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Utilization of Deepfake Technology in the Film Industry: Analysing Al-generated performances in the Hollywood film "The Irishman" and its impact on Artistic Integrity.

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Abstract

This study delved into the intricate intersection of ethics, artistry, and technological advancements in the film industry, focusing on the profound impact of deepfake technology. The study focused on the Hollywood film "The Irishman," critically analyzing its use of AI-generated performances and the resultant implications for artistic integrity. Anchored on the Technological Determinism Theory, the study utilized critical discourse analysis to examine how the film 'The Irishman' reflects and reinforces power dynamics, ideologies and social structures using deepfake technology. The study further scrutinized the ethical dilemmas arising from the manipulation of actors' appearances and performances through deepfake technology. It looked into the questions of authenticity, representation, and the blurred lines between reality and fiction in cinematic narratives. Through a meticulous examination of "The Irishman," this study sought to unravel how AI-generated performances challenge traditional notions of acting and storytelling, thus reshaping the landscape of filmmaking. Furthermore, this research explored the artistic implications of utilizing deepfake technology, examining its potential to enhance or compromise the creative process. By evaluating the reception of AI-generated performances in "The Irishman" and their impact on audience engagement and critical acclaim, this study aimed to contribute valuable insights into the evolving relationship between technology and artistic expression in contemporary cinema. This study recommended among others the need for filmmakers, industry professionals, and audiences to be provided with education and awareness initiatives regarding deepfake technology by relevant authorities. This includes understanding the capabilities, limitations, and ethical considerations of AI-generated performances, fostering informed discussions and critical engagement.

Keywords: Al-generated Performance, Artistic Integrity, Deepfake Technology, Film

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Introduction

Deepfakes are artificial media that have been digitally altered to replace one person's likeness convincingly with that of another. Deepfakes are the alteration of facial appearance through deep generative methods (Berolo & Wood, 2020) While the act of generating fake content is not new, deepfakes utilize powerful techniques from machine learning and artificial intelligence to alter or produce visual and audio content that can more easily mislead the public. The principal machine learning methods used to generate deepfakes are based on deep learning and entails training generative neural network architectures, such as auto-encoders, or generative adversarial networks (GANs)(Zhang & Wong, 2022). Subsequently, the field of image forensics creates techniques to detect manipulated images. The use of deepfake technology in the film industry has become a topic of increasing concern as it raises important ethical questions about the integrity of art and artists. According to Li & Liu (2021), Deepfakes which are known as computer generated images or videos that are created by merging a real person's face or body with the image or video of someone else is a process that can be used to create realistic-looking images or videos that are not actually real. Patel & Shah (2020) in their study argue that this technology can be used to create convincing fake news,manipulate public opinion or commit fraud. On the other hand, Ahmed & Duru (2022) in their study also argue that deepfake technology can be used to create art and entertainment that would otherwise be impossible to produce. The utilization of deepfake technology in the Nigerian film industry raises some unique ethical concerns. For instance, many Nigerian films feature prominent religious and spiritual themes and the use of deepfake technology to create false representations of religious figures could be seen as blasphemous. In addition, the widespread use of deepfake technology could create competition for traditional Nollywood actors who may find it more difficult to find work. Ahmed & Duru (2022) opine that Nollywood films often explore the complex and diverse cultures of Nigeria and the utilization of deepfake technology could lead to a homogenized and unrealistic representation of the country which could have negative consequences for social cohesion and understanding. One example is the Biafran war which is a common theme in Nollywood films. Deep fake technology could be used to create inaccurate depictions of the war which could have an impact on how the war is remembered and understood by future generations. It has been observed that the use of deepfake technology in the Nigerian film industry is relatively new and there is little understanding of its potential ethical and legal implications indicating that there is a lack of information on how this technology could affect the representation of Nigerian culture and history. This technology as Malik, Kuribayashi, Abdullahi and Khan (2022) assert has the potential to be used for both positive and negative purposes and therefore it is important to understand the potential risks and benefits. This study thus contributes to the broader debate on the ethical implications of emerging technologies as related to the film industry.

Statement of the Problem

The integration of deepfake technology, an advanced form of artificial intelligence, into the film industry has raised significant questions regarding its implications for artistic integrity, particularly concerning performances by actors. The Hollywood film "The Irishman" has been a notable case study in this regard, as it employed deepfake technology to de-age its actors, altering their appearances to portray characters across several decades. This research seeks to delve into the multifaceted challenges and opportunities posed by the utilization of deepfake technology in filmmaking, specifically focusing on its impact on artistic integrity. Deepfake technology's introduction into filmmaking introduces a paradigm shift in artistic

expression. This study seeks to analyze how AI-generated performances influence storytelling, character portrayal, and audience engagement, evaluating whether the use of deepfakes enhances or compromises the authenticity and emotional resonance of a film's narrative.

Objectives of the Study

1. To assess theHollywood film ‘The Irishman" and its use of deepfake technology
2. To analyze the power dynamics related to the film's portrayal of characters through age manipulation.
3. To investigate the ideological implications surrounding the use of AI-generated performances in filmmaking.
4. To analyze the impact of deepfake technology on artistic integrity within the context of "The Irishman," examining how the use of AI-generated performances influences storytelling.

