

A New Paradigm for Contemporary Film and Television Characters Design in the Context of Artificial Intelligence

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Abstract. This paper delves into the evolution of Artificial Intelligence Generated Content (AIGC) within the realm of contemporary digital art, and scrutinizes its implications on artistic modalities and production. It delineates the genesis and progression of AIGC technology, offering an analysis of its extensive applications on the design of cinematic character. The paper acknowledges the latent capabilities of AIGC in the domain of character design, and highlighting the significance of the fusion of AI technology and humanities in the realm of artistic production. In conclusion, delineates the prospective opportunities and risks associated with the future application of AIGC technology in the field of character design and offer a critical analysis of its implications for the creative industry, which is maintaining a reverent and contemplative stance towards traditional art while pursuing of technological innovation.

Keywords: AIGC; Cinematic character; Design; Traditional art.

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1. Development of the Artificial Intelligence Generated Content (AIGC)

Andreas Kaplan and Michael Haenlein take as Artificial Intelligence the ability of a system to correctly interpret external data, learn from that data and use the knowledge to achieve specific goals and tasks through flexible adaptation. The ability of a system to correctly interpret external data, learn from that data, and use that knowledge to achieve specific goals flexibly. Nowadays, AI has been able to organically combine the theories of various disciplines such as mathematics, computer science, psychology, etc., to deeply learn and simulate human thinking behaviours and processes, to solve various kinds of difficult problems, and to achieve human-computer interactions, etc., as a way to better serve the human society, including robotics, language recognition, image recognition, natural language processing, and expert systems.

Before the birth of creative AI, AI means a kind of behaviours, replacing humans to complete repetitive and complex work. However, in today's ever-advancing digital technology, AI has mostly been able to understand human semantics in its entirety, solve many problems that human brainpower cannot solve, and even create art. Generative Artificial Intelligence - AIGC (Artificial Intelligence Generated Content) - is a technical approach to AI based on generative adversarial networks, large pre-trained models, and other techniques to pre-train various types of large models by looking for various patterns in existing data, Generative Adversarial Networks (GAN) and other methods to automatically generate content, including articles, code, and even images, music, videos, etc. . Compared with past AI technologies, AIGC works mainly based on neural network models, learning language structure, text style and content features through a large amount of training data. AIGC is able to quickly generate corresponding text, images, audio and so on by users' input of keywords, descriptions, or samples.

On 30th May 2014, Microsoft Asia Internet Engineering Institute launched the artificial intelligence chatbot Xiaobing in China. Its research and development goal is to establish an

emotional computing framework, and through the integrated use of algorithms, cloud computing and big data, adopt a generational upgrading approach to gradually form a complete artificial intelligence system that develops in the direction of EQ. Take the artificial intelligence product Microsoft Xiao Bing developed by Microsoft as an example, Microsoft Xiao Bing is based on artificial intelligence technology, integrating multiple fields such as natural language processing, computer speech, computer vision and artificial intelligence content generation, and is used in a variety of fields, including as an intelligent assistant, a social dialogue robot, and a content creator, etc. In 2017, Microsoft's artificial intelligence Xiaobing published a collection of poems named The Sunshine Lost the Glass Window, as a collection of poems created by AI, it shows how AI extracts patterns, language and emotions from a large number of human works through deep and iterative learning, and then generates works with a certain literary value.

In 2019, Xiao Bing, the artificial intelligence girl painter, held her first solo painting works exhibition at the Art Museum of the Central Academy of Fine Arts. The AI artist Xiao Bing spent 22 months studying the works of 236 famous human painters in the art history, then it can be inspired by the text or other sources of creativity, independently complete the work of art, whether in terms of expressiveness or details of the picture, Xiao Bing had achieved a level of artistic proficiency that closely approximates that of a professional artist, demonstrating the remarkable capabilities of Artificial Intelligence in the domain of visual art creation.

Microsoft Xiao Bing 's work reflects the results of a certain stage of AI in art creation, and today, generative AI has penetrated into the general public, and its threshold of use has been greatly reduced, so that many people can use AI tools to create pictures and even audio. In 2024, Open AI officially released the AI model Sora that can create realistic and imaginative scenes just from text. From the information released by Open AI, Sora has been able to generate coherent videos up to 60 seconds according to the prompt words. From the ChatGPT text generation function that initially came into the public's view in 2020 to the AI video editing technology of today's video generation software SORA, the boundaries of AIGC are still broadening, and the potential in the creative field will continue to be tapped.

2. The Fundamental Generation Principles and Characteristics of the Stable Diffusion Model

In the expansive realm of generative artificial intelligence art, Stable Diffusion as a groundbreaking innovation, charting a new avenue for artistic image creation. Rooted in diffusion processes theory, this model optimizes conventional pixel space operations by shifting them to operate within the latent space of pre-trained autoencoders. Its working principle can be encapsulated as an inverse construction process, transforming noise into imagery. