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EMERGING AI TECHNIQUES AND DISSEMINATION OF MISINFORMATION: A QUALITATIVE APPROACH

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ABSTRACT

In this day and age, social media platforms wield enormous significance in the dynamics of communication. Information travels at unprecedented speed, giving individuals around the globe continuous access to a near-real-time conversation about important and trivial matters. However, social media platforms have also engendered specific challenges that obstruct the efficacy of communication. Recent years have witnessed the convergence of artificial intelligence and social media, which may have many benefits, but also present a perilous synergy that, may have far-reaching consequences for humankind. Their amalgamation has thrown in a very accessible avenue for purveyors of misinformation to peddle deceptive content and exacerbate the prevalence of false information. AI techniques like human image synthesis are being used to produce deepfake and cheapfake videos, which are highly capable of spreading disinformation. Thus, the present study adopts a descriptive approach to examine the spread of false information through AI on social media, taking up case studies of deepfake and cheapfake (video) messages circulated through these platforms. It also focuses on the role of bots and artificial intelligence in communicating false information. The analysis considers the theory of agenda setting and information (innovation) diffusion theory in contemporary political and social scenarios.

Keywords: *Social Media, Fake News, Misinformation/Disinformation, Bots, Deepfake, Cheapfake.*

Introduction

Social media platforms play a very significant role in the contemporary communication process. These platforms have a dramatic impact on the ways we interact with each other. In modern times social media plays a very significant role in information sharing and dissemination. But these technologies and methods are being deployed by peddlers of fake news to mislead and deceive the masses. Advancements in technology have introduced bots or software robots, which display human-like communication behavior. Bots are semi-autonomous or autonomous software installed on internet servers to interact with website visitors. Fake accounts which are operated by bots are termed online astroturfing. And they are generally used for political lobbying and other PR activities. Bots and inauthentic (fake) accounts also pose a significant threat to communication. And it is challenging to distinguish between counterfeit and authentic accounts on social media platforms (Macnamara, 2020). According to Facebook quarterly report & Washington Post report, around 16% of all Facebook accounts are fake or duplicates and approximately 5% of its active users are fake on Twitter. Usually, fake accounts and bots are used by individuals or organizations to gain followers and mislead the masses.

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Indeed, with the passage of time, the spread of disinformation has become more organized, exhibiting greater capacities to mislead the masses. The present study aims to explore how misinformation is disseminated through AI and new techniques.

Review of Literature

In contemporary times, the communication process has changed due to digitalization and the convergence of technology. AI and digital technology has blurred the line between truth and fiction. For example, the deepfake and cheap fake videos are created with the help of AI to mislead the masses. Deepfake videos are created with the help of AI and deep learning. The first case of deepfake came into the limelight in November 2017, when a Reddit (social media platform) user with the user name “deepfakes” uploaded a series of videos related to famous actors including Gal Gadot and Scarlett Johansson. Since then, such a genre of videos has been termed deepfakes. Deepfakes are just one component of a larger field of audiovisual manipulation (AV). Audio-visual manipulation includes both the advanced, AI-enabled techniques of deepfakes and "cheapfakes" that use conventional methods of speeding, slowing, cutting, restaging, or contextualizing footage. In simple terms, for creating deepfakes, more expertise and technical resources are required, but cheapfake videos can be created with simple technological tools (Paris, B. & Donovan, J., 2019).

Though deepfake content is a relatively new phenomenon on social media, the trends indicate it is growing at a rapid pace. According to a report by Deeptrace, deepfake content on the internet burgeoned from 7,964 in 2019 to 14,678 in 2020, in a period of merely nine months. The figures continue to swell ever since (Toews, 2020). Moreover, bots are also registering advanced evolution everyday as technology makes them more sophisticated, to mimic human behavior with higher precision (Terra, 2022). There is a huge probability that these techniques will proliferate in near future to become a pernicious political and social forces.