Literature Review

Evolution of Deepfake: Tracing the History and Development of AI-generated Content

The rapid advancement of deepfake technology has been a remarkable and enthralling journey from a niche interest to a potent and transformative force with the capacity to impact diverse industries and the society at large (Singh & Sharma,2021). The hyper-realistic nature of modern deepfakes, which are created with the aid of artificial intelligence to swap one person’s likeness with another has become an ever-growing source of concern due to their potential for misuse.Li & Liu (2021) state that deepfake is a compound word that combines ‘deep learning’ and ‘fake’ referring to the use of advanced algorithms to create misleading and deceptive content. Essentially, it’s a combination of cutting-edge machine learning techniques used to produce deceptive media. The concept according to Ramlakhan & Chari (2020) started in the 1990s, but it was slow to progress because the technology was not advanced enough to create truly realistic images.However, starting in the 2010s, several factors came together to make it possible. These included the availability of huge amounts of data, better algorithms for machine learning and more powerful computers. In 2014, Patel & Shah (2020) state that a type of machine learning algorithm called GANs was introduced by Lan Good Fellows, a researcher at the University of Montreal. GANs helped make deepfakes much more realistic by using two competing algorithms to create images. GANs use two neural networks that compete with each other to generate images. One network, the generator, tries to create realistic images, while the other network, the discriminator, tries to distinguish between real and fake images. This process of competition between the two networks allows the generator to improve its ability to create realistic images. As the technology has advanced, researchers have been able to combine multiple types of media, such as audio and video, to make deepfakes more convincing.

.According to Wu & Li (2020), the initial widely recognized deepfake came into existence in 2017 when a Reddit user named “deepfakes” started posting manipulated videos of celebrities. The user made use of open-source deep learning libraries and a large dataset of images to generate credible, albeit flawed, deepfakes. The technology rapidly attained impact, with other users generating their own deepfakes and distributing them online. This rapid spread of deepfake content raised concerns about the likelihoodfor misuse, such as the

generation of forced explicit content or the influence of political figures (Singh & Sharma, 2021).

In reaction to these apprehensions, Berolo & Woodcock (2020) opines that researchers and tech companies have been working actively to create deepfake detection methods. In 2018, researchers at the University of California, Berkeley, implemented a strategy called "Face Forensics," which uses machine learning to spot manipulated content by evaluating inconsistencies in facial expressions and head movements. Likewise, in 2019, Google introduced a dataset of deepfake videos to enable researchers generate detection algorithms. In spite of these efforts, deepfake technology continues to progress, making detection increasingly difficult (Patel & Shah, 2020).

The possible applications of deepfake technology extend beyond dubious uses. Ramlakhan & Chari (2020) assert that in the entertainment industry, deepfakes have been used to bringdeceased actors back to life, de-age older actors, and generate realistic digital characters. In advertising, deepfakes can be used to generatepersonalized content made specifically for individual consumers. Again, Zhang & Wong (2022) are of the opinion that deepfakes have the likelihood of revolutionizing language translation by creating realistic lip-syncing for dubbed content.

Nevertheless, the ethical implications of deepfake technology cannot be overlooked. Malik, Kuribayashi, Abdullahi, & Khan (2022) state that as deepfakes become more realistic and difficult to detect, they constitute a significant threat to the integrity of information and the principle of truth. The potential for deepfakes to be utilized in political manipulations, disinformation campaigns, and other malicious activities has led to demands for regulation and the development of sturdy and comprehensive detection methods.

Garcia & Rodriguez (2021) state that the progression of deepfake technology has been a speedy and fascinating journey, characterizedby obvious advancements in machine learning and the increasing accessibility of powerful computing resources.They opined that while deepfakes present stimulating opportunities for multifarious industries, they also pose significant ethical problems and threats to the integrity of information.

Le Gall (2021) opines that deepfake technology has a relatively short but rapidly evolving history. Deepfake technology according to Zhang & Wong (2022) emerged in the late 2010's, primarily driven by the combination of deep learning algorithms, particularly Generative Adversarial Networks (GANs) and the availability of large datasets. Researchers and hobbyists started experimenting with creating realistic face-swapping videos. According to Singh & Sharma (2021), deepfakes initially gained attention due to their use in creating non-consensual and often explicit videos featuring celebrities and individuals. This raised significant ethical concerns and led to discussions about the technology's impact on privacy. As its techniques improved and computing power increased, deep fake quality and accessibility continued to rise. This allowed for more convincing manipulations, not only in videos but also in audio and text. Wu & Li (2020) state that the technology found its way into the entertainment industry where it was used for various creative and humorous such as face-swapping actors into iconic movie scenes which contributed to its mainstream recognition. The rise of deepfake technology raised concerns about its potential misuse, including spreading information, identity theft and blackmail. Various countries and platforms began considering regulatory measures to combat its harmful applications (Berolo& Woodcock, 2020).

Ethical Concerns related to Deepfakes in the Film industry

According to Ahmed & Duru (2022), the development of artificial intelligence (AI) has been a topic of great debate in recent years. Some have expressed excitement about the potential benefits of AI such as increased efficiency and productivity. Others have raised concerns about the ethical implications of AI such as the potential for job loss and privacy violations. There are equally concerns that deepfake technology could be used to create fake footage of people without their consent, potentially damaging their reputation or causing personal distress (Li & Liu, 2021). On the other hand, some argue that deepfake technology can be used to create art and entertainment that would otherwise be impossible to produce (Patel & Shah, 2020). This raises questions about the nature of art and what it means to be an artist in the age of artificial intelligence. Ahmed & Duru (2022) state that deepfakes in the film industry pose several ethical concerns which include;

1. **Misrepresentation:** Misrepresentation through deepfakes poses significant ethical concerns in the Nigerian film industry. Deepfakes which involve the use of AI to create manipulated, realistic videos could mislead audiences by depicting individuals saying or doing things they never did. In the film industry, this could result in false portrayals of actors, causing reputational damage or misleading the audience about the actual involvement of these actors in certain scenes or narratives. It raises ethical dilemmas regarding consent, truthfulness and the potential to damage the reputation of actors and public figures. This issue demands a robust ethical framework, including clear guidelines and regulations to address the responsible use of deepfake technology in the industry.
2. **Consent and Privacy:** Certainly in the Nigerian film industry, deepfakes present significant concerns regarding consent and privacy. Deepfake technology can manipulate ors create fabricated content, making it challenging to discern real from fake. In this context, obtaining consent from actors and individuals whose likeness is used in deepfake content becomes crucial. Without proper consent, deepfakes can infringe on an individual's privacy and manipulate their images or voices thereby violating their personal and legal rights. This raises ethical and legal issues, particularly in a creative industry like filmmaking, where an actor's likeness and performance could be altered or used in ways they did not agree to. The Nigerian film industry, Nollywood, known for its vibrant storytelling and creative content, may face challenges related to the misuse of actors' images or voices through deepfake technology. It's essential for the industry to establish clear guidelines and legal frameworks to ensure that consent is obtained and respected when using an individual's likeness, thus safeguarding privacy and maintaining ethical standards in content creation.
3. **Impact on Authenticity and Truth:** The use of deepfakes blurs the line between reality and fiction. It becomes harder to discern what is authentic, impacting the credibility of audiovisual contents especially that of film. Deepfake technology can manipulate audio and video content to create realistic scenes that never happened. This raises concerns about the authenticity of the content presented in films, as viewers may have difficulty distinguishing between real and manipulated scenes. It can also alter the intended narrative of a film by inserting fabricated scenes or characters. This challenges the authenticity of the storytelling process and may undermine the artistic vision of filmmakers. The Nigerian film industry, often referred to as Nollywood, has a rich cultural heritage and deepfakes could potentially be misused to alter cultural or historical narratives, leading to the distortion of the

cultural representation in films which could erode the trust that audiences place in the media and the film industry. If viewers become aware of the prevalence of manipulated content, it may lead to skepticism about the truthfulness of what they see on screen. Therefore as deepfake technology becomes more sophisticated, there is a risk that audiences, filmmakers, and industry professionals may not be adequately educated about its capabilities. This lack of awareness can contribute to the spread of misinformation and the inadvertent acceptance of manipulated content.

4. **Cultural Sensitivity:** Cultural sensitivity is a crucial ethical concern in the context of deepfakes within the Nigerian film industry, as it raises issues related to representation, authenticity, and the potential for reinforcing stereotypes. In the Nollywood film industry, cultural representation plays a significant role in storytelling. Deepfakes could be used to manipulate the appearance of actors in a way that misrepresents cultural characteristics. This may lead to the perpetuation of inaccurate or stereotypical portrayals of certain ethnic or cultural groups. Nollywood often seeks to portray and preserve Nigerian cultural values and traditions. Deepfakes that alter the appearance of actors might compromise the integrity of these cultural representations. If deepfake technology is used without ethical considerations, it may allow for the creation of misleading content that misrepresents cultural practices, rituals, or historical events. Deepfake content may influence how audiences perceive certain cultural aspects, potentially leading to misunderstandings or reinforcing biased views. This could impact societal attitudes and contribute to the spread of misinformation.

Defining Artistic integrity in the film industry

In his study Le Gall (2021) states that artistic integrity in the film industry refers to the commitment of filmmakers to create work that is true to their artistic vision and values, rather than compromising their creative decisions for commercial success or external pressures. According to him, it is a concept that emphasizes the importance of authenticity, creativity, and a genuine expression of the filmmaker's artistic voice. Filmmakers with artistic integrity prioritize their unique creative vision and voice. They strive to tell stories that are meaningful to them and create a distinct cinematic experience. Wu & Li (2020) assert that artistic integrity involves aligning the film's content with the filmmaker's personal values, beliefs, and perspectives. This authenticity can resonate more strongly with audiences. Filmmakers often face pressures to conform to commercial trends or meet the expectations of studios, producers, or investors. Those with artistic integrity resist compromising their vision solely for financial gain (Garcia & Rodriguez (2021).

Ramlakhan & Chari (2020) state that some filmmakers may face challenges from studios or producers who want to alter their work for various reasons, such as marketability or audience appeal. Maintaining artistic integrity often involves standing firm against unwarranted changes. Filmmakers with artistic integrity are willing to take risks and explore innovative storytelling techniques. They strive to push boundaries and challenge conventions, contributing to the evolution of the art form (Patel & Shah, 2020).

Artistic integrity may involve tackling controversial or unpopular subjects without diluting the message to cater to mainstream tastes (Wu & Li, 2020). This willingness to address challenging topics contributes to the diversity of cinematic narratives. Filmmakers committed to artistic integrity often maintain a consistent approach to their work across projects (Patel & Shah, 2020). This helps build a body of work that reflects their unique perspective and artistic sensibilities. Ahmed & Duru (2022) insist that while compromising artistic vision might lead

to short-term success, maintaining integrity is seen as contributing to a filmmaker's long-term impact and legacy in the industry. Authenticity resonates with audiences (Le Gall, 2021). Films created with artistic integrity have the potential to establish a deeper and more genuine connection with viewers who appreciate the honesty and sincerity in the storytelling. Films that tackle relevant social or cultural issues with authenticity are more likely to leave a lasting impact on audiences and contribute to discussions beyond the screen (Wu & Li, 2020).

