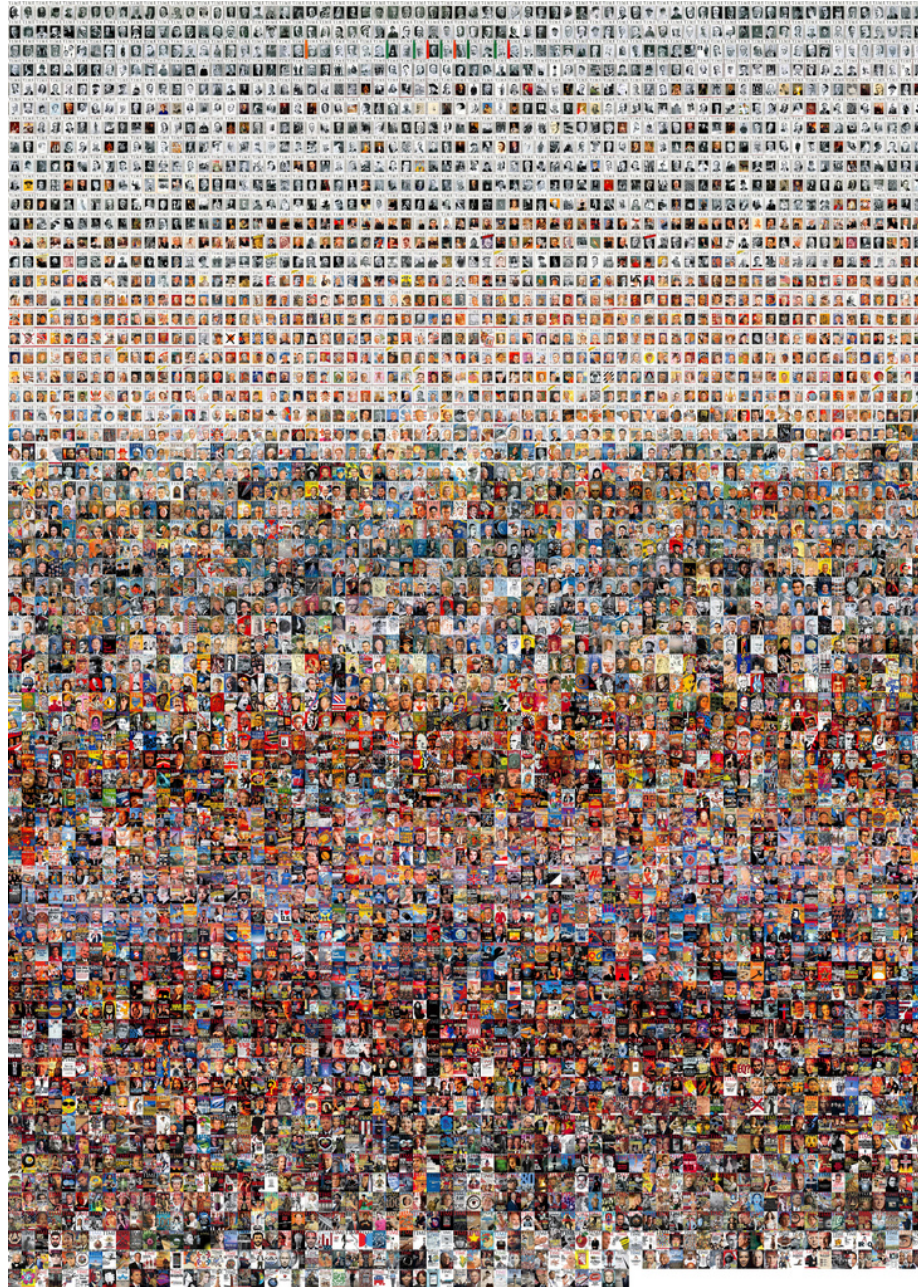
effectively catalog, identify, and define artifacts by criteria, bringing similar resources together and selecting among those that are different.

### *Media Visualization*

Cultural datasets contain large quantity of artifacts, but Manovich anticipated that the way to organize the artifacts for the analysis was essential to generate impact. To this end, researchers in Manovich laboratory's extrapolated visualization techniques from media design and digital art to exemplify cultural patterns (Manovich, 2020). Researchers use these techniques to preserve as many attributes of the artifacts as possible in order to reveal patterns that traditional statistics might hide. Media visualization contributes to cultural analytics with new approaches to organizing information to avoid shirk rich data into one descriptive category, one of the approaches is image montage.

*Image montage* is a technique that focuses on showing all images in a single visualization. To this end, researchers can organize the images by using metadata present in all images of the dataset. As Manovich stated, this technique accomplishes one of the core objectives of media studies: to compare items. New technologies allowed the comparison of items in a different way. For example, grids in Adobe Photoshop let investigators organize data using color palates to analyze the symbolism behind cultural phenomena. There are sophisticated applications that allow the organization of the images by features of the data, such as ImageJ programmed by Manovich. One project made using this application was the analysis of time magazine covers from the 1920s to 2009 (Manovich & Douglass, 2009) (see Figure 6).

Figure 6. Time magazine covers 1923-2009 (Manovich & Douglass, 2009)



After reviewing the general aspects of the cultural analytics methodology, it has been concluded that it is a suitable approach to investigate political deepfakes.

Methodologically, it offers different techniques to collect data, structure it, and visualize it to expose patterns, connections, and processes between the media artifacts. The cultural discourses contribute to the symbolic representation of reality through the transmission of shared meanings, as seen in Figure 6. The purpose of this research is to understand how the cultural discourses that digital media have created around political deepfakes, which include a wide variety of sources such as podcasts, articles, and videos. Therefore, since the authorship of the objects in the database is not by professionals in the field, it is considered that the cultural analytic is an appropriate method to study what contemporary culture is asserting on media websites about political deepfakes.