A review of the existing literature shows that while there exists a huge body of research on the use of fake news to manipulate the public in general, there is a dearth of a study that exclusively focuses on the recent usage of deepfake videos, along with cheapfakes and bots in the Indian political context. The present study has been designed to fill in this research gap and explore the hitherto understudied phenomenon of AI-enabled content on social media, utilizing the qualitative approach of case studies.

Objectives of the Study

- To understand the role of AI techniques in sharing different fake messages.
- To study the role of deepfake / cheapfake videos in the present political and social scenario.
- To understand the concept of bots and fake accounts on social media platforms (on Facebook and Twitter) and their relevance in the present context.

Research Methodology

To fulfill its objectives, the study adopts the case study method, which is a qualitative research approach. According to Burns (Burns, 2000), “To qualify as a case study, it must be a bounded system, an entity in itself. A case study should focus on a bounded subject/unit that is either representative or extremely atypical.” Case studies allow in-depth scrutiny of an issue, situation, group, or an individual, especially when things are more complex and difficult to investigate (Parveen & Showkat, 2017). As per Gilbert (Gilbert, 2008), "The advantage of the case study design is that the research can be much more detailed than possible if one is studying a large sample, but the corresponding disadvantage is that it is much more difficult and often impossible to generalize the findings."

Therefore, five different cases have been studied to understand the role of emerging AI techniques in spreading misinformation and disinformation, on the basis of their significance and importance. Cases from political and social genres have been chosen from different social media platforms like Facebook and Twitter. Secondary data has been used from various news websites, social media platforms, research reports, and news articles. Cases have been selected on the basis of Purposive sampling (non-probability) method (Kumar, 2022).

Each case has been taken as a unit of analysis, which gives detailed insight into the particular case and subject. Cases have been interpreted according to their significance, context, motive, impact, and implication on different aspects. Apart from categorizing its genre, the study presents a detailed analysis of each case, its historical context, and the controversy and media coverage surrounding the issue. An attempt has been made to decode the social dimensions of the technology-enabled fake content online to have a deeper understanding of the phenomenon of misinformation in this day and age.

Data Analysis and Interpretation

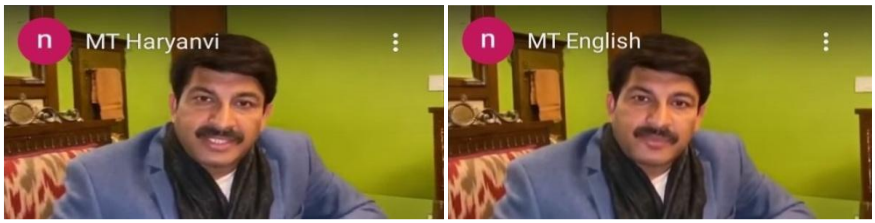
The first two objectives of the study intend to understand the role of AI techniques in sharing different fake messages, taking into account the deepfake and cheapfake content that emerged in the present political and social scenario.

Case Study – 1

Case - A deepfake video that went viral during Delhi assembly elections.

- **Detailed Analysis**

A deepfake video went viral during February, 2020 Delhi assembly elections. The video featured Member of Parliament (MP) Manoj Tiwari appealing to the voters in three different languages Hindi, English, and Haryanvi (local Hindi dialect). The total duration of the video in Hindi (which is claimed to be the original one) is around 51 seconds; in English, the duration is 51 seconds; in Haryanvi, it is around 44 seconds. The transcript of the English version video is as follows - Friends, I am here just to ask about the work accounted for. Kejriwal said he will start 500 new schools. Have they started? He said, "They will install 15 lakh CCTV (closed-circuit television) cameras. Have they installed?" They said, "They will start 10 thousand DTC (Delhi Transport Corporation) buses. Have they started?" He just cheated us on the basis of such promises, but now Delhi has a chance to change it all. Please press the lotus (party's symbol) button on 8th February to form government. Thank you."



