The Artificial Intelligence Dimension of Digital Manipulation Deepfake Videos: The Case of the Ukrainian-Russian People

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Abstract

Rapidly developing technologies make it possible to blur the boundary between real and unreal on the internet, especially in social media channels. This situation has led to the construction of the concept of deepfake, which is defined as "deep fake" by the addition of artificial intelligence technology to manipulative actions that are described as deception. In Deepfake videos, even if there is a small change in the image and sound, it interferes with reality and alters it. In particular, the use of deepfake videos by everyone through visual and auditory manipulations can cause information pollution. Therefore, in this research, it is aimed to determine the extent to which artificial intelligence-oriented deepfake videos can affect the Ukrainian and Russian people with videos manipulated in the war environment. It was aimed to measure whether the citizens of both countries had information about deepfake videos and how much they were affected by these videos. In this context, in this research, the content analysis method was used to explain the attitudes of the citizens in question to the videos with a descriptive approach. As a result of the research, it was determined that both countries had information about deepfake videos and that citizens acted prudently in the face of disinformation that could change the course of the war during the war process. In this research, it was observed that the fake images and contents published did not cause indignation in the citizens of both countries due to the close follow-up of the technology and having literacy in this regard.

Introduction

Hilmi Ziya Ülken, points to the phenomenon of globalization by stating that innovations in communication and transportation technology trigger not only socialization but also intercultural interaction. With the invention of fire and the discovery of steam, a great epoch change took place in the history of civilization, thus, intercontinental relations were born and developed over time" (Ülken, 1998 quoted in Taşcıoğlu, 2010). After such historical events and innovations that have opened and closed an era until today, the greatest discovery of our age has come to the age of the internet. In these days, which are expressed as the age of information and technology, we see that digitalization is going to be done in every aspect of life at the point reached in internet information systems. When talking about digital life, it is necessary to talk about the benefits, problems and limits of this life.

Therefore, the use of artificial intelligence-based systems for image manipulation to create other stories with other identities has become the most important element of the last century. The visuals, which have been reshaped for manipulative purposes by manipulating images in digital environments, have

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led to the recognition of artificial intelligence-based applications called deepfakes with their use on a special platform in 2017.

Deepfake applications are a video that anyone can access, "manipulated and made with prolific deep learning technologies such as prolific adversarial networks or autocoders." Deepfake applications are a combination of the terms "deep learning" and "fake", which refers to the technique of changing the source person in the target video. This technology makes impersonation appear as if the person has done actions they have never done or are saying actions they have never said. In particular, fake news emerges as harmful social problems such as revenge, cases of abuse (Heo et al., 2023).

This new manipulation application, which is more capable, has also offered the possibility of manipulating visual and auditory perceptions. In fact, it is quite difficult to distinguish manipulated images and sounds from real ones, to see them with the naked eye. So much so that these deepfakes, which are both difficult and time-consuming to detect, come up with content that discredits people. In this respect, it can be stated that deepfakes are used by turning them into a tool of reputation assassination.

Fake news, revenge, black propaganda, blackmail and its use for many purposes are of great concern. In a period when information pollution, disinformation and manipulative news are so abundant, it is necessary to take precautions regarding deepfakes, which are the problem of the age. For this purpose, many studies have been carried out on applications that can detect image manipulation. The studies are mostly about preventing the montage of videos and photos and being able to easily identify them when they are montaged.

Digital Manipulation

The concept of manipulation, which originated from western languages and is used in almost every discipline in Turkish, can be defined as a fictional fact or the reshaping of reality and making it possible to circulate. The word meaning of the term has a negative characteristic, since it means to cheat and deceive. Manipulation is fraudulent manipulation because of its effect of 'making what is not appear to be defective' as well as 'making what is not appear to be defective'. "In this fraudulent routing process, both conventional communication technologies and new communication technologies undertake an important mission with the link they establish with the target" (Elitaş, 2022).