#### Applying the method

The cultural phenomena of this study are political deepfakes. This form of political deepfakes based on AI technology is so realistic that it can make people believe something is real when it is not. Political deepfakes threaten the notions of evidence and authenticity which are core values of democracy. Following cultural analytics, the next step in this study is to select the data created in this contemporary culture to set the boundaries of the object of investigation.

#### *Selecting Data*

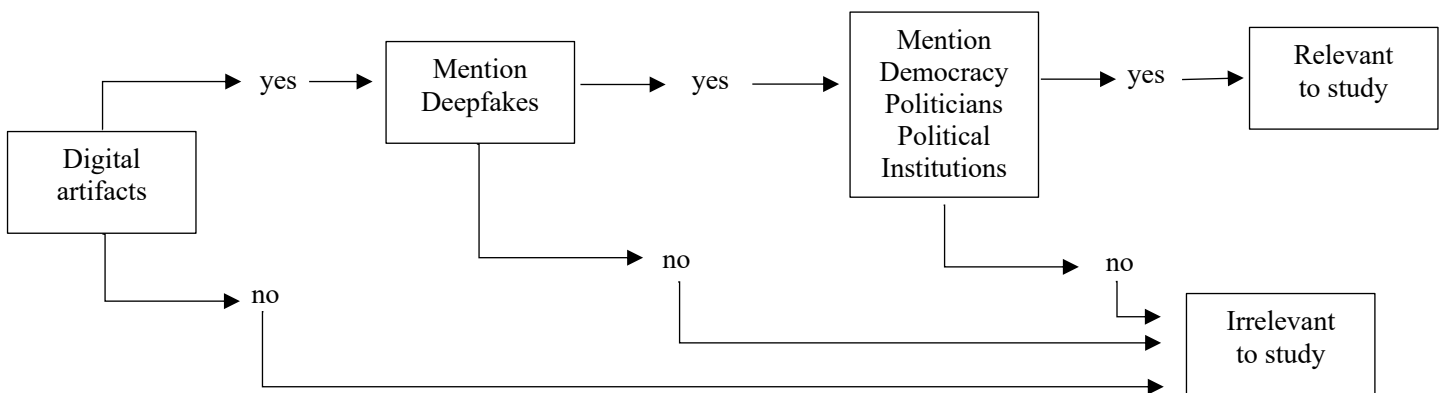
To analyze political deepfakes, the study focuses on cultural data, specifically born-digital artifacts such as videos, podcasts, news, etc. Since there are many artifacts on the internet concerning deepfakes or making deepfakes videos, it was essential for the research to define each artifact's features that would be relevant for the study; these were as follows:

1. All relevant data has to be born virtually.

2. The artifacts should be about deepfakes and not about similar technologies such as artificial intelligence, augmented reality, or deep learning.
3. The deepfakes themes must concern political matters such as candidates, campaigns, and integrity of elections (Diakopoulos & Johnson, 2020)

See the process followed in choosing the data in Figure 7.

Figure 7. Determining relevant data



### Collecting Data

After determining the way to select the artifacts, the next step was to choose which social sites were appropriate to find the artifacts. I searched the sources of the thesis in the types of social media sites mentioned in the 11th Annual International Conference on Web and Social Media (2017), quoted in Manovich’s book on cultural analytics (2020). Among the examples suggested there, the most helpful to create the curated collection of data where social news sites and websites of news media to find for news (e.g., *The New Yorker*, Times, CNN, CBS, and *The Guardian*), then community media sites (e.g., YouTube) for deepfake videos, and other specialized sites (e.g., Spotify) for podcasts. The key terms used to search for the digital artifacts were “political

deepfake” OR “Deepfake” AND “Politics.” This search yielded potentially relevant online news, journal articles, podcast, lecture videos, and YouTube clips. To fulfill the purposes of the thesis, the month of February of 2021 was spent going through these social media sites collecting 100 artifacts using (Figure 7) as a guideline. I choose to systematically analyze 100 digital artifacts to provide a snapshot of the cultural discourse built on the internet around political deepfakes.

This idea of elements (artifacts) that are part of specific cultural phenomena has its roots in Foucault’s *The Archaeology of knowledge*, as Manovich states (2020). In this study, the archive created is based on the assumption that artifacts are in systems in constant transformation representing a part of the contemporary culture. As Foucault’s said, discourses are more than ways of thinking but ways to produce meaning based on cultural artifacts and their connections between them. The archive built for this study is based on the perspective that artifacts are linked between them rather than isolated items related to something outside them.

