

Exploring the Misuse of Deepfake Technology in India: Implications for Society

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Abstract

The evolution of manipulation from photo manipulation to advanced hyper-realistic video manipulation has been advancing remarkably faster (Semwal, A.,2020). Technological advancements in artificial intelligence, especially in deep learning models and generative adversarial networks (GAN), have increasingly made the prevalent fake content look hyper-realistic (Badrinarayanan, V., Kendall, A., and Cipolla, R.,2017).

Deep fakes are termed the advancement of artificial intelligence. Deep fakes replace imitated images, audio, or video content with original images, audio, or video, creating a realistic fake (Alexandrou, A., & Maras, M. H., 2019). They broadly fit into three categories: face swap, lip sync, or puppet master (Farid & Schindler, 2020) and can be employed by anyone with any computer skill level (Semwal, A.,2020).

Deep fakes are found to be deployed for various criminal purposes (Ajder et al., 2019, p. 6). This study explores the varying employment of deep fake technology for malicious intentions and its implications for society. Freely disseminating fake content has eroded public trust and led to the proliferation of misinformation and this information in society. This further leads to an information apocalypse, the end of trust in information that aims to disempower the public sphere, causing more significant harm to society.

Through a mixed-methods approach, combining primary survey and secondary content analysis, this study aims to comprehensively understand the deep fake technology in the digitally advancing Indian landscape. The analysis drawn from the survey and relevant news articles sheds light on public perception, awareness, and real-world case studies in this domain.

This study emphasizes the need to address this growing threat to save netizens and safeguard

societal trust in the advancing digital age by increasing our understanding of evolving technology. It highlights the importance of media responsibility in understanding evolving technologies that empower the public sphere and strengthen democracy.

Keywords: deep fakes, digital manipulation, artificial intelligence, societal implications, media literacy, disinformation

Introduction

Doctored content encompassing images and videos has been generated since the very conception of media. Photo manipulators like the American photographer Mathew Brady have been practicing this art almost perfectly (Semwal, A.,2020). Additionally, this manipulation of photographs and videos has been explored during the wars, especially the world wars. Through darkroom techniques, historically prominent personalities like Hitler and others have attempted to manipulate photographs to narrativize history as per their ideological leanings (Farid, H., & Schindler,2020).

Furthermore, as artificial intelligence advances, various deep learning models, namely ‘autoencoders’ and generative adversarial networks (GANs), are solving computer problems and making digital manipulation unchallenging (Badrinarayanan, V., Kendall, A., and Cipolla, R.,2017).

However, with the advancing pace of these autoencoders' interconnected neural networks, feeding sufficient images, audio, and moving images can generate content that looks original. This immersive and comprehensive feeding of data makes the altered content look more hyper-realistic

and almost authentic with advancements in feeding. This gives birth to the generation of deep fakes.

On combining the terms ‘deep learning’ and ‘fake technology,’ a new phenomenon of deep fake comes to life. Deep fakes are the advancement of artificial intelligence. Generating a deep fake involves amalgamating the image, audio, or video of the target and the source, creating a naturalistic fake (Alexandrou, A., & Maras, M. H., 2019).

Deepfakes are gaining traction owing to their easy-to-use ability, which can be learned by any user with any level of computer skills, from professionals to novices. (Semwal, A.,2020) This is further built upon the increasing concentration of internet and social media users using machine learning, enabling deep fakes to be produced more realistically (Semwal, A., 2020).

Hyper-realistic-looking deep fakes tend to be employed for malicious purposes, posing a massive threat to society. This malicious intent has been found to lean towards criminal purposes, such as producing content like pornography that is especially non-consensual (Ajder et al., 2019). Furthermore, democratizing sophisticated technology further leads to misinformation and disinformation campaigns designed to commit fraud or scams. (Farid & Schindler, 2020)

A more profound risk that deep fakes demonstrate is the implied erosion of public trust. With this increased erosion of trust, people are made to enter an ‘infocalypse’ that does not let them trust anything with conviction. The information apocalypse—the end of the world of trusted information—accelerates the tension between eroding trust in a society where everyone is wrong, even when one is correct. With such negative societal implications, the public sphere is impacted negatively, explored further in this study.