In summary, Garcia & Rodriguez (2021) assert that artistic integrity in the film industry revolves around staying true to one's creative vision, resisting external pressures, taking creative risks, maintaining consistency, and fostering a genuine connection with the audience. Filmmakers who prioritize artistic integrity contribute to the diversity and richness of the cinematic landscape.

Effects of AI- generated Performances on Storytelling

AI-generated performances can influence storytelling (Ramlakhan & Chari, 2020). One of the most significant effects is that these performances can allow for a greater degree of user agency and interactivity. With traditional storytelling, the user is a passive observer of the story, but with AI-generated performances, the user is actively involved in shaping the story. This can create a more immersive and engaging experience (Singh & Sharma 2021).

Ahmed & Duru (2022) state that AI can introduce new and innovative elements to storytelling. They assert that it can analyze vast amounts of data to identify patterns and generate unique storylines, characters, and settings that human creators might not have thought of.AI can be used to personalize storytelling experiences. By analyzing user data and preferences, AI algorithms can tailor stories to individual tastes, creating a more engaging and immersive experience for each audience member (Zhang & Wong, 2022). It can further assist creators in generating content more efficiently. For example, it can automate certain aspects of the storytelling process, such as generating background details, dialogues, or even entire scenes. This can save time for human creators and allow them to focus on more complex and creative aspects of storytelling (Le Gall, 2021). Again, it can enable interactive storytelling experiences where the audience's choices influence the direction of the narrative. This can lead to a more dynamic and engaging storytelling experience, as the audience becomes an active participant in shaping the story (Li & Liu, 2021).

According to Patel & Shah (2020), the use of AI in storytelling raises questions about the authenticity of the narrative. AI-generated content may lack the depth, emotional nuance, and cultural context that human creators bring to their work (Singh & Sharma,2021). Striking a balance between AI assistance and human creativity is crucial to maintain the authenticity of storytelling (Ramlakhan & Chari, 2020).As AI becomes more involved in content creation, ethical considerations arise. Issues such as bias in AI algorithms, the responsible use of AI-generated content, and the potential impact on employment in creative industries need to be addressed (Malik, Kuribayashi, Abdullahi and Khan, 2022).

However, AI can enable artists to explore new forms of expression. For example, AI algorithms can be used to generate music, visuals, or even entire performances that challenge traditional artistic boundaries. Berolo & Woodcock (2020) are of the view that AI systems can learn from audience feedback and adapt over time. This continuous learning process can lead to the evolution of storytelling techniques and the development of new narrative styles. While AI-generated performances offer exciting possibilities, it's essential to approach them with careful consideration of ethical, cultural, and creative implications (Le Gall, 2021). The collaboration between AI and human creators has the potential to push the boundaries of

storytelling and create entirely new forms of artistic expression but at the same time could lead to a decrease in human created stories and a loss of human creativity and expression (Ramlakhan & Chari, 2020).

Audience Perception and Reception of AI-generated contents in Films

The way in which audiences perceive and react to AI-generated content in films is a complex and evolving area of study. On one hand, audiences may appropriate the novelty and innovation of AI-generated content as well as the potential for more realistic and immersive story telling. On the other hand, some audiences may feel that AI-generated content lacks the authenticity and emotional resonance of human created content. If AI-generated content, such as computer-generated imagery (CGI), is able to create visually stunning and realistic scenes, audiences may respond positively. Advances in AI and graphics technology can enhance the visual experience, making it more immersive (Li & Liu, 2021).

However, Wu & Li (2020) assert that if the generated content lacks realism or appears artificial, audiences may find it distracting or unconvincing. Unrealistic visuals can disrupt the suspension of disbelief and hinder audience engagement. In a situation, AI is used to enhance storytelling or assist in creative processes, audiences may appreciate the innovation Zhang & Wong (2022). For example, AI algorithms can analyze successful story structures and contribute to scriptwriting or generate music scores. When the use of AI is perceived as a replacement for human creativity or as a shortcut that compromises the storytelling, it may lead to a negative reception (Patel & Shah, 2020). Audiences often value the human touch in artistic endeavors. Some audiences may actually appreciate AI-generated content for its efficiency and cost-effectiveness, especially if it enables filmmakers to bring ambitious projects to life within budget constraints. Nevertheless, concerns about job displacement for human artists or ethical issues related to the use of AI in creative processes may lead to negative perceptions (Malik, Kuribayashi, Abdullahi and Khan, 2022).

Garcia & Rodriguez (2021) opine that audiences often appreciate innovation in filmmaking and if AI is used in novel and creative ways, it may attract positive attention while on the other hand, if the use of AI feels gimmicky or if it is perceived as a mere marketing strategy without genuine artistic merit, it may result in a negative reception among the concerned audience.

Furthermore, Zhang & Wong (2022) state that educating the audience about the use of AI in filmmaking and its potential benefits can contribute to a positive reception. Understanding the technology behind the scenes may foster appreciation while the lack of awareness or misunderstanding about AI technology may lead to skepticism or fear, affecting audience perception (Le Gall, 2021).The reception according to Patel & Shah (2020) may vary based on cultural context and the genre of the film as certain genres or cultural contexts may be more receptive to the use of AI-generated content. In some cases, if AI-generated content is perceived as culturally insensitive or out of place in a particular genre, it may face criticism (Ramlakhan & Chari (2020). Hence, It is important to note that perceptions and receptions can change over time as technology advances, and filmmakers continue to experiment with AI in the creative process. Additionally, public attitudes may evolve as audiences become more familiar with AI-generated content in film (Ahmed & Duru, 2022).

Examination of specific films or projects utilizing deepfake technology

Deepfakes can be used for various purposes, including entertainment, political manipulation, or even malicious activities. Below are a few instances where deepfake technology has been examined in specific films or projects in the Hollywood scene:

“Mortal Kombat” (2021)

Deepfake technology was used to recreate the appearance of the character Shang Tsung as played by the actor Cary-Hiroyuki Tagawa in the original film. It also used deepfake technology to recreate the appearance of the character Goro, a four-armed alien warrior. The film makers also used this technology to create completely new characters for the film. One example is the character Cole Young, who was created using deepfake technology to combine the face of actor Lewis Tan with the body of a stuntman. This allowed the filmmakers to create a character who looked and moved like the real person.

"Welcome to Sudden Death" (2020):

A deepfake of LeBron James was used in a fight scene for this film. The deepfake technology was employed to create a digital stunt double for certain sequences. The film was a remake of the 1995 movie “Sudden Death’’ which starred Jean-Claude Van Damme. In the 2020 version, deepfake technology was used to recreate the appearance of Van Damme’s character from the original film. This was done to create a visual connection between the two versions of the film and to create a sense of continuity.

"The Irishman" (2019):

Director Martin Scorsese used de-aging technology to make the film's actors, including Robert De Niro, Al Pacino, and Joe Pesci, appear younger in certain scenes. The filmmakers used a combination of digital effects and make up to create a more youthful appearance for the actors who were all in their 70s at the time of filming. The use of deepfake technology allowed the actors to play younger versions of their characters which helped to create a more realistic and immersive experience for the audience. While not a traditional deepfake, it involved similar principles of using technology to alter an actor's appearance in order to tell a story spanning several decades.

"The Mandalorian" (2019–present):

In some scenes, the Disney series used deepfake technology to recreate a young Luke Skywalker's appearance, bringing the character back to the screen. This stirred discussions about the implications of using digital doubles in filmmaking. Specifically, the show used a technique called ‘facial capture’ to create a digital version of the actor Mark Hamil, who played Luke Skywalker on the original Star wars trilogy. This digital version of Hamil was used to create a de-aged version of his character that appeared in a scene at the end of the second season of the show. The use of this technology allowed the show to create a younger version of Luke Skywalker that looked like the original actor but with less of the obvious signs of aging.

In Nollywood, the film industry of Nigeria, it has also begun to use deepfake technology in some of its productions. While it is relatively new to Nollywood, its use in some films shows that the industry is beginning to embrace the technology and its potential to create more immersive and engaging stories. Here are some examples of the Nollywood productions that utilized deepfake technology;

'Omo-ghetto: The Saga' (2021)

The film which is a sequel to the 2010 Nollywood film "Omo Ghetto' tells the story of a group of friends who are trying to navigate the challenges of life in Lagos Nigeria. The film used deepfake technology to recreate the face of late Baba Suwe who died in 2019. In addition to its use of deepfake technology, the film was also praised for its cinematography and direction.

"Lara and the Beat" (2020)

This Nollywood musical drama that was released in 2020 tells the story of a young musician named Lara who is struggling to find her place in the music industry. The film's use of deepfake technology was praised by critics who said it helped to create a more realistic and immersive experience for the audience. By using deepfake technology to recreate the face of the late Fela Kuti, the film makers were able to incorporate his music and personality into the film in a unique and innovative way.

Theoretical Framework

Technological determinism theory as propounded by Marshall McLuhan in the 1970s is a theory that posits technology as a primary driver of social, cultural, and economic change. This theory suggests that technological developments have a profound influence on how societies evolve, shaping values, behaviors, institutions, and even the course of history.

One of the core tenets of technological determinism is the idea that technology has its own autonomous impact on society. This means that technological advancements can lead to societal changes and transformations, often in ways that are not entirely predictable or controllable (Ahmed & Duru, 2022). The theory emphasizes how technologies can shape cultural values, norms, and practices. From the Industrial Revolution to the digital age, major technological shifts have been seen as catalysts for economic growth, social change, and cultural shifts.While technological advancements bring about numerous benefits, technological determinism theory also highlights the potential for unintended consequences. This includes issues such as technological unemployment, ethical dilemmas related to emerging technologies, and the unequal distribution of technological benefits across different segments of society. The theory is not without its critiques. Some argue that it oversimplifies the complex interplay between technology and society, overlooking the agency of individuals and social structures in shaping technological development and adoption. Additionally, critics point out that the impact of technology is often mediated by social, political, and economic factors.

In the context of "The Irishman" and its use of deepfake technology, technological determinism theory asserts that advancements in technology play a decisive role in shaping artistic practices, narrative techniques, and audience expectations within the film industry. This theory suggests that the introduction of deepfake technology in filmmaking has a transformative impact on the creative process, influencing decisions regarding casting, performance, visual effects, and storytelling techniques.