The definition of manipulation meant "proficiency in using a tool" until the 18th century. More detailed information can be obtained when this definition and the origin of the word are examined; because it is derived from the Latin words manus meaning "hand" and meaning "to fill". Sometimes manipulation means “the hand is full of something, a handful,” while sometimes it is related to dexterity; In other words, it is used to indicate the ability to perform a job that requires high precision, manually, with bare hands or a manually used tool, or the grasping ability of the external limbs. In recent times, the first meanings that come to mind are "manipulating someone", "holding someone in your hands, moving them around your finger, treating them as an object" and similar meanings (Wyrostkiewicz, 2014 cited in Aydın, 2022).

Factors to be taken into consideration when performing manipulation are those (Hybrid Media, 2021):

> **Light Harmony:** It is difficult to achieve light harmony in photographs taken at different times of the day. Photographs with good lighting may be easier to manipulate. Light harmony of photographs combined for manipulation is very important.

Perspective Harmony: As with light harmony, it is difficult to combine photographs taken from different angles. Using photographs taken from the same angle can increase the level of success.

Resolution Compatibility: When trying to combine photos with different resolutions, an incompatible and incompatible photo manipulation application is obtained. Harmony is very important in images with similar resolutions. Due to this incompatibility, pixel disorders also occur.

There are basic "10 Golden Rules" for successful manipulation work. These are listed as follows:

- Ability to prepare personal images,
- Realistic shadow and realistic light use,
- Use of Proportion and Perspective,
- Paying attention to texture,
- Preparing images,
- Ensuring color harmony and balance of color harmonies,
- Paying attention to detail,
- The ability to compose multiple images,
- Ability to think in three dimensions,
- Ability to improve the images he composes

There are many applications for digital manipulation. Many software such as "Adobe Illustrator, Adobe Photoshop, Adobe Lightroom, Pixlr, GIMP" are examples of digital manipulation (Hybrid Media, 2021).

Deepfake and Its Historical Process

The concept of "Deepfake" is a combination of the terms "deep learning" and "fake". "Deepfake applications" can generally be created with three types of techniques: "face changing, expression changing and face creation". Deepfake content, specially created with face changing technology, is created with "machine learning" artificial intelligence technology. Deepfake applications that are so convincing that they are almost difficult to distinguish from the real thing can be created with as few as 300 images (Çolak, 2021:7).

The first known example of deepfake applications manipulated with artificial intelligence; It is based on a social media post made by a Reddit user in 2017. This Reddit user, nicknamed "Deepfakes", uploaded videos in which many famous faces, including well-known actresses, were incorporated into bodies in pornographic content through digital manipulation. After this incident, the news media began to use the term deepfake when describing such content to manipulate human faces and bodies" (Göngen & Kesgin, 2023).

Thanks to the increasing number of social video sharing platforms after the 2000s, people have shot videos for entertainment or information purposes and uploaded them to video sharing platforms. This entertainment industry has turned into a commercial area as people started to earn income based on the content uploaded to such video sharing platforms. With the creation of software, the manipulations

made in videos have become a matter of entertainment for some, while they have also become disturbing for the individuals or institutions mentioned in the video (Berk, 2020).

Features of Deepfake Videos

"Deepfake applications" are divided into four main categories: "Photo, audio, video and audio/video deepfakes".

"Photo Deepfakes": A new image can be created by replacing the face or body of a person in an image with the face or body of another person.

"Voice Deepfakes": This is a type of deepfake in which people's voices are replaced and people are imitated. It can also produce new sounds by converting written text into speech.

"Video Deepfakes": It can be stated that the faces in the videos are changed or the real image is transformed into another face. In addition, in the deepfake application called "body puppet"; The physical movement of the individual can also be included in the video by being transferred from one body to another.

"Audio/Video Deepfakes": In another deepfake application also called "Lip synchronization"; It allows changing the mouth movements and spoken words of the person in the video (Whittaker et al., 2023).

Since "deepfake production" requires very little information in terms of visual or audio input, it is very easy for someone else to create such images of the people they want to deepfake against their will, thanks to easy access. Therefore, deepfake applications are harmful practices that violate the basic moral principle of respecting people's will in transactions involving people and use people as tools for other people's purposes. The definition of deepfake can be expressed more as "cheating". This technology, which deceives people with images that do not actually exist, is seen as morally ambiguous. Because the phenomenon of deception violates the norms of truthfulness, inspires false beliefs and leads to immorality (De Ruiter, 2021).

