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The organic drive and reflection of AIGC image creation on the video industry

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Abstract. The rapid development of Artificial Intelligence (AI) technology has propelled AIGC (Artificial Intelligence Generated Content) technology to become a key driving force in the field of video creation. This represents not only an innovation in creative thinking but also a reshaping of the industrial ecosystem. This paper explores the multi-dimensional impacts of AIGC on the video industry by analyzing its role in simplifying the video industry chain and its decentralized creation model that shifts the narrative subject. The study finds that AIGC has clear advantages in enhancing creative efficiency, reducing costs, and enriching content diversity. At the same time, the potential challenges arising from its deep integration are discussed, with the paper offering theoretical support and practical references for the sustainable development of the video industry, particularly in terms of copyright, ethics, artistic innovation, and employment.

Keywords: AIGC image creation, video industry, creative efficiency, ethical challenges, sustainable development

1. Introduction

With the sweeping wave of digitization, the video industry, as a key pillar in the contemporary cultural and entertainment sector, is undergoing unprecedented transformations. Artificial Intelligence Generated Content (AIGC), with its efficient content production model, has gradually become the core driving force behind innovations in video creation, reshaping the ecosystem of the video industry.

In 2023, the market size of the online audio-visual industry exceeded 1.15 trillion yuan for the first time. Short videos, as the core growth engine, have seen continuous increases in both user scale and market value. By the end of 2023, the number of online video users in China had reached 1.074 billion, with a coverage rate of 98.3%. These figures indicate that video content occupies a significant position in the daily lives of the general public.

In the field of content production, the video industry is transitioning from a traditional centralized and mass-market model to a more vertical and segmented approach. The rise of UGC (User Generated Content) and PGC (Professional Generated Content) models has further enriched the diversity of the content ecosystem. Meanwhile, AIGC technology, through core techniques such as Natural Language Processing (NLP), Generative Adversarial Networks (GAN), and Transformer architecture, has enabled the active generation of various types of content, including text, images, audio, and video. This technology has driven the intelligentization of scriptwriting, video generation, and special effects production, significantly enhancing content production efficiency. AIGC technology, through multimodal fusion and automated generation, has lowered the cost of video production, providing creators with more creative space and inspiration. Additionally, the high-speed, low-latency characteristics of 5G technology have made real-time interaction and high-definition transmission of video content possible, further promoting the development of immersive experiences.

In the future, with the deeper application of AIGC, AI-generated content will play an even more critical role in the video industry, driving the industrialization and automation of content production. Simultaneously, the integration of VR/AR technologies will offer users a more immersive viewing experience, and users will also become participants in content creation at another level. However, the content generation and adaptation brought by AIGC technology have raised copyright disputes and ethical issues. How to protect original content and the rights of creators, as well as how to address the "human-machine relationship," have become urgent challenges. These challenges not only relate to the sustainable development of the video industry but also impact the healthy ecosystem of the entire cultural industry. This paper will explore, based on the current application of AIGC technology in image creation, how it drives the transformation and development of the video industry from the perspectives

of content ecology, video industry chain, and industry opportunities, and provide references for the sustainable development of the industry from the interdisciplinary integration and multi-field collaboration dimension.

2. AIGC technology: From tool to subjective creative revolution

Film, as an art form based on film stock, has long been grounded in the aesthetic and narrative logic of "film as cinema." However, the rise of digital technology has completely transformed this framework. From its early role as an auxiliary tool for special effects to its full replacement of film stock in 2011, digital technology has reshaped the material foundation and aesthetic logic of cinema. Image creation has evolved from mechanical to digital, and now to virtual.

The involvement of Artificial Intelligence (AI) technology today has elevated image creation to a higher level. The key to AI development lies in data, algorithms, computing power, and application scenarios, with data as the foundation. The technological logic of AI is to transform real-world problems into computable ones, and computational aesthetics is the core of AI's aesthetic approach [1]. In its early stages, AIGC (Artificial Intelligence Generated Content) was merely an auxiliary tool for human image creation. However, with the emergence of deep learning, Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), and diffusion models, the capabilities of AIGC have undergone a qualitative leap. GANs, through the "battle of wits and skills" between the generator and the discriminator, can generate realistic images. Diffusion models, through the process of "adding noise—removing noise," generate high-quality images and videos. These technologies have allowed AIGC to move from simple, tool-based applications into more complex creative fields.

Since the late 1970s, when Hollywood director George Lucas first employed Computer-Generated Imagery (CGI) in his film Star Wars, a technological revolution driven by artificial intelligence has unfolded. Today, AIGC has permeated various areas, including scriptwriting, special effects production, sound synthesis, and more, with widespread applications. The advancement of this technology not only drives technological innovation in the film and television industry but also brings about profound changes in content creation methods, work efficiency, and information transmission. For example, Huace Film & TV's "Youfeng" large model uses intelligent evaluation and optimization of scripts, reducing script assessment time from several days to just five minutes, significantly improving creative efficiency. In the films Fox Demon Little Matchmaker and The Dream of Return, AI technology enabled green-screen keying and virtual filming, reducing production costs and enhancing visual effects. The movie Moonwalkers generated complex scenes and special effect shots through artificial intelligence, creating highly realistic imagery with a single command. In addition, Xinhua News Agency's short film Under the Bridge used AI to create video soundtracks that matched the plot and characters' emotions, showcasing AIGC's value in sound synthesis. These cases illustrate that AIGC technology has gradually evolved from being a simple auxiliary tool to becoming a core creative force.

In recent years, the emergence of multimodal large models has provided even stronger support for AIGC in image creation. These models can handle multiple types of data, such as text, images, and audio, to generate high-quality content and even complete complex creative tasks independently. In 2024, the domestic visual generation large model Keling AI collaborated with several directors to create nine AIGC film short films, achieving effects that traditional filming could hardly accomplish through AI-generated dynamics and narrative rhythm. These practices demonstrate that AIGC technology not only drives technological innovation in the video industry but also leads to a profound transformation in creative concepts and roles, shifting from a simple auxiliary tool to a force with creative subjectivity.

3. Intelligent engine: AIGC technology propels new transformation in the video industry

In February 2024, OpenAI released the text-to-video model Sora, marking a "GPT-3" moment in the field of video generation and signaling a new phase for AIGC in this domain. Sora can generate high-fidelity videos up to one minute in length, simulate complex physical dynamics, process multi-character scenes, and switch between multiple camera angles. This technological breakthrough not only demonstrates AIGC's potential as a new productive force but also transforms artificial intelligence from a mere tool into a creative "director," opening up new possibilities for video creation. In its report, the Kezi Guangnian Think Tank proposed the concept of the "AI Creation Era," noting that "AIGC video generation is about to usher in the AI Creation Era, and reshaping the video industry chain is just the first step."

3.1. Flattening the production chain to enhance creation efficiency

AIGC has now become an indispensable driving force in the video industry chain, with its most prominent and widely used function being the rapid generation of high-quality special effects scenes and automated keying technology. This reduces the time required for manually building various scenes or labor-intensive post-production editing, significantly improving both creation efficiency and quality. It can also generate multiple versions of images according to market demands, fulfilling the needs of different video genres and styles, without the need for substantial effort in data integration and distribution. This greatly saves manpower, material resources, and time costs. The "flattening" of the video production chain consolidates elements such as art direction, video generation, editing, post-production, and sound/music into one cohesive process.

For example, the much-discussed sci-fi film Everything Everywhere All at Once serves as a typical case. Its visual effects team collaborated with Runway, using AI tools to generate a Japanese anime-style background that differed from the film's own style, incorporating elements such as shattered glass to provide a striking visual impact. This was done to convey the rapid interdimensional movement of the protagonist, played by Michelle Yeoh. In conventional filmmaking, this effect would require actors to collaborate with the cinematographer to capture dynamic shots in different settings, a labor-intensive process that does not achieve the same clear results as the one-click AI-generated effect. Furthermore, this technology, which transforms real-world scenes into cartoon or cut-out styles, enhanced the overall visual diversity and fantasy of the film, allowing the wildly imaginative content of Everything Everywhere All at Once to be vividly portrayed through visual imagery.