Review of literature

Originating from ‘Deep Learning,’ the phenomenon of deep fake expands the capability of machine learning methods under various Artificial Intelligence technologies (Thi Nguyen, Cuong M., Tien Nguyen, Thanh Nguyen, Nahavandi,2020).

Primarily, deep fakes aim to create hyper-realistic content that is fake at its foundation. Created by merging and replacing content, deep fakes appear incredibly authentic (Maras, M. H., & Alexandrou, A., 2019).

Furthermore, technological advances have made the process of creating deep fakes easier, extending its reach to a broader audience wherein even a non-technologically savvy person can swap facial features easily (Kosarkar, Usha & Sakarkar, Gopal & Gedam, Shilpa., 2022).

Broadly, deep fakes have been categorized based on the advancements used to generate them. The first level is face swap, wherein the faces of the source and target are swapped. Extending this, the next level incorporates lip sync wherein the source video is mixed with the video of the target, with consistent lip sync. The most advanced stage is that of the puppet master, wherein the target person is animated in totality by tracing all bodily movements and expressions according to the puppet. (Farid & Schindler, 2020)

Although deep fakes can be utilized well for positive purposes as art, as seen in Forest Gump (Farid, H., & Schindler, H. J.,2020), these videos are increasingly linked to a political nexus, as evident in the advancements in misinformation campaigns as per ideological reasoning which directly threatens free democracy (Farid & Schindler, 2020).

Not just physical spaces but digital spaces are in danger. Due to social media's virality, social media is hard to trust (Westerlund, M.,2019). This trust deficit further traps us in an information apocalypse, wherein we cannot trust what we see, which can be used by malevolent actors to run hyper-realistic-looking false information campaigns to exploit public opinion(Anderson, K. E.,2018).

When deep fakes started making rounds, the initial target was famous personalities like political leaders or actresses entrapped in porn videos (Hasan, H. R., & Salah, K.,2019). However, the future of deep fake technology is likely to be used on ordinary people for various nefarious purposes extending from bullying to revenge porn and even terrorist propaganda (Maras, M. H., & Alexandrou, A.,2019).

Since deepfake mimics reality, its detection is way more complicated than it looks. To fight against deep fakes, it becomes imperative to understand their foundation, why they exist, and how they are generated. The discussion on deep fakes in the U.S. is very relevant to India. (Semwal, A.,2020) Hence, we aim to shed light on the increasing misuse of Artificial Intelligence through deep fakes specifically applied to the Indian context (O'Brien, 2018).

According to analytical understanding, the deep fake phenomenon has been gaining traction since 2017. However, the literature on the topic based in India needs to be more extensive. Therefore, this study aims to bridge this gap by discussing what deep fakes are and how they are increasingly being misused by netizens for varying motives and intent in India.

Research Methodology

This study employs a mixed-method approach to investigate the increasing misuse of AI through deep fakes comprehensively. The approach combines primary and secondary research methods to understand this technology's implications better.

Campbell and Fiske (1959) advanced the mixed methods concept in research to enhance its validity. When employed correctly, mixed methods lead to a more nuanced and comprehensive understanding of the topic from all domains, which is necessary.

Research Design

The research employs a detailed mixed-methods approach to investigate the misuse of deep fake technology in India, integrating qualitative and quantitative research methods. The design comprises a primary survey and a secondary content analysis.

1. Primary Research: Survey

Objective:

The research aims to gauge the general public's awareness and understanding of deep fake technology in young adults. The study is restricted to New Delhi, India.

Survey Design:

The primary research component involves a survey designed to be administered to individuals aged 18-35 in New Delhi, India. This demographic was selected owing to their higher likelihood

of engagement with content on various digital platforms, which increases their vulnerability to attack by deep fake content.

The survey has been designed to understand better the level of awareness, perception, and implications of deep fake technology. The questions follow these tripartite requirements to gain effective responses from the required demographic.