Methods

This research was carried out by content analysis based on qualitative method. In this research, the reaction of the Ukrainian-Russian people to deepfake videos, which is the artificial intelligence dimension of digital manipulation, and their awareness of these videos are analyzed.

The scope of the study was determined as 03.01.2022 to 17.12.2022. In the study, it was aimed to measure the knowledge of the citizens of both countries about the deepfake videos between these dates. Accordingly, the content analysis of deepfake searches on Google and YouTube through Google trend was examined with a descriptive approach.

The interdisciplinary use of the content analysis method in the methodological sense is due to the flexible nature of this method. This flexible structure is the strongest feature of the content analysis method. For this reason, content analysis has an important place in the field of social sciences as a scientific method (Yıldırım, 2015: 115).

"The aim of descriptive analysis is to bring the data collected as a result of interview and observation to the reader in an organized and interpreted way. In most descriptive analyses, data are classified according to predetermined themes, findings of classified data are summarized, and summaries are

interpreted with the subjective background of the researcher. In addition, the researcher establishes a cause-and-effect relationship between the findings and, if necessary, makes comparisons with structural difference analyzes between the cases" (Kitzinger, 1995; Kvale, 1994)

Findings

Following Russia's invasion of Ukraine on February 24, 2022, a "deepfake warning" was issued on March 2, 2022 from the official Facebook account of the Ukrainian Armed Land Forces in order to prevent disinformation and black propaganda in the digital field. Then on the same day, Ukraine released a deepfake video of Russian President Vladimir Putin. On March 16, 2022, Russia released a deepfake video of Ukrainian President Volodymr Zelenskyy. Therefore, in this study, the reactions of the citizens of both countries to the deepfake videos that have been edited many times in the ongoing war – before the war started, after the war started and after the announcements about the deepfake videos that are likely to be made – were examined.

From time to time in the ongoing war, deepfake videos of the presidents of Ukraine and Russia can be published on different social media platforms on the Internet. In Image-1 and Image-2, the videos of the heads of state of both countries were made by different methods of deepfake applications.

Image 1. *Viladimir Putin's Digitally Manipulated Deepfake Video (Gov.Uk. 2019).*

Image -1 shows that the face's face, mouth, eyebrows, the movement of the eyes and the tilting of the head are manipulated by the method of re-animating the face. In this method, which is also referred to as the method of re-enactment or puppetry, the statements of the person are distorted without changing the identities of the targets.

Image 2. *Comparison of Volodymr Zelenskyy's Deepfake Video with His Real Video (Fox61, 2022).*

In Image -2, Zelenskyy's real video is compared with the deepfake video and it is revealed that the video is a deepfake. In the image, it is noticeable that the face and body are larger than they are. The fact that the face and body move more than they do in the image and that Zelensky blinks very quickly suggests that the video is a deepfake

Research; It has been assumed that the citizens of the countries in the war environment make searches on Google or YouTube to reach these videos that spread virally and to get information. In this direction, research was conducted on Google Trends regarding deepfake searches made through Google and YouTube. The research also aimed to measure the reaction of the country's citizens on this issue after the announcement on March 2 that Russia could publish a deepfake video against Ukraine from the official Facebook account of the Ukrainian Land Forces. Since it is desired to reach the data on whether there is a previous trend regarding these applications, the research has been determined as 03.01.2022 and 17.12.2022 date range.