Figure 1. Xiu Lian's finger evolves into the hot dog universe, image source: internet

At the same time, Runway's Green Screen tool offers efficient keying functionality, quickly removing backgrounds and repairing images. For example, in the "Hot Dog Hand" universe (see Figure 1), AI technology helped the team quickly generate and switch backgrounds while seamlessly integrating the actors' movements with the new background. This ensured the continuity and sci-fi feel of the scene. Director and screenwriter Evan Halleck noted in an interview that "just a few clicks can save several hours, which can then be used to try three or four different effects, improving the film further." This demonstrates that, in the early stages of image creation, AI technology can quickly construct character prototypes and scene concept images based on the creator's plot summary and keywords, utilizing multimodal generation technology to effectively integrate and classify reference materials. During the shooting phase, the deep integration of AI and virtual filming technologies enables high-precision real-time keying of shooting backgrounds, significantly enhancing shooting efficiency and quality [2].

3.2. Initiating human-computer interaction, breaking creative boundaries

AIGC technology not only assists creators in script brainstorming and creative guidance, but also allows for one-click generation of short video content, enabling independent video creation. This changes the traditional creative paradigm, ushering in a new "prompt-interactive" paradigm. Human directors use AIGC technology to inspire more creative ideas and explore greater creative possibilities. Creators can call upon AI models to explore the infinite potential of each shot. This lowers the creative threshold, and in the future, "everyone could become a creator."

The "human potential" has driven the century-long discourse in film art, where humans constantly connect with the surrounding world, with sensitivity prompting new forms of life. The evolution of film art is rooted in human emotional power. Since the emergence of large models such as text-to-video AI, image creators have gradually begun handing over creative control to artificial intelligence [3]. When human subjective emotions and AI's technical capabilities are organically combined, the video industry will be ignited with endless possibilities.

Figure 2. Character images generated using AIGC technology in the fantasy short drama Shan Hai Qi Jing: Pi Bo Zhan Lang, image source: internet

In the AIGC fantasy short drama Shan Hai Qi Jing: Pi Bo Zhan Lang, AIGC technology was used to reinterpret the intricate texts of the Classic of Mountains and Seas, creating a variety of vividly lifelike images of mythical beasts like the Kunpeng (see Figure 2), helping creators break free from conventional thinking patterns and achieve unprecedented visual effects. In The Wandering Earth 2, much of the preview footage was created by AIGC technology, demonstrating its practical value in both creation and narrative, while greatly reducing the demand for specialized resources. Meanwhile, in the highly industrialized film and television industry, non-professional creators have successfully entered the forefront of the industry through the new "AI collaborative creation" model. This phenomenon reveals that AI technology offers independent artists new opportunities to compete with capital forces, promoting the diversification of the creative ecosystem [4].

3.3. Reshaping user roles and creating diverse experiences

With the continuous application of AIGC technology, video users will also become native inhabitants of AI. The role of users is gradually shifting from traditional passive consumers to a "trinity" entity that combines producers, consumers, and owners. One of the core advantages of AIGC technology is its ability to generate personalized, customized video content based on user preferences, historical behaviors, and real-time feedback, precisely meeting user needs and providing a deeply personalized interactive experience. At the same time, utilizing 5G, VR/AR technology enables immersive interactive video creation, allowing users to become active participants in video production, making interactive cloud cinemas possible.

Director Xu Bing's Infinite Film of Artificial Intelligence can be seen as an example of audience-led interactive creation. Through the platform, viewers can directly enter the movie creation interface, choose the movie genre according to their preferences, and generate movie clips in real time by inputting keywords or sentence instructions. This creates unlimited possibilities for video creation. This decentralized generation model enables interactive dialogue while simultaneously making personalized, customized video adjustments and creation, achieving a deep integration of human-machine interaction and audience participation, and providing new ideas and directions for future video creation.

AI's intervention in video production has transformed passive viewers into "productive viewers," who combine production and consumption. This highlights the concept of "media reception," which focuses on the behavior and response of the audience when receiving media information, treating it as a cultural and aesthetic process and emphasizing the subjectivity and agency of the audience in the cultural and aesthetic process. [5] In the future, video content will no longer be limited to linear realities and fictions, but will offer users richer and more immersive experiences through multimodal fusion and real-time interaction. Meanwhile, with AIGC's widespread application in other fields such as education, gaming, and entertainment, even more diverse immersive experiences will be created for users.