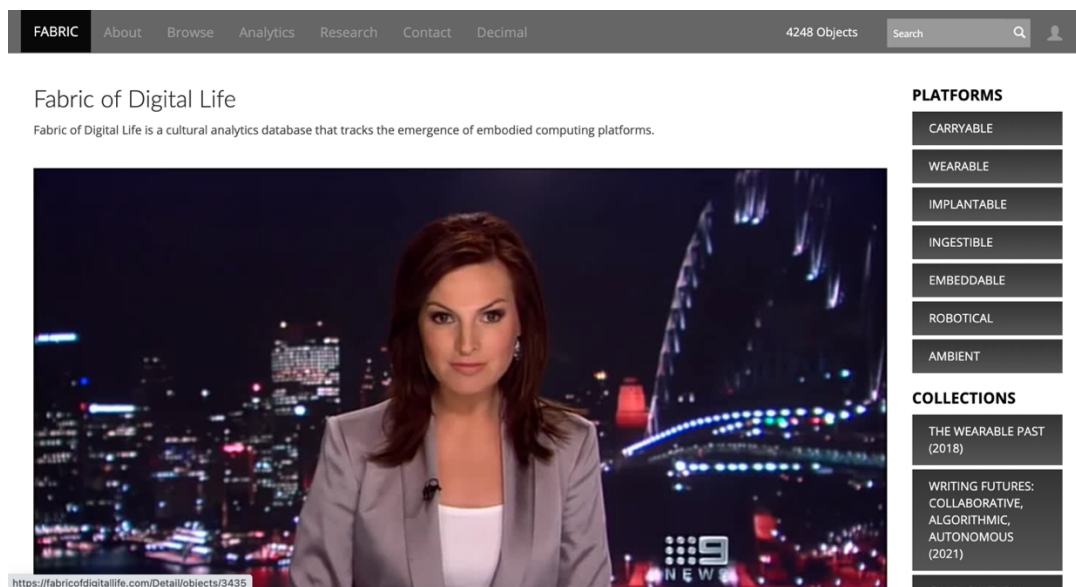
In this study, the archive created is based on the assumption that artifacts are in systems in constant transformation representing a part of the contemporary culture. That is why the artifacts were organized in a spreadsheet under the following categories: name, object type, persuasive intention, media type, publisher, and keywords, among other categories, to understand the links between the elements that give meaning to political deepfakes. See Appendix A for further explanation of these categories.

Once the spreadsheet was created, it was reviewed and uploaded to an online cultural analytics database called Fabric (<https://fabricofdigitallife.com/database>), whose homepage is displayed in Figure 8. Iliadis and Pedersen (2018) stated that this database

“attempts to capture, annotate and build a searchable collection of embodied computing media that is sensitive to the discursive motives that inform them. The database preserves the discourse(s) surrounding embodied computing by cataloging the materials related to objects along several phases of their existence: from the first time an idea is proposed in fiction, capturing the cultural imaginary, to an inventor’s proposal to make an object a reality, through to the object’s emergence in the market” ( p. 9).

Fabric is constantly updating its database with collections of artifacts interconnected between them. Most of the content is related to embodied technologies presented in different kinds of media such as designs, social media shares, videos, texts, websites, and datasets that document emerging trends (Iliadis & Pedersen, 2018). The purpose of using Fabric is to catalog the media artifacts collected to understand how media has covered the issue of political deepfakes, and to serve as an archived and curated collection of media artifact that can be referenced in future research.

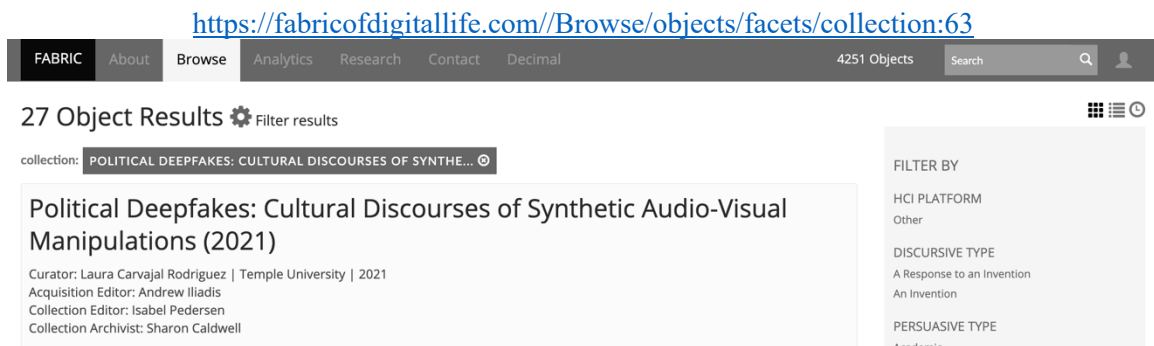
*Figure 8. Fabric’s database*



## Analyzing Metadata

The first step to analyze the artifacts was to organize a spreadsheet according to the 18 metadata categories provided by fabric, see appendix A. After uploading the files to the Fabric website, a link is generated to access the curated collection. Then the collection archivist Sharon Caldwell reviews the digital artifacts uploaded to Fabric in order to publish them. Since she has to review each of the entries so far, 27 entries of the 100 already uploaded have been published. To see the curated collection, enter the link in (Figure 9).

*Figure 9. Political Deepfakes: Cultural Discourses of Synthetic Audio-Visual Manipulations (Carvajal, L. 2021)*



Form 18 metadata categories used to classify the features of the digital artifacts; this thesis focus will be focusing on the following three categories: 1. Artifact Type, 2. Persuasive intention, and 3. Media Type, to see the definition of these categories, see Appendix A. The purpose of reviewing these three categories is to understand the standard media format used on the internet to cover political deepfakes and persuasive intention.

### *Visualizing Data*

The second step of the analysis is to decide what the adequate tools to visualize the media artifacts are. Most of the artifacts in the dataset has an image that represents its content such as the image embedded in the news articles, the thumbnails in YouTube videos, and the images in podcasts uploaded to Spotify. Consequently, to create an image montage, each image was extracted from the source organized chronologically in the software Adobe Photoshop to visualize the evolution of the imagery regarding political deepfakes.

Next, the authors' photos of the digital artifacts in the curated collection were compiled to analyze if there is diversity in the people who are talking about this topic. To complement the analysis of the diversity among the media ecosystem another mosaic was made with the publishers' logos that released the digital artifacts.

### *Analyzing Texts*

The final analysis step is to use the Voyant application developed by Stéfán Sinclair & Geoffrey Rockwell in 2003 to examine the scripts of the 100 digital artifacts in the curated collection. This application provides different ways of analyzing the description of the artifacts by performing text analysis. For the purpose of this study, the focus was on Term's Frequency and the Word cloud made in Voyant.