Images from the related video (deepfake)

- **Case History of this Viral Deepfake Video**

This video went viral on WhatsApp (an instant messaging app) to influence voters directly. This deepfake video was distributed across 58,000 WhatsApp groups in the Delhi and NCR region, reaching approximately 15 million people. And, video was created by a Chandigarh-based advertising agency called the Ideaz Factory.

According to the company, the lip-sync deepfake algorithm was used to superimpose forged versions of the video in the original copy. The company also hired a mimic artist to impersonate Tiwari and deliver his speech in two other languages, English and Haryanvi. According to researchers, this was not the first time such content was circulated on social media platforms, especially in India. However, how professionally it was produced during an election campaign, was unprecedented. Hence, it was the first kind of deepfake video used during any election campaign in India.

- **Controversies and Media Reports Around the Video**

The deepfake video led to a spate of media reports and controversies. *Outlook* magazine published a news story citing concern over deepfake videos being used in Indian political campaigns to attract voters. The magazine writes that such deepfakes are created with the help of artificial intelligence (AI) by manipulating and fabricating audio-visual content to make it seem real. The popular digital news portal *'The Print'*writes that India must be worried about the deepfake videos and their ramification and consequences would be distressing in the near future. Experts claimed that even though the video was made with good intentions, it is still a piece of misinformation to mislead the masses. Since Manoj Tiwari only knows Hindi language, his other two videos (except the Hindi version, which was original) manipulated with the help of AI, where it seems that he is speaking in English and Haryanvi, are misleading. Therefore, the Manoj Tiwari deepfake is a classic example of how AI techniques have immense potential to mislead voters during an election campaign.

Case Study – 2

Case – Cheapfake video of Delhi Chief Minister Arvind Kejriwal.

- **Category**

Political Misinformation / Cheap fake video

- **Detailed Analysis**

This case is related to a video, which Delhi Chief Minister Arvind Kejriwal originally shared during Punjab assembly elections in 2017. He uploaded this video on Facebook on 29th January, 2017. The video shows Kejriwal appealing to Punjab's voters to support his party in the upcoming assembly elections.

Images of that particular viral video

In January 2019, the same video went viral on social media platforms like Facebook and X (formerly Twitter), claiming that Kejriwal was in an inebriated (drunk) state. However, when the video was fact-checked and compared with the original video, it was found to be fake. The total duration of the edited video was around 1 minute and 13 seconds. In the viral video, he can be heard saying (translated from Hindi), "This is their last election, and this time they are only coming to plunder you. So please do not vote for them; otherwise, you will suffer."Compared with the original video, it was found that his voice was manipulated and slowed-down in such a way, that it appears that he is in an inebriated condition. Actually, it was manipulated with the help of simple AI tools to mislead the viewers. The video is a clear case of cheapfakes, which are used to spread misinformation on social media platforms.

Several news stories and fact-checking reports were published about this viral video. The video that had been shared on multiple social media platforms, was debunked by many fact-checking websites like Alt News, BoomLive, and Newschecker. According to a fact-checking website 'smhoaxslayer', the video was edited with the help of the TikTok application with a slower frame rate. It is a perfect example of spreading disinformation through misuse of AI to manipulate public opinion about a public figure and try to scuttle a fair electoral process.

Case Study – 3

Case – Deepfake videos that went viral during (ongoing) Russia-Ukraine war.

- **Detailed Analysis**

This case study is related to the deepfake videos that went viral during the Russia-Ukraine war. In this war, both countries resorted to information warfare to manipulate reality with the help of fake news and misinformation.