3.4. Optimizing the industry chain and enhancing the video ecosystem

Under the influence of AIGC technology, the restructured video industry chain has been efficiently integrated into three core stages: creative generation, video generation, and distribution and broadcasting. This transformation not only simplifies the traditionally complex video production process but also significantly improves the overall efficiency of the industry chain. Additionally, it drives ecological innovation and business model transformation in the video industry.

The difficulty of the video generation production stage has been reduced, which raises the importance of the creative generation and distribution and broadcasting stages. On the creative generation level, AIGC technology offers unprecedented freedom and efficiency. High-quality stories and scripts will become the core competitiveness of the video industry. Traditional IP copyrights will also achieve integrated production, transaction, and development, no longer requiring cumbersome transactions between people but allowing creators and technology platforms to directly upload content, grant copyrights, and proceed with publishing and distribution. The application of AIGC technology in the distribution and broadcasting stages offers new opportunities for the spread and promotion of video content. Through intelligent recommendation systems, platforms can accurately push video content that meets users' needs based on their interests, behavior habits, and market trends. It is even possible to generate customized videos based on user data. This intelligent distribution model and personalized service effectively increase content exposure and allow real-time adjustment of marketing strategies based on user feedback, achieving precise marketing. Furthermore, AIGC technology can quickly generate promotional materials such as posters, supporting the efficient operation of promotional and broadcasting processes.

AIGC technology has also brought new business models to the video industry. For example, it can generate more attractive advertising videos, realizing innovation in advertising and marketing; cross-media and cross-industry collaboration and expansion with fields such as gaming, animation, e-commerce, and education allow for further market expansion, achieving a $1+1 \geqq 2$ effect. In conclusion, as AIGC technology continues to develop and expand its application scenarios, the video industry is expected to embrace a more diversified and efficient development landscape.

4. Challenges and dilemmas: A critical reflection on the hidden risks of AIGC in video creation

AIGC (Artificial Intelligence Generated Content) has undoubtedly brought great technological convenience and innovation to the video industry, unleashing unprecedented creative potential and effectively restructuring the industry ecosystem. However, alongside these immense benefits, various issues and challenges also arise. Over-reliance on artistic aesthetics has led to content homogenization, ethical and copyright issues related to the use of AIGC technology, and future concerns regarding entrepreneurial ecosystems and employment. These issues require critical and reflective thinking.

4.1. Lack of soul: Homogenization due to over-reliance on artistic aesthetics

As early as in the field of film and television production, André Bazin proposed that "cinema must be based on reality to achieve perfection." In his book Ontology of the Photographic Image, he further elaborated on the core concept that "there is consistency between the image and the object being filmed." The pursuit of realism in cinema has long been the goal and purpose of human image creation. However, with the advent of AI-generated content, the traditional notion of cinematic realism is being challenged. There is an urgent need to clarify the boundaries of "realism" in creative works, and doubts and reflections on the essence of cinematic art are beginning to emerge.

At the same time, as AIGC technology gradually takes the lead in creation, human directors have shifted from once meticulously controlling every aspect of scriptwriting, character setting, scene planning, shooting scheduling, and post-production to now simply inputting keywords or instructions to have AI assist in the process. Over time, this has led to a decline in creative thinking among directors. The stories conveyed through images are derived from the emotional connections between human development and the surrounding world. As human directors' thinking stagnates, their ability to innovate stories diminishes, and their deep thought processes become increasingly shallow, leading to the gradual disappearance of human artistic intuition. Additionally, since AI-generated content relies on massive data collection for learning, the resulting video content may become homogenized. While material wealth may continue to increase, the spiritual realm faces the risk of stagnation. Without the flourishing of human art, creators' creativity will slowly fade, leaving the audience without emotional resonance.

Therefore, it is essential to reconsider what type of "realism" is pursued in the post-image era. The realism sought in cinema is constructed from multiple dimensions, including "reproducible realism," which is based on the photographic technique of capturing physical space, "event realism," which accurately recounts actual events, and "psychological realism," which expresses the true emotions and feelings of individuals. [6] Thus, AIGC's approach to image authenticity depends on the purpose of creation. Furthermore, human directors must recognize that they still need to maintain a dominant role in soulful creation, engaging in deep thinking. In addition, the creative materials used in AIGC technology can be continuously enriched and expanded by incorporating more diverse data sources from different cultural backgrounds, time periods, and scenes.