The purpose of using cultural analytics is to use existing media artifacts to unfold new meanings by sampling, rearranging, and visualizing the data in different ways that highlight hidden connections between elements. This study aims to build the scholarly literature on political deepfakes; authors like Brooks (2018) have studied media to

understand the effects of deepfakes and how it is essential to approach this cultural and technological phenomenon by using creative methods to uncover their effects in society.

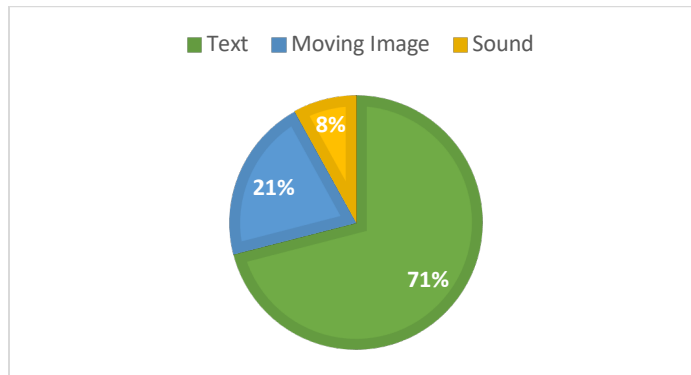
## CHAPTER 5: FINDINGS

After reviewing the methodological procedures to organize the information, the study will continue to analyze how political deepfakes are being framed in internet media. This analysis will be presented into three sections. The first section focuses on the examination of the metadata organized in the online Fabric database. The second section focuses on interpreting the images' visualization of the photos embedded in the articles, the publishers' logos, and the photos of the people who have created these artifacts. The third section focuses on a text analysis of transcripts of the videos and articles.

### Metadata about the Artifacts

Each of the artifacts collected for this project were coded with metadata. A list of the descriptions and definitions for each of the metadata categories can be found in the Appendix A. After classifying the sources in Fabric's categories, descriptive statistics were calculated to show the data sample's aspects and connections. The first feature analyzed is the artifact type. The pie chart in Figure 10 shows that 71% of the total number of the artifacts are text, followed by the moving image and sound.

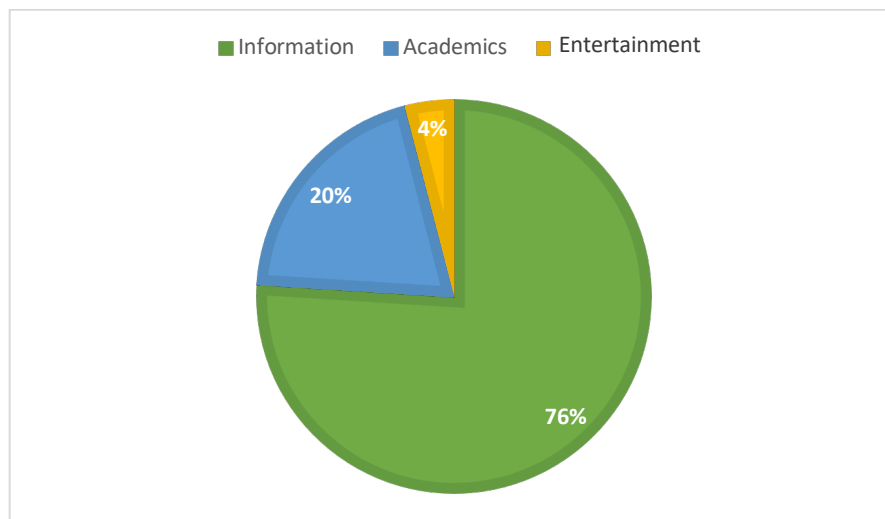
*Figure 10. Artifact Type*



Text is the prevalent way of presenting artifacts over political deepfakes. From the 100 digital artifacts in the curated collection, it can be said that this format allows describing in a structured the way using background elements, examples, and definitions to explain this technological phenomenon's characteristics.

Subsequently, it was essential to analyze what the predominant persuasive intention was across the artifacts. The persuasive intention was defined by using Fabric categories of information, entertainment, advertisements, academics and art (Appendix A). As shown in Figure 11, it is possible to see that 76% of the 100 artifacts are focused on informing the audiences what deepfakes are.