By anchoring technological determinism theory to the study of "The Irishman," we can explore how the adoption of deepfake technology represents a significant shift in the cinematic landscape. Deepfake technology enables filmmakers to seamlessly integrate AI-generated performances into the narrative, blurring the lines between reality and fiction. This innovation in storytelling techniques challenges traditional notions of acting and character

portrayal, offering new possibilities for character development and narrative complexity. The use of deepfake technology in "The Irishman" contributes to heightened visual realism, allowing for convincing depictions of characters across different ages and time periods. This enhancement in visual effects contributes to audience immersion and enhances the cinematic experience.

Technological determinism theory also suggests that the adoption of deepfake technology influences artistic expression by expanding the toolkit available to filmmakers. This expansion allows for experimentation with unconventional casting choices, unconventional narrative structures, and innovative approaches to character representation (Le Gall, 2021).

The introduction of deepfake technology in "The Irishman" may also shape audience expectations regarding realism, authenticity, and visual spectacle in cinema. Viewers may come to anticipate more sophisticated visual effects and nuanced performances, driven by advancements in AI and digital manipulation.

Anchoring technological determinism theory to the study of "The Irishman" illuminates the transformative impact of deepfake technology on the film industry, highlighting how technological advancements shape artistic decisions, narrative possibilities, and audience perceptions. This perspective underscores the dynamic relationship between technology and artistic innovation, emphasizing the ongoing evolution of filmmaking practices in response to technological developments.

Method

Critical Discourse Analysis (CDA) offers a lens through which to examine the hollywood film "The Irishman" and its use of deepfake technology. This analysis delves into power dynamics, ideology, social contexts, and implications related to the film's portrayal of characters through age manipulation.The film begins with an elderly Frank Sheeran, residing in a nursing home, reflecting on his life. He recalls his days as a truck driver in the 1950s, working for a company that transports meat. Through a chance encounter at a gas station, he meets Russell Bufalino, a prominent mobster, who takes a liking to Sheeran's personality and work ethic. Russell starts involving Sheeran in small-time criminal activities. As Sheeran's relationship with Russell deepens, he becomes more integrated into the world of organized crime. He carries out various tasks for Russell and his associates, including violent acts and executions. Sheeran's loyalty and efficiency earn him respect and trust within the Mafia circles.

During this time, Sheeran also meets and befriends Jimmy Hoffa, the influential leader of the International Brotherhood of Teamsters. Sheeran becomes a close confidant of Hoffa, acting as a mediator between him and the Mafia. Sheeran helps Hoffa with political connections and uses his influence to ensure Hoffa's interests are protected.

However, tensions begin to rise within the Mafia, as Hoffa's confrontational style and clashes with other mob bosses create rifts. Sheeran finds himself torn between his loyalty to Russell and his friendship with Hoffa. As the power struggles escalate, Sheeran becomes increasingly involved in illegal activities, including assassinations and cover-ups.

The film spans several decades, depicting key historical events such as the Bay of Pigs Invasion and the Kennedy assassination, all of which have indirect or direct impacts on Sheeran's life and the criminal underworld.The central conflict escalates when Hoffa's relationship with the Mafia deteriorates, leading to threats and attempts on his life. Sheeran

finds himself caught in the middle, torn between his allegiance to Russell and his loyalty to Hoffa. Ultimately, Hoffa goes missing in 1975, and Sheeran is suspected of being involved in his disappearance. As Sheeran grows older, he reflects on his past actions and the consequences they have had on his life. He grapples with guilt and remorse, particularly over his role in Hoffa's fate. In the end, Sheeran is left alone, haunted by memories of his criminal past and the price of his loyalty to the Mafia.

"The Irishman" is a sprawling epic that explores themes of loyalty, betrayal, power, and the human cost of a life lived in crime. It offers a complex and introspective look at the world of organized crime and the individuals who inhabit it.

Discourse on Power Dynamics

Deepfake technology in "The Irishman" gives the filmmakers power over the actors' appearances, allowing them to portray characters at various ages.This power dynamic influences how characters are represented and perceived, impacting the narrative's authenticity and emotional resonance..Deepfake technology allows the film to manipulate the appearance of actors, portraying them at different ages throughout the story. This manipulation of visuals mirrors the manipulation of power and narratives within the organized crime world depicted in the film. Characters like Frank Sheeran gain and lose power over time, and the digital de-aging reflects these shifts in their roles and influence within the Mafia.

The use of deepfake technology blurs the line between perception and reality, much like the characters' manipulations within the criminal underworld. Characters project certain images of themselves to gain power and influence, and the deepfake technology reinforces this theme by altering the perception of the actors' ages. This raises questions about how power is constructed through image and perception in both the film's world and real-life contexts.

Deepfake technology in "The Irishman" also reflects themes of control and authority. The characters at the top of the Mafia hierarchy, such as Russell Bufalino, exert control over others, shaping their actions and decisions. Similarly, the use of deepfake technology gives filmmakers control over the appearance of actors, allowing them to craft a narrative that spans decades and reinforces the power dynamics at play.

The adoption of deepfake technology in filmmaking represents a technological advancement that empowers filmmakers to tell stories in new and innovative ways. This parallels the theme of power dynamics within "The Irishman," where characters use various means, including technological advancements like guns and phones, to exert their influence and control over others. The use of deepfake technology raises ethical questions about the manipulation of images and the potential for misleading representations. Similarly, the characters in "The Irishman" engage in morally ambiguous actions to maintain power, prompting viewers to consider the ethical implications of power dynamics in both the film and real life.