4.2. Blurred boundaries: Ethical and copyright issues must be addressed

AI-generated content is produced by integrating and learning from data sources. While some of the original source materials may have been granted copyrights, the works generated by AIGC technology may closely resemble the original works, and in some cases, parts of the original materials may be directly used. The question of whether such generated content should be considered original remains ambiguous, which easily leads to copyright disputes. This has disrupted traditional creative practices and has heightened ethical concerns in the realm of AIGC creation. According to current legal regulations, the basic requirement for a work to have copyright is that it must involve human creativity. Since the content generated by AIGC technology is created by algorithms and models, whether it meets the standards to be recognized as a "work" with copyright remains controversial, and the division of rights between platforms and creators is also unclear. In September 2024, a case involving the AI infringement of the Ultraman character image was concluded. The defendant's company provided services that allowed users to generate various versions of Ultraman artwork based on instructions, which the plaintiff argued infringed upon their copyright. The court ruled that the defendant was a provider of generative AI services, and it determined that, given the characteristics of AIGC technology, infringement liability should be categorized and layered according to different application scenarios. The final ruling stated that the defendant's actions constituted infringement on the plaintiff's reproduction and adaptation rights, and the defendant was required to cease the infringement and compensate the plaintiff. This case highlights the need to avoid highly similar content when using AI technology and provides a framework for resolving similar disputes in the future.

4.3. Ecological and employment issues in creation

The convenience of AIGC has significantly lowered the barriers to entry in creative production, allowing individuals and companies to mass-produce video content, thereby creating a considerable impact on the original creative ecosystem. Although the volume of video production has increased, the quality has become uneven, with issues such as choppy visuals, stiff character movements, and narrative discontinuities. The mass generation of videos may also lead to a loss of soul in the content, as there is no longer a unique aesthetic or humanistic sentiment derived from a human perspective. Instead, the content is generated based on

data and models, impacting the audience's viewing experience. Moreover, there is the risk of deep forgery and the spread of false information. AIGC technology has significantly lowered the threshold for generating fake content. With AI, even non-professionals can easily replace the voices and lip movements of characters in original videos or create highly realistic fake video photos.

The impact on the employment market is also significant. The development of AIGC has changed the employment landscape in the video industry, as content that previously required several people or even a team to produce can now be made by just one or two individuals. This has led to forced unemployment or career shifts for many workers in the industry. Furthermore, AIGC's widespread use has shifted the role of video professionals from creators to supervisors, with their tasks reduced to simply giving instructions for creation, limiting their career development and deeply affecting the creative ecosystem in the video industry.

Looking forward, there is a need to accelerate the development of advanced detection technologies, such as the multi-modal forgery detection framework FakeShield, and strengthen the relevant legal and regulatory frameworks. To address the employment market's impact, support for workers transitioning into roles such as planners and creators should be provided, helping them enhance their professional competitiveness by learning new skills, such as AI ethics and data labeling, to meet new employment demands.

5. Conclusion

With the continuous development of technology, image creation has evolved from traditional mechanical production to intelligent creation. Technological transformation has also brought subtle changes to the subject of image creation, with human directors and intelligent directors working together becoming the future development direction of video industry creation. When the precise algorithms of digital intelligence intersect with the brilliant halo of human intuition, a new multi-dimensional experience of blending reality and imagination will be constructed. The organic drive of AIGC technology in the video industry not only improves creative efficiency and content quality but also facilitates cross-domain collaboration, reshaping the entire video industry ecosystem. However, it also requires careful consideration of potential ethical dilemmas, sustainability, and other complex issues.

In the future, the sustainable development of the video industry will require a balance between technological empowerment and humanistic care. On the one hand, continuous technological progress will bring more possibilities for video creation and further expand the boundaries of the video industry; on the other hand, the improvement of ethical and legal frameworks is crucial to ensuring the proper application of technology. Measures such as clarifying copyright ownership, regulating content generation, and combating the spread of false information will provide safeguards for the healthy development of the video industry. Through the collaborative development of technology, law, ethics, and the industry, it is expected that a healthier, more sustainable, and innovative video industry ecosystem can be built in the AIGC era. This is not only an inevitable choice for the development of the video industry itself but also a crucial pathway for promoting the prosperity of the cultural industry and advancing social and cultural progress.

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