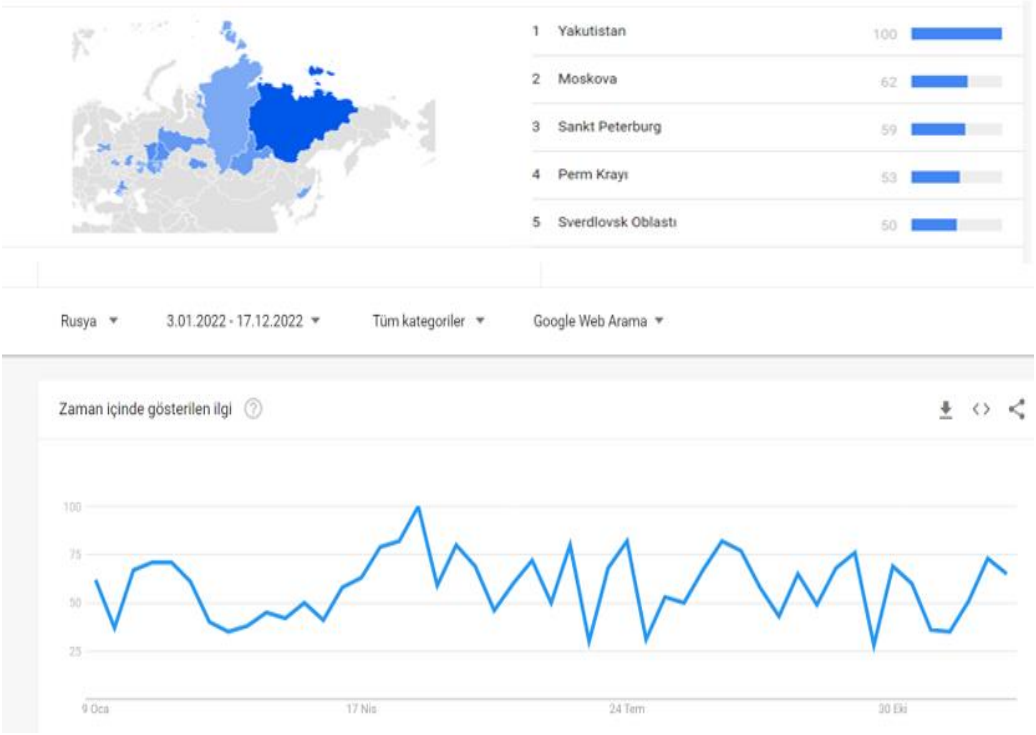

Image 3. *Google Web Deepfake Content Search Results (Russia) (Google Trends)*

Image -3 shows the search results of the Russian people for deepfakes on Google Web, including the date when the war began. In the graph, it was observed that the changes in the number of searches of deepfakes -Google web- were not very much between the dates of the war, and even the number of deepfake searches was not affected by the war environment. The published deepfake documents did not increase the need for information and did not arouse the necessary interest in the Russian people in a war environment. When the search results are analyzed on a regional basis, it is seen that the Yakutia region is the most searched region. The Yakuts, who make up the majority of the population, are a Turkic people (Wikipedia, 2022).

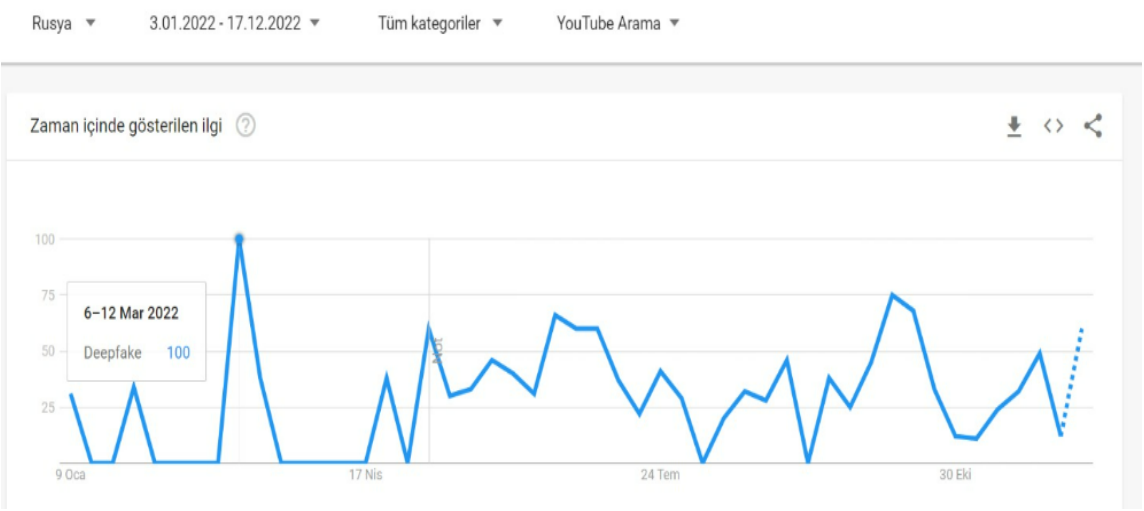

Image 4. *Youtube Sourced Deepfake Content Search Results (Russia) (Google Trends)*