Sampling:

The convenience sampling method was used to select participants who could willingly answer the survey questionnaire. The survey was conducted online through Google Forms, ensuring ease of access for all the participants. It was also shared widely on various social media platforms within the chosen demographic. 150 respondents participated in the survey and answered all questions thoroughly as listed below-

1. How familiar are you with the term "deep fake"?
2. Have you ever come across media content that you suspected might be a deep fake?
3. Have you personally experienced any negative consequences or impacts from the misuse of deepfakes?
4. Are you aware of the methods used to create and disseminate deep fakes?
5. On a scale of 1 to 5, how concerned are you about the increasing misuse of deepfake technology in India?
6. In your opinion, what are the most common motivations behind the malicious use of deepfakes in India?
 - A. Misinformation/Disinformation

- B. Political Manipulation
- C. Identity Theft/ Privacy Invasion
- D. Entertainment and Satire
- E. Fraud/Scam
- F. Sexual Harassment/ Pornography

7. Which media platforms, in your opinion, contribute the most to spreading deep fakes in India?

- A. Social Media Platforms: Facebook, Instagram, etc.
- B. Video Sharing Platforms: YouTube, etc.
- C. Messaging Apps: Whatsapp, Telegram, etc.
- D. News Platforms: Google News, etc.
- E. Other:

8. How confident are you in your ability to distinguish between authentic and deepfake media content?

9. Are current laws and regulations in India sufficient to address the misuse of deep fake technology?

10. Do you believe there is a need for increased public awareness regarding the potential dangers of deepfake technology?

11. Do you believe that deepfake technology can long-term impact societal trust and cohesion?

12. What measures can individuals take to protect themselves from falling victim to deepfake misinformation?

- A. Media Literacy
- B. Verification Tools
- C. Source Verification
- D. Awareness Campaigns
- E. Being skeptical
- F. Other:

13. Do you have any questions or suggestions? If yes, please mention it.

2. Secondary Research: Content Analysis

The secondary research involves rigorous content analysis of relevant news articles from identified sources, particularly English digital news sites, as per their timeliness and prominence.

Objective:

This content analysis aims to grasp the misuse of deep fake technology, the intent behind it, and its broader implications on society through real-world case studies in India.

Sampling:

Articles were selected from reputable English digital news sites based on their prominence and timeliness. The criteria for inclusion encompass their relevance to the theme of this research study.

Table Number 1: List of English Digital News Sites Referred

S.No.	Names of Digital-English News Sites referred to
1.	Times of India
2.	News 18
3.	The Indian Express
4.	NDTV World
5.	Business Today
6.	India Today
7.	MIT Technology Review
8.	NDTV
9.	Mint

Content Analysis Process

The aim is to understand the intent behind the creation of deep fakes and their broader implications on society. The construct implication here stands for applying the current study around deep fakes to gauge the effect it will have on the future as per similar parameters.

The content analysis process consists of completing a rigorous data collection in the most recent time frame (1 February 2020- 22 April 2014). The articles collected from this time frame were put together for thematic analysis.

Patterns were identified from the articles, and recurring themes were drawn through a systematic approach. The categorization was done according to the nature of deep fake misuse:

Pornography/sexual exploitation, Fraud/Scams, and Misinformation/Disinformation. Following this, the articles were coded according to their respective themes, and notes were taken.

With the intertwining of both methods, a detailed analysis contributes to the literature of deep fake studies. The mixed-methods approach aims to enrich the literature on deep fake studies in India, paves the way for further research, and highlights the urgent need to mitigate deep fake misuse in broader society.

Presentation of Data

The thematic analysis was conducted using a systematic approach to identify patterns and recurring topics in the content related to the misuse of deep fake technology in India. The data sources included news articles, research papers, and expert opinions from reputable sources. The extensive analysis consisted of numerous stages, from familiarizing data to coding as per analyzed themes and interpreting them altogether. The themes chosen are listed below:

Pornography/Sexual Exploitation:

The theme of Pornography/Sexual Exploitation emerged prominently in the analysis, reflecting the widespread use of deep fake technology to create and distribute explicit content without consent. Instances of deep fake pornography involving celebrities, politicians, and ordinary individuals have been reported, leading to privacy violations, reputational damage, and psychological trauma. Moreover, the proliferation of such content exacerbates issues of online harassment and exploitation, mainly targeting women and vulnerable groups.

Frauds/Scams:

The theme of frauds /scams highlights the role of deep fake technology in facilitating various forms of fraudulent activities in India. From financial scams to identity theft, perpetrators utilize deep fake videos and audio to impersonate individuals or manipulate digital media for illicit gains. These fraudulent practices undermine trust in digital platforms and pose significant risks to individuals' financial security and privacy.

Misinformation/Disinformation:

The theme of Misinformation/Disinformation underscores the potential of deep fake technology to spread false narratives and manipulate public opinion in India. Malicious actors can deceive audiences, sow discord, and amplify existing social tensions by creating realistic yet fabricated audiovisual content. The dissemination of deep fake videos misrepresenting political leaders, events, or societal issues can have far-reaching consequences, eroding trust in institutions and undermining democratic processes.

Table no. 2- Thematic Analysis of Deepfake Content

Theme	Meaning of Theme	News Items	About News Item
<p>1. Pornography / Sexual Exploitation</p>	<p>Facilitating illicit content creation and using it for sexual purposes</p>	<ol style="list-style-type: none"> 1. Ahmedabad Sextortion Case 2. Rana Ayyub Case 3. Mumbai Man's Arrest 4. Wrestler's Morphed Picture 5. Woman's Pictures on Porn Site 	<ol style="list-style-type: none"> 1. A short video call wherein a woman makes suggestive gestures used for blackmail 2. Spreading fake porn videos for character assassination 3. Harassing woman over the phone for sexual favours 4. Spreading manipulated photos for online harassment

			<p>5. Woman's Deepfake Posted on Porn Site by her Best Friend</p>
<p>2. Frauds/ Scams</p>	<p>Use of deep fake technology through illegal financial gain</p>	<p>1. Kerala Man's Loss 2. Last Pass CEO Impersonation 3. 200 crore deepfake scam 4. 207 crore lost to a video call 5. 40000 lost to a scary deep fake</p>	<p>1. Impersonation leading to financial loss 2. Video of hackers Impersonating as LastPass CEO goes viral 3. Loss of 200 crores in Deepfake scam 4. Company loses 207</p>

			<p>crores after a scam call</p> <p>5. Ex-coal India executive loses 40000 rupees in a deep fake scam</p>
<p>3. Misinformation/ Disinformation</p>	<p>Spreading misleading information without/ with ill intent</p>	<p>1. Manoj Tiwari Deepfake</p> <p>2. Arvind Kejriwal's Video</p> <p>3. NSE warns against Deepfake on stock tips</p> <p>4. Zerodha's Nithin targeted by deep fake</p>	<p>1. Manipulating speech for electoral gain</p> <p>2. Manipulated video of Arvind Kejriwal</p> <p>3. Deep fake video of MD on stock tips</p> <p>4. Kamath's (Zerodha) deepfake</p>

		5. Virat Kohli's deep fake	video goes viral 5. Virat Kohli's fake video promoting a betting app
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Table No. 3: Listing of deep fakes, referred to

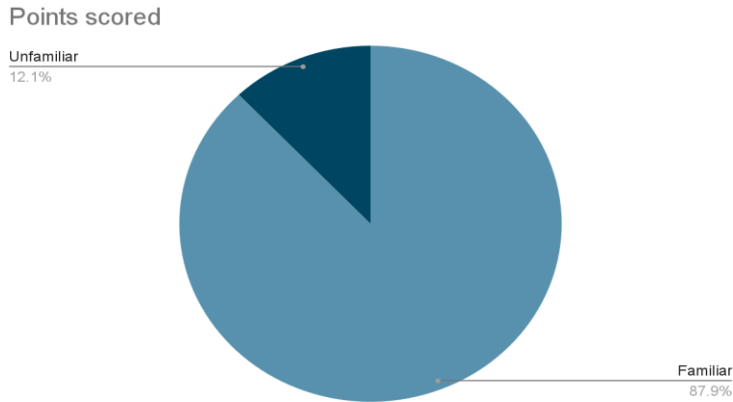
Findings and Discussion

Drawing inferences from the research methods about the survey and content analysis, significant findings advance our argument that believes in the increasing misuse of deep fake technology in India and their impact on society.