*Figure 11. Persuasive Information*

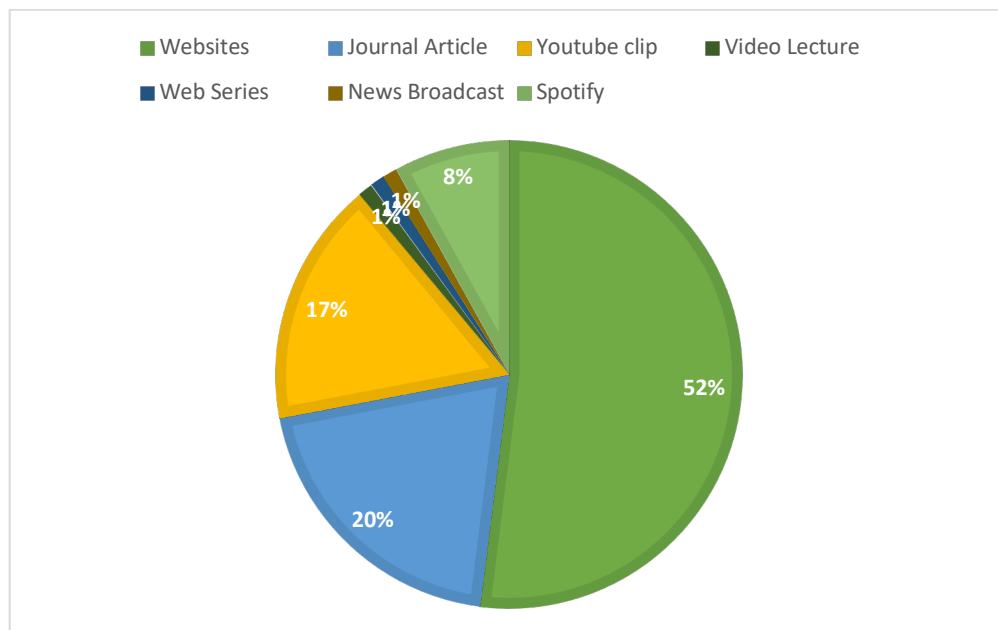


Analyzing the attributes 'artifact type' and 'persuasive intention' together shows a strong connection between them. The features of text and information are prevalent compared to text with academic persuasive intention and moving image with informative persuasive intention. In general, the media on the internet use the text format for informational purposes to talk about political deepfakes. Since deepfakes are a recent topic with their first appearance in 2017, it is consistent that the digital artifacts are focused on

understanding and informing what deepfakes are. This exploratory phase gives a brief insight into what deepfakes are, in which environments they are being used, and what their effects are.

The study of the artifacts' metadata helps to understand which media formats are and persuasive intentions are being used to raise the cultural discourse about political deepfakes. Finally, to find out how the information on political deepfakes is distributed, a pie chart was made in which the following three features were correlated: object type, persuasive information, and media type. In Figure 12, it is possible to see that the principal media type is Websites.

*Figure 12. Media Type*



From Figure 12, it can be seen that there are two prevalent ways when trying to convey the cultural discourse around political deepfakes. Initially, most of the digital artifacts collected were texts that seek to inform and were disseminated through websites such as CNBC, BBC, The Guardian and VOX among others. By distributing these artifacts through websites, they have a broader reach to diverse and more extensive

communities. On the other hand, academics are investigating the effects of political deepfakes on society and are publishing it through journals. Although these academic artifacts are more robust regarding the information, organization, and processing, general audiences have less access.

The statistical analysis shows some general results about in what medium format cultural discourse around political deepfakes is presented. From that, it can be inferred that the content is typically news articles that include a description of the events and an image from the event reported upon. After determining the preferred format to present political deepfakes, the next step is to analyze political deepfakes by visualizing the artifacts' images.