Image -4 shows the search results of the Russian people for deepfake applications on Youtube, including the date when the war began. In this way, it is observed that deepfake-related searches were made on Youtube before the war in Russia, and the searches increased due to the increase in the content served by both countries with the war.

From the graphs in Image-3 and Image-4, it is understood that the people of Russia are interested in deepfake content, that the searches are mostly made from the Yakutia region, that they use more Youtube resources for searches, and that the searches on the source increased during the war period.

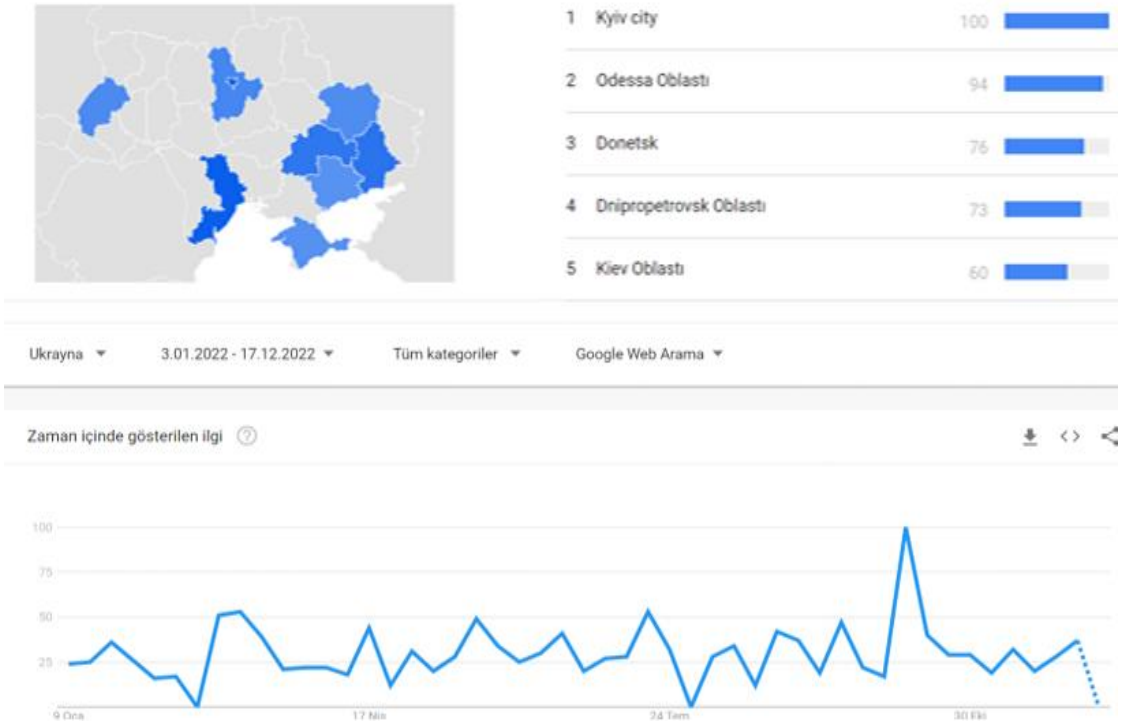

Image 5. *Google Web-sourced Deepfake Content Search Results (Ukraine) (Google Trends).*

Image -5 shows the Ukrainian people's deepfake applications on Google Web search results, including the date when the war began. The graph shows that Ukrainian people searched the Google Web for deepfake documents before the war. Following the announcement by the Ukrainian Land Forces on March 2, 2022 that Russia could publish a deepfake video directed at Ukraine from its official Facebook account, there was a significant increase in searches. This increase shows that the warnings made have been taken into consideration and have been successful**.**