However, the use of deepfake technology in "The Irishman" adds layers of complexity to the film's exploration of power dynamics, perception versus reality, control, technological advancements, and ethical considerations. It intertwines with the thematic elements of the story, highlighting how advancements in technology can intersect with and reflect broader themes within the narrative.

The film portrays the power struggle within the Italian-American Mafia, focusing on figures like Russell Bufalino and Jimmy Hoffa. Bufalino, a mob boss, exerts control over Frank

Sheeran, the protagonist, highlighting the hierarchical structure of organized crime. Hoffa, on the other hand, represents a challenge to traditional mob power due to his influence in the labor movement. The Mafia's ability to influence politicians and law enforcement demonstrates the blurred lines between legal and illegal power. Characters like Bufalino showcase how organized crime can manipulate political figures, highlighting the corruption that can arise when powerful interests intersect. Frank Sheeran's loyalty to Bufalino and Hoffa is constantly tested against his own ambitions and desires. This internal power struggle reflects the complexities of loyalty and self-interest within criminal organizations.

Throughout the film, violence is portrayed as a means of exerting power and maintaining control. Characters use intimidation and murder to eliminate threats and enforce their authority, showcasing the brutal nature of power dynamics in criminal enterprises. As the characters age, their power dynamics evolve. The film explores how aging leaders like Bufalino and Hoffa navigate their diminishing influence, highlighting the inevitable decline of power and the challenges of maintaining control as one grows older.

The film "The Irishman" provides a nuanced exploration of power dynamics, showing how they manifest in various aspects of life, from organized crime to politics to personal relationships. It portrays power as a multifaceted and often destructive force that shapes the lives of its characters in profound ways.

Discourse on Ideological Implications

The use of deepfake technology reflects societal ideals of youthfulness and glamour, particularly in Hollywood cinema where aging actors are often digitally altered to maintain their appeal. The Irishman" utilizes deepfake technology in a groundbreaking manner, digitally de-aging its actors to portray characters across several decades. This usage of deepfake technology raises several ideological implications:

Deepfake technology challenges traditional notions of authenticity in filmmaking. While it allows for realistic depictions of characters across different ages, it also blurs the line between reality and fiction. This raises questions about the representation of historical events and figures, as viewers may struggle to differentiate between digitally altered footage and authentic portrayals. The use of deepfake technology in a film like "The Irishman," which is based on real events and historical figures, raises ethical concerns about historical revisionism. By digitally altering the appearance of actors, the film presents a version of reality that may not align with historical accuracy. This challenges viewers to critically assess the authenticity of the narrative presented.

Deepfake technology has the potential to redefine performance in films. Actors can now portray characters at different ages without the need for extensive makeup or casting multiple actors. However, this also raises questions about the identity of actors and the value of their physical performances. It challenges traditional notions of aging and performance in the film industry.

The use of deepfake technology also highlights the potential for the manipulation of reality in media and entertainment. As deepfakes become more sophisticated, there is a risk that they could be used to create false narratives or misleading content. This raises concerns about the impact of technology on truth and trust in media.

The adoption of deepfake technology in filmmaking reflects broader cultural shifts and advancements in digital artistry. It opens up new possibilities for storytelling and visual

expression but also raises questions about the role of technology in shaping artistic vision and creative integrity.

Nevertheless, the usage of deepfake technology in "The Irishman" carries significant ideological implications related to authenticity, historical representation, ethical considerations, performance in cinema, manipulation of reality, and cultural/artistic impacts. It prompts discussions about the intersection of technology, storytelling, and ethics in the film industry.

Discourse on Social Context

The film's use of deepfake technology to de-age actors raises questions about aging and identity in society. In a culture obsessed with youthfulness and appearances, the ability to digitally alter one's age challenges traditional notions of aging and the importance placed on physical appearance. This reflects broader social anxieties and desires surrounding youth and beauty.

"The Irishman" is based on real events and historical figures, and the use of deepfake technology to portray these characters at different ages raises questions about historical accuracy and revisionism. It prompts viewers to consider how technology can reshape our understanding of the past and the stories we construct around historical events. The adoption of deepfake technology in filmmaking represents a broader trend of technological advancements and their ethical implications. Deepfake technology can be used for entertainment purposes, as seen in "The Irishman," but it also raises concerns about its potential misuse, such as creating fake news or manipulating political narratives. This reflects society's ongoing struggle to navigate the ethical dilemmas posed by rapidly advancing technologies.

The use of deepfake technology blurs the line between media representation and reality. In "The Irishman," viewers are presented with digitally altered images of actors, challenging their perceptions of what is real and what is constructed. This reflects broader societal concerns about the authenticity of media representations and the impact of digital manipulation on our understanding of truth. "The Irishman" showcases the evolving role of visual effects in cinema and popular culture. Deepfake technology has the potential to revolutionize filmmaking by allowing filmmakers to depict characters at different ages without relying on makeup or multiple actors. This reflects broader shifts in how we create and consume media, highlighting the growing influence of technology on storytelling and visual aesthetics.

"The Irishman" uses deepfake technology to engage with social and cultural themes such as aging, historical representation, technological advancements, media authenticity, and the impact of visual effects on storytelling. It prompts viewers to critically examine the intersection of technology, art, and society, raising important questions about identity, ethics, and the nature of reality in a digital age..