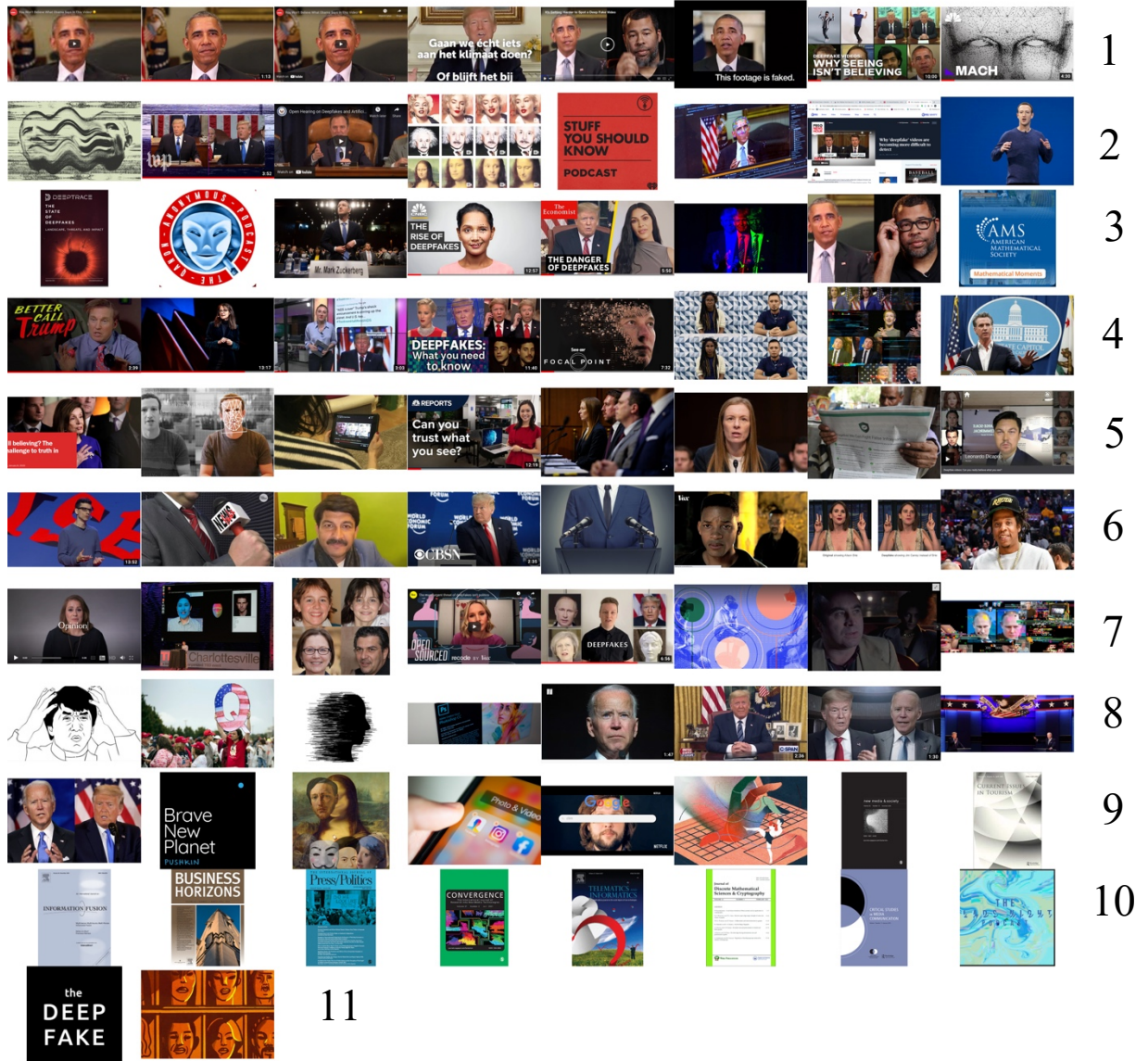
### Imagery

Following Manovich's visualization techniques to arrange the artifacts' images, this study used the image montage technique to analyze the digital artifacts. Figure 13 is an image montage made from the images found in each of the curated collection artifacts. The image montage was created to understand the evolution of the imagery through images of political deepfakes presented in the digital artifacts. This assembly is organized chronologically from the year 2019 to February 2021. The first line corresponds to the year 2019, then lines 2-6 corresponds to the year 2019, lines 7-10 correspond to the year 2020, and line 11 corresponds to the year 2021.

In the first line, the mosaic shows that the main event that was linked to political deepfakes was the one made by BuzzFeed of President Obama with Jordan Peele (Craig, 2018). This deepfake was published in 2018 and was the critical artifact that brought the audiences' attention outside the computer sciences field. As it moves forward to the

second line, it is possible to see that the media is worrying about how political deepfakes could affect President Donald Trump. To answer the concerns about political deepfakes new artifacts such as podcasts and videos were created to make society aware of this technological phenomenon.

Figure 13. Imagery of the artifacts



As technology develops and becomes more accessible in the fourth line, it is possible to see the widespread technology affecting more individuals. In 2019, the deepfake of Mark Zuckerberg was released (Eadicicco, 2019). This put pressure on social

networks with respect to how political deepfakes could be distributed massively through this medium. In response to this, big companies such as Facebook, Google, and Amazon started to think about strategies to mitigate the propagation of deepfakes in general (Strickland, 2019).

Line 7 of the montage, it corresponds to the year 2020; the predominant issue was the presidential election and how deepfakes can affect the electoral process. A lot of the imagery in this time portrays the presidential candidates Joe Biden and Donald Trump. Once the elections were over, the images on line 10 fall back into the theme of awareness of the effects of political deepfakes. In conclusion, the imagery of artifacts about political deepfakes shows that the main concern is to make society aware of its vulnerability. It shows how political deepfakes put society in a vulnerable position where even the nation's leaders, such as the president, can be victims of this technology.

After studying the artifacts' imagery, this study will analyze a mosaic with the photos of authors' that create digital artifacts about political deepfakes. Due to access limitations, it was not easy to obtain all the authors' images in the curated collection specially the photos of the authors of the videos. However, it was possible to collect a significant amount number of photos available, as shown in Figure 14.

*Figure 14. The face of political deepfakes artifacts*



After analyzing the images, it was noticeable that most of the photos are of white men. The disproportionate number of white male authors show a problem of representation of minorities given that political deepfakes have not only affected the United States, and this phenomenon has also occurred in countries such as Gabon (Ajder et al., 2019), Brazil (WITNESS, 2020), and Russia (Haoarchive, 2020). The predominance of the white male authors threatens media pluralism by not contemplating another context where political deepfakes have had tremendous effects on their governments.

Subsequently, the study reviews the image montage of the publishers' logos. Some logos are from the BBC News, Wired, Vox, Spotify, and TED, among others, (see Figure 15).

Figure 15. Publisher Companies



Figure 15. shows the most common media channels in the United States that distributed several media types: newspapers, websites of academic journals, and websites. Many of the media are controlled by large conglomerates that generate significant revenues. The concentration of media ownership and the emergence of the conglomerates enable the centralization of information. Consequently, media concentration reduces the participation of plurality and diverse points of view in the content spread about political deepfakes.

In conclusion, it is possible to see from the imagery that the cultural discourse around deepfakes has been built based on the popular political deepfakes presented in the digital artifacts. As a result, there is a predominance of mass media conglomerates from the United States, imagery based on the political scandals, and prevalence of white men

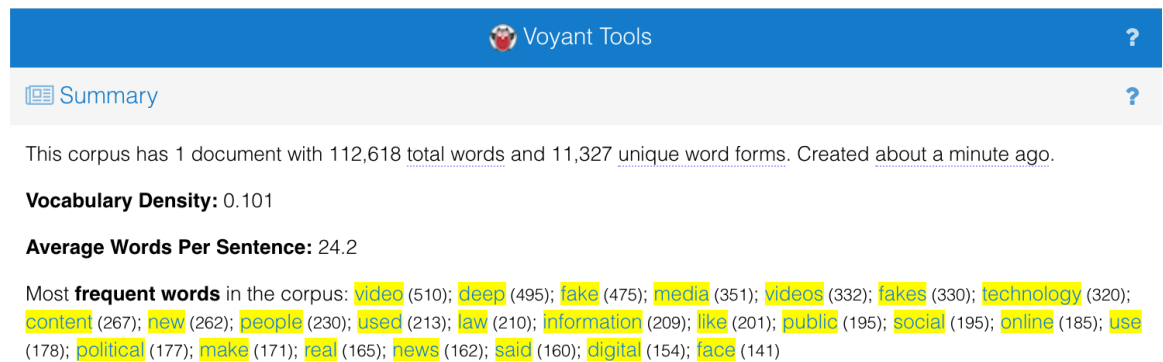
as the authors of the digital artifacts. In essence, the media structure covering political deepfakes is mediated by the American culture and the extensive media conglomerates.