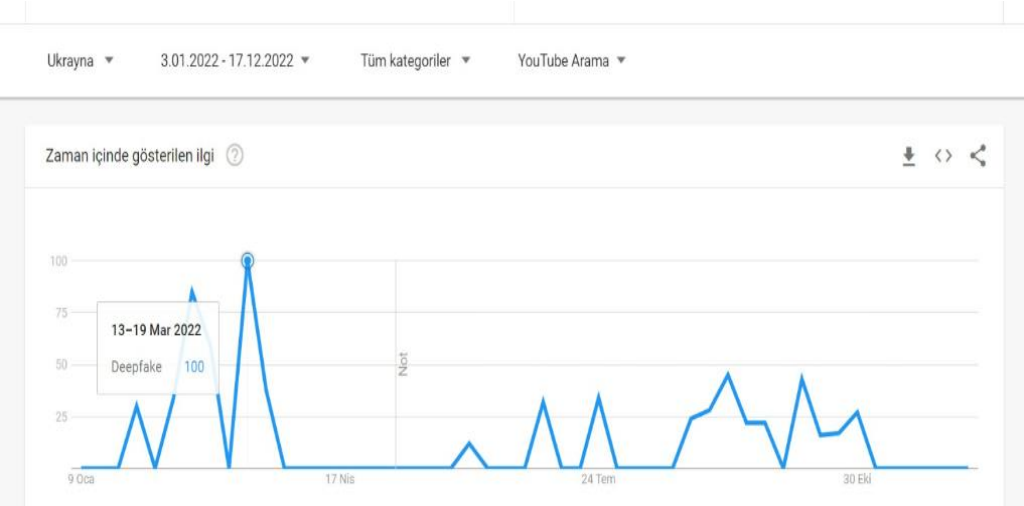

Image 6. *Search Results for Deepfake Content from Youtube (Ukraine) (Google Trends).*

Image-6 shows the deepfake applications of the Ukrainian people and the search results on Youtube, including the date when the war began. It has been observed that the warnings about deepfakes on state-sponsored channels and social media are effective, and that the Ukrainian people search for the subject on YouTube with the warnings. March 13-19, 2022, when the number of calls reached their highest level; It coincides with the process of publishing deepfake videos of the presidents of Russia and Ukraine.

Discussion/Conclusion

The destruction of digital images according to the initiatives of individuals has introduced the term digital manipulation. Digital manipulations, which started with the acquisition of a new image, accelerated the transition to artificial intelligence-based programs such as deepfakes with the further development of synthetic media.

It is necessary to take some precautions before Deepfake applications are spread and used by citizens. The fact that the laws are not yet at the desired level or dominant in the case of deepfakes does not mean much because deepfake technology has been in use for several years. In this respect, even if these technologies are not legally regulated, social and ethical norms may change the use of deepfake technology over time (Van der Sloot & Wagensveld, 2022)

According to the research findings; The published deepfake documents did not increase the need for information and did not arouse the necessary interest in the Russian people in the war environment. It is observed that deepfake-related searches were made on Youtube in Russia before the war, and searches increased due to the increase in the content served by both countries with the war.

Following the announcement of the Ukrainian Land Forces on 2 March 2022 from its official Facebook account that Russia could publish a deepfake video aimed at Ukraine, it was determined that there was

a significant increase in searches. The increase in searches on YouTube for deepfakes is; It shows that the warnings made with the support of the state have been taken into consideration and have been successful. March 13-19, 2022, when the number of calls reached their highest level; It coincides with the process of publishing deepfake videos of the presidents of Russia and Ukraine. As a result of the searches conducted on Deepfakes, it was observed that closely following the technology and having literacy in this regard did not cause indignation in the citizens of both countries in the face of fake images and contents.

Due to the fact that image forgery starts with digital manipulation and is easy to access and use with artificial intelligence programs, many studies have been done on the detection of deepfake applications. However, it is necessary to prevent legal gaps with a joint study or legal regulation that will bring together academics, lawyers, security units and software developers working on deepfakes. With the latest developments, the fact that deepfake applications can imitate the images and sounds of people that cannot be distinguished from the real ones in an advanced dimension is worrisome due to the possible negativities that may be experienced in the future.

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