- **Deepfake Video related to Russian President**

In the said video, that went viral in March, 2022 on social media, President Putin can be heard saying he has reached peace with Ukraine. However, in reality, Putin never made such statements. Initially, the video took Twitter by storm, showing Russian President Putin making a peace agreement with Ukraine, while also announcing that Crimea will once again become an independent republic inside Ukraine. The total duration of the video was around 1 minute and 20 seconds. Later, it was found that the doctored video was created from a speech Putin gave on 21st February, 2022. On cross-checking with the original video (which was published by Putin's official website), it was found that he was speaking about the situation in Ukraine way before Russia invaded the country. There was no reference to a peace agreement with Ukraine.

Images from real and fake videos

- **Deepfake Video Related to President Zelensky**

In the supposed video, he appeared to urge his countrymen to give up their weapons and surrender to Russia's invading forces. However, Zelensky never made such a statement in reality. The video was also identified as fake by multiple media organizations and fact-checking websites. The manipulated video was first uploaded on a Ukrainian news website (Ukraine 24, on 16th March, 2022) by hackers, following which; it went viral on social media platforms. Not only this, the hackers also managed to send the fake Zelensky message across live television on the scrolling-text news (known as the ticker).

While the video circulated on social media platforms like Facebook, X, and YouTube, it was further amplified by VKontakte (Russian social media network akin to Facebook in Russia and Ukraine) and Telegram. The two cases highlight the disinformation attempts made by both the conflicting parties, and both criticized each other for spreading misinformation during the war. However, it must be understood that both acts were a part of information warfare.

- **Different Media Reports Around this Viral Video**

The videos received a good quantum of coverage in news media, with various media organizations citing concern about the use of AI tools in information dissemination. The war between Russia and Ukraine officially started on 24th February 2022, and by then, there was misinformation abound on social media platforms to manipulate the information process. *The Guardian* (a British daily newspaper) reported that Ukraine's strategy for debunking misinformation is more effective than that of Russia. According to *Euro news* (a European television news network), the video of Zelensky was the first 'intentionally' used deepfake in the Ukraine war. They further cited that one version of "deepfake" was viewed more than 120,000 times on Twitter. Euro news also reported that both videos were distinct from the majority of misleading content that has been shared since the war started. Thus, it can be gleaned that usage of deepfakes or AI generated content is evolving rapidly in political context and can have far reaching repercussions in critical times like those of war or disaster.

Case Study – 4

Case – A deepfake video of Hollywood actor Tom Cruise.

- **Detailed Analysis**

Several deepfake videos of Hollywood star Tom Cruise went viral on social media platforms between February and June, 2021. A series of ten videos that was posted on TikTok (a short video-sharing app), managed to deceive millions of people, who thought it to be real. In these videos, it appeared that Cruise was showing off magic tricks, working on his golf swing, and playing guitar. The videos saw a lot of reportage in news, highlighting their negative and positive aspects. News network *CNN* interviewed Chris Ume (creator of this video), who admitted that they created the videos for the sake of entertainment and they used different AI tools to make those videos more convincing. On the other hand, Fisher claimed (in an interview with *NBC* news), "We have created the first deepfake that's so realistic, that a large majority of people have seen them." *ABC News* published that it is estimated that 93% of deepfakes are currently produced for pornography. However, technology is rapidly evolving from the web's dark corners into the mainstream.

Different images from viral deepfake videos on social media platforms

They also cited Chris Ume, who said that to create a deepfake video, one has to start with source data, where pictures and videos of that particular person are assembled. Ume collected more than 6,000 images of Tom Cruise from different angles with different facial expressions to train the algorithms. Furthermore, it also took over two months to build the computer model before finally creating the deepfake videos. Some media reports confirmed that these videos confused online viewers about whether the real Tom Cruise had joined TikTok. Interestingly, with these deepfake videos, account holders also gain followers. It can be understood by the fact that while the account *deeptomcruise* had 3.4 million followers on TikTok before uploading these videos, after posting these videos, the account gained more than 10 million followers. This case manifests the creation of deepfake videos solely for entertainment purposes; nonetheless, they resulted in misleading the social media users. In light of the cases studies so far, it is clear how artificial intelligence is being used intentionally or unintentionally, to create misleading content, which can have unprecedented consequences, both politically and socially.