Survey

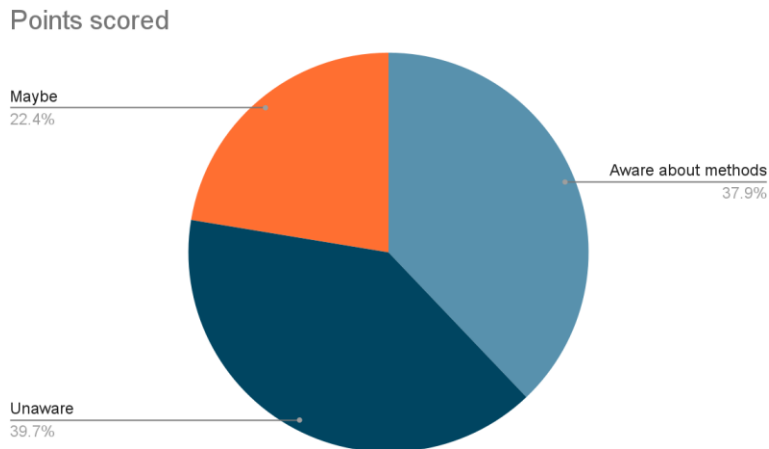
The survey was administered to individuals aged 18-35 in New Delhi, India, owing to their higher likelihood of engaging with content on various digital platforms. A convenience sampling method was used to select participants to complete online Google Forms. 150 respondents participated in the survey and answered all questions thoroughly.

Familiarity with Deep Fakes



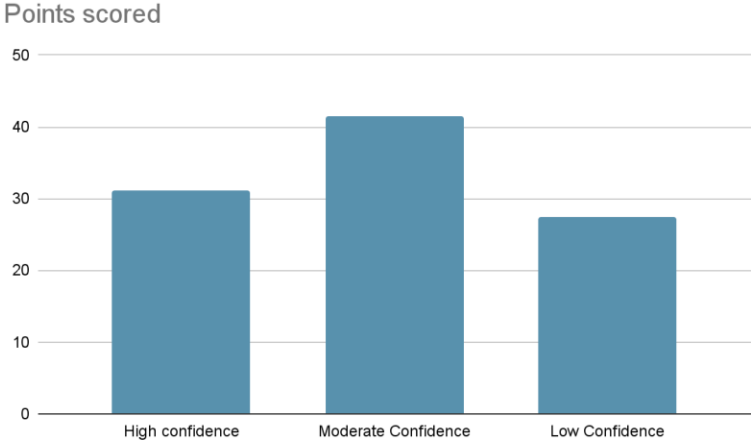
A notable finding is that 12.1% of the survey respondents were unfamiliar with deep fake, sending an unsettling signal about the need for awareness in this domain of tech-savvy alterations of media content. This knowledge gap creates a scenario where technologically savvy individuals can exploit other people's reputations with impunity. The problem escalates when the target is unaware of the attack they are facing, leaving people in extreme vulnerability.

Awareness of Methodology behind Deep fakes



Among those aware of deep fakes, 39.7% of respondents needed clarification about the methods used to create them. One is FaceSwap, software that uses a GAN to create deep fake videos or even extends to Face2Face to create puppet masters. (Farid & Schindler, 2020) This further corroborates the lack of understanding, exacerbating susceptibility to disfiguration and manipulation.

Confidence in Distinguishing Between Real and Fake Content

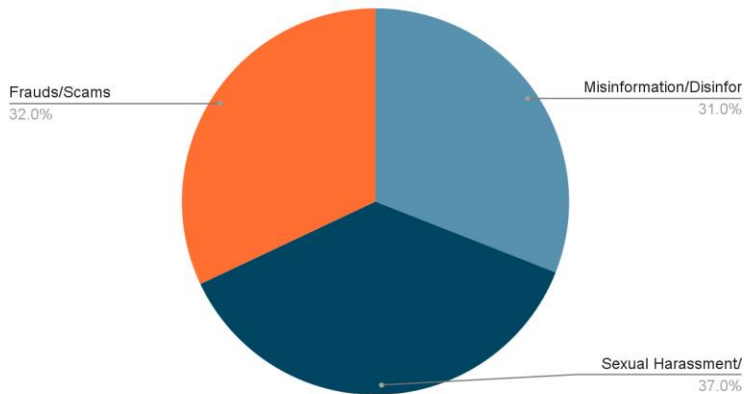


Furthermore, 41.4% of respondents expressed only moderate confidence in distinguishing between original and fake content. This is attributed in part to the inundation of social media content. With social media content penetrating every household in the form of Facebook short videos, Instagram reels, or other formats, netizens are bombarded with content from all sides. With a lot of content, the ability to distinguish between original and fake content becomes bleak, and lines get blurred.