Discourse on Narrative Impact

One of the most noticeable narrative impacts of deepfake technology in "The Irishman" is its ability to seamlessly transition characters across different time periods. This allowed the film to span several decades in the lives of its characters without needing multiple actors or extensive makeup. The narrative flow benefited from this smooth transition, as it enabled a cohesive and continuous storytelling experience. Deepfake technology played a crucial role

in portraying the aging and development of characters such as Frank Sheeran (played by Robert De Niro) and Russell Bufalino (played by Joe Pesci). The visual depiction of these characters at different stages of their lives contributed to their overall development, showing how time and experience shaped their personalities, motivations, and relationships.

By digitally de-aging actors, "The Irishman" aimed to achieve a level of historical accuracy and realism in its portrayal of real-life events and figures. The use of deepfake technology helped create a sense of authenticity, immersing viewers in the historical context of organized crime and labor union politics during the mid-20th century. The narrative impact of deepfake technology extended to the emotional resonance of the film. Seeing familiar actors portrayed at different ages added depth to their performances and allowed for more nuanced emotional storytelling. For example, viewers could witness the gradual changes in Frank Sheeran's demeanor and internal conflicts as he aged, which contributed to the film's emotional depth.

Beyond its narrative impact, the use of deepfake technology in "The Irishman" represented a technical achievement and innovation in filmmaking. It showcased the capabilities of visual effects to enhance storytelling and expand the creative possibilities of cinema, setting a new standard for how aging characters can be portrayed on screen. However, it's worth noting that the use of deepfake technology also sparked discussions and debates about its ethical implications, historical accuracy, and potential drawbacks. Some critics raised concerns about the uncanny valley effect or the risk of relying too heavily on digital manipulation at the expense of traditional acting techniques. In summary, deepfake technology had a profound narrative impact on "The Irishman" by facilitating seamless time transitions, enhancing character aging and development, improving historical accuracy, increasing emotional engagement, and showcasing technical innovation in filmmaking.

Conclusion

The study explored the ethical and artistic dilemmas surrounding deepfake technology in the film "The Irishman" and has shed light on the complex interplay between technological innovation, artistic expression, and ethical considerations in filmmaking. The use of AI-generated performances to depict characters at different ages has undoubtedly pushed the boundaries of filmmaking and challenged traditional methods of portraying aging characters on screen. However, this innovation has also raised profound questions about artistic integrity, historical accuracy, and the ethical implications of digital manipulation in films.

On one hand, the seamless integration of deepfake technology in "The Irishman" has allowed for a more immersive and authentic narrative experience, enabling actors to portray characters across multiple decades with remarkable realism. This has expanded the possibilities for filmmakers to explore complex narratives and themes, showcasing the potential of technology to enhance artistic expression and engage audiences in new ways.

On the other hand, the reliance on AI-generated performances has sparked debates about the preservation of artistic integrity and the authenticity of human performances. The use of deepfake technology raises concerns about the potential commodification of actors' identities, the blurring of lines between reality and fiction, and the risk of eroding trust in the authenticity of cinematic representations.

Furthermore, the ethical implications of deepfake technology extend beyond artistic concerns to encompass broader societal issues such as privacy, consent, and the potential for misuse or manipulation of digital content. As deepfake technology continues to evolve, filmmakers, audiences, and policymakers must grapple with these complex ethical challenges and ensure

that the use of AI-generated performances in film upholds principles of transparency, accountability, and respect for human dignity. The impact of AI-generated performances in "The Irishman" serves as a thought-provoking case study, highlighting the need for ongoing dialogue, critical reflection, and ethical guidelines to navigate the evolving landscape of digital manipulation in film and preserve the integrity of artistic expression.

Recommendations

The study therefore recommends the following;

1. Filmmakers are encouraged to develop and implement clear ethical guidelines for the use of deepfake technology in filmmaking. These guidelines should address issues such as consent, transparency, protection of actors' rights, and responsible use of AI-generated performances to ensure ethical standards are upheld.
2. Conducting research on audience perception and reactions to AI-generated performances should be carried out by filmmakers, researchers and policymakers. Understanding how viewers interpret and engage with deepfake technology can inform ethical decision-making and storytelling strategies in future projects.
3. Collaboration should be encouraged between filmmakers, technologists, ethicists, and legal experts to navigate the ethical and legal complexities of deepfake technology. A multidisciplinary approach can foster dialogue, identify potential risks, and develop best practices for responsible use of AI in filmmaking.
4. There should be awareness and education about deepfake technology and its implications within the film industry and among the general public. This would promote discussions, workshops, and educational resources to enhance understanding of the ethical considerations and societal impact of digital manipulation in media.
5. Filmmakers and relevant stakeholders are encouraged to emphasize transparency and accountability in the production and marketing of films that use deepfake technology. Filmmakers should clearly disclose the use of AI-generated performances, provide context to audiences, and engage in transparent communication about the methods and intentions behind digital alterations.
6. Advocating for the development of legal frameworks and regulations that address the ethical challenges posed by deepfake technology in filmmaking should be encouraged. Filmmakers should collaborate with policymakers to establish guidelines for intellectual property rights, privacy protection, and digital content manipulation in the film industry.
7. There should be ongoing research, reflections, and dialogues on the ethical and artistic implications of deepfake technology in films. It would help foster a culture of critical inquiry, innovation, and responsible storytelling that considers the broader societal impact of digital advancements in media production.

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