Case Study – 5

Case – Fake accounts created on social media platforms in the name of former ISRO chief during the Chandrayaan-2 launch.

- **Detailed Analysis**

The spacecraft Chandrayaan-2 was launched from the Satish Dhawan space center in Sriharikota (Andhra Pradesh) on 22nd July, 2019. Following its launch, massive amounts of information was shared on social media platforms like Facebook, X (formerly Twitter), and WhatsApp. A significant phenomenon observed during this period was the huge number of fake accounts created in the name of former ISRO chief K. Sivan.

- **Case History and Media Reports about the Fake Accounts**

Not only were numerous fake (Twitter) accounts opened in the name of the-then ISRO chief K. Sivan, but some fake accounts were also created on behalf of ISRO. When this story came into limelight, ISRO clarified that K. Sivan had no account on social media.

Images from fake accounts (Twitter)

Related to this issue, the newspaper *The Indian Express* (10th September, 2019) wrote that ISRO has official Facebook, Twitter, and YouTube accounts. However, its chairman has no account on any social media platform. The newspaper further said that on 7th September, when ISRO (space agency) lost contact with Vikram lander, a fake account of Sivan gained more than 40,000 followers. Similarly, many more accounts were created on his identity to spread misinformation. *Zee News* reported that (news published on 9th September) ISRO has issued an alert on the fake accounts opened in the name of its chief, because such accounts are spreading disinformation and fake news. *The Times of India* (9th September 2019) reported that the primary motive was to spread misinformation and gain followers. Following are some examples of fake accounts that were created (in the name of K. Sivan) to gain followers on X (Twitter) -

- **Fake Account 1 –** This account started with the handle ID - @kailasavadivoo, was claimed to be one of the first fake accounts (on X) created under the name ISRO Chairman. The person who created the fake account used Sivan's photo as the display picture and a generic image of the Earth as the cover image. The bio of that Twitter account read as, "Chairman, ISRO and updated the location as Bengaluru, India." This account was possibly created on 7th September 2019, and it gained more than 63,000 followers within one day of its creation (Check, 2019).

- **Fake Account 2 -** This account's X ID (handle) was - @KailasavadivooS, and this account was created on 7th September 2019. The account had a tweet about 'upcoming ISRO missions' as its pinned tweet. This account gained more than 17,300 followers within some hours, and after a day, it gained more than 41,000 followers. After gaining more than forty thousand followers, it changed the display picture, cover image, bio, and location (Check, 2019).

Initial image of fake account **Image of fake account after gaining followers**

These examples clearly show how fake accounts were created on social media platforms to mislead the masses. Some accounts seemed to be created on X as a strategy to gain followers.

Results and Discussions

The qualitative research demonstrates the contemporary use of AI technologies in political, social, as well as entertainment spheres. The research findings from the first two objectives explain the use of AI techniques for creating deepfake and cheapfake videos and how they mislead the masses by spreading misinformation.

The case studies present a clear picture of how technology is being mis-used by many for vested interests, and also show how it can wreak havoc in times to come. A report by ScienceX says that the deepfakes may become a nightmare in times to come, especially in context of politics. Such videos can very easily spread false information about a political figure or election candidate, with people being duped into believing whatever is presented to them. Such content has the capacity to rig an entire election campaign (George, 2019). This was observed in the case of Arvind Kejriwal and Manoj Tiwari, most of the viewers believed the vidoes to be real. Some experts claim that Manoj Tiwari video was quite influential in drawing in voters.

An association of researchers and specialists along with policymakers, warned that the use of AI for destructive purposes (deepfakes) is the most potent emerging threat in current times (Caldwell et al., 2020). Since social media is a primary source of public's information, fabricated content like deepfakes can be extremely harmful as it directly damage the knowledge acquisition.