Suspected Intentions behind Deep fake Creation

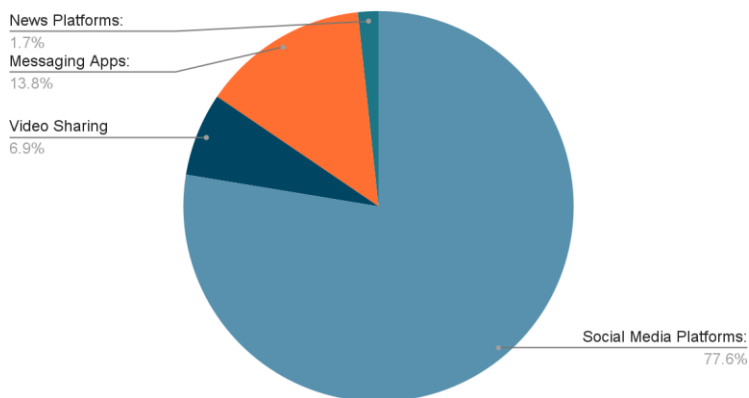
As advanced in the study, there can be various intentions or mal intentions to deploy deep fake technology. Sexual exploitation or pornography is drawn out as the primary intention, followed by frauds or scams and then misinformation or disinformation.

Points scored



Suspected Media Platforms Used

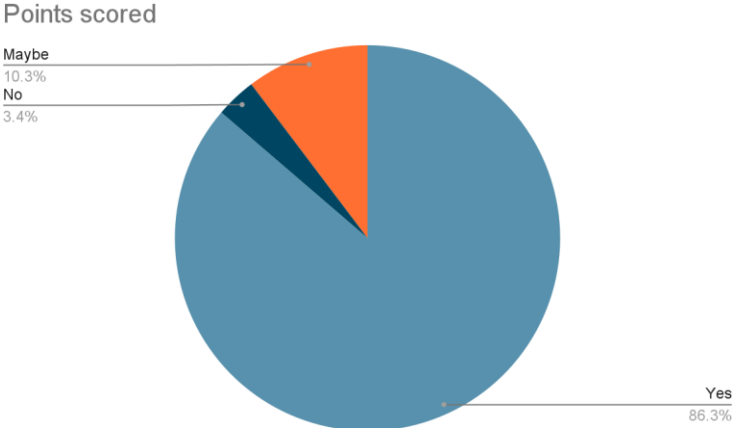
Points scored



Deep fakes have started to become commonplace, penetrating most of the platforms available. The respondents believe that social media platforms such as Facebook and Instagram, as well as

messaging applications such as Whatsapp and Telegram, are used the most to create and disseminate deep fakes.

Long-term Impact on Societal Trust



Most respondents agree that deep fakes are not just a micro-level problem but rather a macro-level problem. When escalated, they can cause more significant harm to society as a whole, resulting in diminished trust and cohesion.

Content analysis

The thematic analysis reveals the multifaceted impact of deep fake technology misuse on Indian society, encompassing privacy infringement, fraudulence, and informational manipulation. Addressing these challenges requires a comprehensive approach involving technological interventions, legal frameworks, and public awareness campaigns. Efforts to mitigate the misuse of deep fake technology must prioritize safeguarding individual rights, promoting digital literacy, and fostering ethical practices in digital content creation and consumption.

The thematic analysis sheds light on the detrimental effects of deep fake technology misuse in India, emphasizing the urgent need for proactive measures to mitigate its negative consequences. By addressing the identified themes of Pornography/sexual exploitation, Fraud/Scams, and Misinformation/Disinformation, policymakers, industry stakeholders, and civil society can work together to safeguard the integrity of digital spaces and protect vulnerable populations from harm.

The study identifies a concerning trend in the misuse of AI through deep fakes, as evidenced by various analyzed news pieces. The respondents also expressed alarm at the increasing usage of technology, such as deep fakes. This unanimous agreement is built on the very foundation that this technology could be used to influence media content, which has an increasingly negative impact on a person and the community.

The prevalence of using deep fake technology for sexual exploitation or harassment, mainly targeting women, underscores the nefarious nature of advancing technology like that of deep fakes. As established by various such cases listed in the news article articles, sextortion and harassment were the primary reasons for the employment of deep fake as agreed by the respondents and as a result of the content analysis.