### Text Analysis

After analyzing the media format, and the authors of the digital artifacts, a text analysis of the 100 digital artifacts was conducted. Due to financial constraints, the only texts that are not included are the transcripts of the podcasts on Spotify. To understand the message of the digital artifacts, the study used an application called Voyant (<https://voyant-tools.org/>). This application summarizes the frequent words (Figure 16) and a word cloud (Figure 17)

The text analysis summary (Figure 16) shows the number of words in the corpus, 112,618 and the number of unique words in the corpus, 11,327. Then the most frequent words in the corpus are shown, with their frequencies indicated to their right in brackets. From this overview, it is possible to see that the most common words are video, deep, fake, media, and technology. These words show that the media artifacts have a transversal theme that creates a cultural discourse of political deepfakes. The first theme is the format presented: video. Then purpose, which is to create synthetic media, and the use of technological tools to make them.

Figure 16. Summary of the text analysis





*Table 3. Frequent words*

	Term	Count
1	video	510
2	deep	495
3	fake	475
4	media	351
5	videos	332
6	fakes	330
7	technology	320
8	content	267
9	new	262
10	people	230
11	used	213
12	law	210
13	information	209
14	like	201
15	public	195
16	social	195
17	online	185
18	use	178
19	political	177
20	make	171

From these findings, the study could make some general observations that answer the research question ‘How is the issue of political deepfakes covered among media on the internet?’ In the metadata analysis, the statistics show that the digital artifacts on the internet cover political deepfakes mostly in the format text that informs the audiences about the effects of this technological phenomena. Then the three image montages show the following: 1. Political deepfakes are focus on harming candidates and campaigns, undermining trust of audiences, 2. The centralized media ecosystem, and 3. The predominance of mass media conglomerates from the United States. Finally, the text

analysis shows the vocabulary used in the digital artifacts refer to the technological features, the intention to threaten democracy, and medium format video in which it is presented.

## CHAPTER 6: CONCLUSIONS

This study has allowed us to explore from a different perspective how digital artifacts have created a discourse on political deepfakes. It should be noted that this study has a limited scope given that in the curated collection, only 100 articles found on the internet were collected. In a broader study, this cultural analytics method can be used to analyze a broader dataset that allows building a complete scenario of how digital media have created a cultural discourse on political deepfakes. Another path for future studies to follow to explore this issue is to carry out an experiment that analyzes variables such as the credibility of deepfakes in audiences.

Political deepfakes have an immense cultural impact that can affect many people's lives if they are used for harmful purposes. It is essential to understand this technological phenomenon to mitigate the adverse effects it may have on society, media institutions, and democracy. It is imperative to generate a critical and preventive awareness that prevents political deepfakes from having irreparable effects on society. The media must start to dive into prevention to avoid a media crisis.

In general, digital artifacts are focused on commenting on the media situation that affects a specific point in time, but not on delving into the long-term effects of deepfakes. Studying the long-term effect of deepfakes is essential because as technology develops, it makes deepfakes more accessible and easier to use. As a result, deepfakes like those of Barack Obama, Richard Nixon, or Mark Zuckerberg will not be so sporadic or challenging to do, and they will also be spread on social networks at high speed. The

present moment of deepfakes only shows a part of the iceberg in which society is about to crash if it does not pay attention to this phenomenon.

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## APPENDIX

### A. FABRIC'S METADATA GUIDE

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Date: July 2019 (version 2)

<b>Metadata Categories and Descriptions</b>	
Object Type	When creating a new submission, you must first determine your artifact's type or form: Image (for photographs or still images without text), Moving Image (for videos), or Text (for articles, patents, blog posts, etc.).
Name of Artifact	Refers to the title of your article, video, or image (e.g., "Iron Man - Designing and Testing the Mark II Gauntlets" or "NeuroPace: How the RNS System Works").
Persuasive Intention	Refers to your artifact's intention and purpose (e.g., advertisement, information, entertainment, etc.).
Media Type	Refers to the artifact's specific media format. Each subtype is indented under the broader category. It is best to select a narrower category to describe your artifact. If none of the subtypes fit your artifact, then you can choose the broader category (e.g., corporate video, news broadcast, feature film, etc.).
Publication Title	Refers to the name of the newspaper, magazine, journal, or blog (e.g., TechCrunch, The New York Times, IEEE Spectrum) OR the name of the film/TV show/video game/book (e.g., Iron Man, Black Mirror), not the title of the article. If it's a corporate video, you can leave this category blank.
Publication Date	Refers to the date that your artifact (article, video, or image) was published (YYYY-MM-DD).
Description	A short description of your artifact that gives it context. For academic articles or patents, you can post the abstract. For journalistic articles, you can either copy and paste the introductory paragraph, or (if you're feeling ambitious), summarize the article yourself in a short paragraph or two. An ideal description would include what the product/invention/service/film is, its intention or use(s), some key technological components, and why it is important.
Technology Keywords	Refers to all the different technologies that your artifact discusses or showcases. This can include broader technology categories (e.g., Artificial Intelligence (AI), Smartglasses, Smartphone Applications, Holographics, Facial Recognition, Spatial Computing, Fitness Trackers, etc.) as well as the more 'granular' technologies (e.g., Batteries, Light Emitting Diodes (LED), Radio Frequency Identification (RFID), 3D Printing, Temperature Sensors, Cameras, etc.). This category is only for generic technological terms (e.g., Operating System (OS), Wireless Connectivity, Heads Up Displays (HUD), etc.). Note: specific