Köbis et al. (2021) contend that the deepfakes are not easy to detect anymore. The general public will struggle to sift fact from fiction, and even the previously established strategies to identify misinformation fail to recognize deepfakes. The Putin and Zelensky deepfake videos were believed to be real by innumerable social media users, as they went on to share them quickly, confirming that "seeing is believing". Similarly, Tom Cruise videos were also received very well on social media platforms, becoming viral overnight.

While deepfakes are based on high-end technology, cheapfakes – though easier to make – have also had unpleasant real-world outcomes. Schick (2020) presents a detailed account of how cheapfakes were quite efficacious in different political developments worldwide. Cheapfakes have been instrumental in spread of covid misinformation and have even catalyzed a genocide. Their reach and influence cannot be underestimated. The cases of Nancy Pelosi and Arvind Kejriwal are apt examples of cheapfakes that deceived the social media users, who even went on to criticize them for such behaviour.

Himelein-Wachowiak et al. (2021) argue that bots are 'super-spreaders of misinformation'. They are very efficacious in re-posting (or re-tweeting) content, within seconds of it being posted, and contribute in it going viral. A huge number of bots are involved in sharing information from sources with low-credibility. They are also capable of mentioning influential personalities in fake content, lending it a look of reliability. This leads to the public partaking in the spread of misinformation, unknowingly. The case of ISRO chairman shows how fake accounts and bots were used during Chandrayaan-2 launch to mislead people, specifically the Twitterati, to gain followers and spread misinformation. The study also reveals that it is a bigger challenge to debunk handmade fake accounts rather than automated accounts (bots).

Key Findings of the Study

- Research shows that the use of different AI techniques has recently increased for disseminating misinformation on a larger scale.
- The use of deepfake videos, especially in political communication, has increased to spread misinformation and mislead the masses.
- Bots and fake accounts are mostly used for spreading disinformation and gaining followers on social media platforms.
- Videos like deepfake and cheapfakes are used in political scenarios to target individuals and defame political opponents.
- Bots and inauthentic accounts constitute a significant concern for disseminating information on social media platforms, and it is challenging to decode handmade fake accounts on social media.
- Deepfakes / Cheapfake videos which spread in the form of parody or satire on social media (by individuals or groups) are further used as a piece of misformation.

Moreover, the study also supported the Agenda setting theory and Information (Innovation) diffusion theory. The agenda-setting theory by McCombs & Shaw (1972) supports the idea that media don't tell people what to think, but what to think about. The findings of this research shows how AI techniques produce fake messages to set agendas and create a reality that never existed. And it makes these issues become the topics of discussion in social circles.

On the other hand, the theory of Information (Innovation) diffusion theory explains how innovations are introduced and adopted by various groups in society. This can be understood by the fact that earlier deepfake and cheapfake content was created with the help of sophisticated AI techniques. However, new technologies have facilitated this or made it easy for everyone to create such content on a larger scale with the help of simple software applications. Thus, people who do not have access to advanced levels of technology, can also produce such content with unprecedented ease. So, this research study clearly supports the agenda setting and information (Innovation) diffusion theory in contemporary political and social scenarios.

Conclusion

The study shows that the use of AI and machine learning technologies have increased in present times for disseminating misinformation. Beyond doubt, social media platforms are becoming the primary vehicle for such manipulative information. Media experts have warned about the use of modern communication technology to ends unimaginable. So, when powerful new technologies merge with artificial intelligence without any restriction or regulation, it leads to information disorder within the social arena. The study also shows that the use of deepfake and cheapfake videos has increased on social media platforms to spread misinformation.

Limitations of the Study

This research study has some limitations in terms of its sample size because a limited number of cases has been studied. There are concerns regarding the generalizability of the findings, though each case gives insight into the use of artificial intelligence (AI) techniques in spreading misinformation. Studies could also try to study the impact of AI-generated content on the users, and the motivations behind their sharing such information.

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