Instances of cyber fraud, such as the Kerala man's loss of 40,000 rupees due to deep fake impersonation, highlight the financial risks associated with this advancing technology. With the ill intentions of garnering money through technological slyness via unrecognizable images and videos, new kinds of such scams are troubling netizens.

In particular, spreading deep fakes involves spreading information with or without ill intention. While lack of ill intention adds to spreading fake content for fun and satire, prevalent ill intent

aims to tarnish the target's reputation. Misinformation or disinformation has been particularly associated with politics due to its race of being on top while pushing others down. Some might use it for their gain, as seen in the case of Manoj Tiwari, or it could be more targeted, as evident in the case of Arvind Kejriwal. While intentions could be severe or more fleeting and dispersed, the misuse has been established to be present evidently in Indian case studies.

One exciting finding delves into the domain of probable targets. These targets encompass individuals or groups who are antagonistic to the people in power. However, with the increasing democratization of this technology, the risk of harm to renowned people will be well shared by anyone with a social media profile or Internet access. (Semwal, A., 2020)

However, deep fakes used for political bluff also entail a more serious risk, destroying public trust in political establishments.(Farid & Schindler, 2020) The political intent is to launch the other party's deep fake aims to tarnish the other party's reputation or advance one's political agenda. Adding to the agenda-based deep fake employment, deep fakes may be utilized by terrorist groups to cause political disruption (Farid & Schindler, 2020)

Deep fakes contribute to misinformation campaigns due to the distance between their creators and the masses through which they are disseminated. These campaigns can further employ a “liar's dividend” wherein the employers of deep fakes deny responsibility or accountability for disseminating such deep fake-generated content.

In totality, deep fakes pose a significant threat to our society as they advance fake news, employ propaganda, interfere in elections, hamper public trust, raise cybersecurity issues, and lead to an

information apocalypse where every piece of information is regarded fake and biased (Westerlund, M., 2019).

Drawing inferences from the prevalent misuse and adding the fact that 72.4% of respondents believe current laws and regulations in India are not sufficient to address the misuse of deep fake technology, the ages-old law and order needs to accelerate upgradation while tapping into the potential of law making in the cyber domain. Without direct legal definitions and remedies, the world of deep fake goes unregulated and, hence, unnoticed, calling for redressal.

Summarising the discussion, and as believed by the respondents, media literacy and awareness campaigns are most helpful in preventing individuals from falling victim to deep fakes; the media should promote awareness in this emerging area of deep fakes. Finding ways better to equip oneself against the employment of deep fakes is the need of the hour.

Conclusion

The study's findings underscore the pervasive misuse of AI through deep fakes in India and its profound impact on the social fabric. This misuse manifests in various forms, from personal harm to broader societal repercussions, eroding trust and integrity. It presents an imperative opportunity to raise awareness among netizens about the diverse implications of deep fake technology.

The thematic analysis delves into the intricacies of the misuse, revealing its underlying ill intentions, including sexual exploitation, financial fraud, and intentional dissemination of misinformation or disinformation. This range of harmful uses underscores the urgent need for interventions to address the growing threats posed by deep fakes.

One critical aspect highlighted in the research is the lack of a robust legal framework in India to effectively detect and punish instances of deep fake technology misuse. While existing legislation, such as Section 66A of the Information Technology Act 2000, aims to tackle manipulated content, its applicability to deep fakes must be clarified. This legal vacuum exacerbates the challenges in combating deep fake-related offenses effectively.

Moreover, the study underscores the broader societal ramifications of deep fake misuse, particularly its detrimental effect on trust within the public sphere. When individuals become wary of trusting information or engaging in meaningful discussions due to the prevalence of manipulated content, the foundation of democratic discourse is compromised.

In response to these challenges, media literacy and awareness campaigns emerge as crucial tools to mitigate the impact of deep fake technology misuse. Educating individuals about creating, disseminating, and detecting deep fakes can empower them to navigate digital spaces more safely and critically evaluate the information they encounter. While not a panacea, such initiatives represent a vital first step in addressing deep fake technology's complex and evolving threats.

In conclusion, addressing the misuse of deep fake technology in India requires a multifaceted approach encompassing legal reforms, awareness initiatives, and concerted efforts from various stakeholders. Fostering a culture of digital literacy and strengthening regulatory frameworks in the digital era can preserve the integrity of public discourse while reducing the detrimental effects of deep fake technology.

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