	brands or trademarked names of technologies (e.g., Android KitKat, Bluetooth, Google Glass) belong in Marketing Keywords).
Marketing Keywords	Refers to anything that is marketed for profit: the names of companies (corporations, start-ups, etc.) as well as their products (Google Glass, Muse Softband). It also includes the names of films (e.g., Blade Runner, Terminator 2) TV shows (e.g., Black Mirror, Westworld), video games (e.g., Deus Ex, Cyberpunk 2077), books (e.g., Do Androids Dream of Electric Sheep, Neuromancer), fictional characters (e.g. T-1000, Tony Stark), fictional technologies (e.g., Mark II, Universal Translator), fictional places (e.g., The Oasis, The Metaverse), and fictional companies (e.g., Skynet). For products, include the name of the company along with the name of the Product (e.g., Fitbit Versa). For example, if you are archiving a video about the “Vuzix Blade Augmented Reality Smartglasses”, your Marketing Keywords would be: Vuzix (name of company) and Vuzix Blade (name of product).
General Keywords	Refers to general words that help further categorize the artifact and the subject(s)/concept(s) it discusses. This can include broad terms (e.g., Fashion, Medical, Ethics) or narrower terms (e.g., Shirts, Parkinson’s Disease, Privacy, etc.). It can also include descriptions of the product (e.g., Comfort, Stylish, Immersive).
Classification	<i>An Invention</i> : Select this if your artifact discusses or announces the creation of a device/product (e.g., a commercial for the Samsung Galaxy Gear). This includes company concept or launch videos, demonstrations from the creator, news releases written by the company/inventor, patents, etc. <i>A Response to an Invention</i> : Select this if your artifact features commentary about an invention (e.g., Forbes Discussing the new Apple Watch Series 4). Magazine or newspaper articles, news videos, and blog posts typically belong in this category, unless it is the inventor writing about the product (e.g., someone from Apple writing a guest post on Forbes about the new Apple Watch Series 4). In this case, it would be classified as ‘An Invention’. <i>An Object of an Allusion</i> : Select this if your artifact is a snippet from popular culture or fiction (e.g., film trailers, clips from movies or TV shows). These are useful to archive because inventors will sometimes allude to pop culture by saying something like, “I was inspired to create this device after watching Star Wars/Batman/Minority Report, etc.”
Related Items	Any related items in the database.
Allusion or Response	Does your artifact refer to any other inventions, responses to inventions, or objects of allusions in the archive? For example, if you are archiving a magazine review of the Oculus GO VR headset, you would include the primary Oculus GO advertisement here. If your artifact references any similar inventions (e.g., an article about North’s Focals mentions Google Glass) or alludes to pop culture (e.g., the concept video for an AR heads-up display alludes to Tony Stark’s suit in Iron Man), include them here.
Names of Creators, Contributors, Publishers	Refers to any individuals or organizations (companies, universities, research groups, etc.) who helped create, contribute to, or publish your artifact as well as the technology being advertised or

	<p>discussed. Author(s): Refers to the name(s) of the person/people/company who wrote the article or created the video. For films, it would be the director. Contributor(s): Refers to any other person who is mentioned in the artifact, but is not the main creator. This could be editors, experts, or researchers in the field, as well as any relevant universities/research labs/institutions/organizations. Publisher(s): Refers to the name of the company or institution that published the artifact (e.g., Brown University, Vice Media, Springer Nature Publishing). This may be different than the publication title. For example, CNET is published by CBS Interactive Inc. Look for the copyright symbol at the bottom of websites. For films, include the name of the production company (e.g., Warner Brothers, Marvel Studios).</p>
Location on Body	<p>Refers to where on the body the device is meant to be worn, embedded, or implanted. Think about which part(s) of the body is being augmented: If it's an Ingestible, it would typically be Digestive Tract. If it's Robotical, you would classify it as the Entire Body (referring to the robot itself). If it's in the Other category (e.g. artificial intelligence algorithms that aren't associated with a specific device, or ambient technologies like smart sensors for homes), it will likely be classified as Not on the Body. If it's Carryable, it will likely be on the Hand. For Wearables, it could be the Wrist (for smartwatches), the Eyes (for AR/VR headsets or smartglasses), the Entire Body or the Torso (for smart clothing), etc.</p>
Augment Keywords	<p>Refers to the ways in which the product or technology helps to augment the human body. Consider things such as: how the product enhances human capacity, actions the person performs while interacting with the technology, and what the product or technology helps facilitate (e.g., Walking, Exercising, Working, Communicating, Creating, Imagining, Engaging, Expressing, Feeling, Learning, Living, etc.) Write is as a present tense action verb (ending in 'ing').</p>
Use/HCI Platform	<p>Refers to the way that the technology being discussed in your artifact is intended to interact with the human body. Carryable: Is it meant to be carried around (e.g., smartphones or tablets)? Wearable Is it meant to be worn somewhere on the body (e.g., smartwatches, LED dresses, Brain-Computer Interfaces that use EEG sensor caps)? Embeddable: Is it meant to be embedded into the body (this refers primarily to prosthetics that are not explicitly implants (e.g., prosthetic legs, bionic hands)? Implantable: Is it meant to be implanted in the body, typically through surgical means (e.g., pacemakers, Brain-Computer Interfaces such as Elon Musk's Neuralink, cybernetics, sensors that transhumanists or biohackers/grinders put under their skin, etc.)? Ingestible: Is it meant to be consumed internally (e.g., a digital pills)? Robotical: Is it a standalone robot that is physically separate from the human body altogether (e.g., humanoid robots, social and companion robots, mobile manipulator robots)? Other: Does it not fit into any of the above categories (e.g., artificial intelligence algorithms or systems that are not incorporated into robots or other HCI</p>

	technologies (IBM's Project Debater), smart home systems, the internet of things and connected devices, personal assistants like Apple's Siri, self-driving cars)?
Source/Web Address	Refers to the web address of the artifact. Copy and paste the link to your video, article, or image here.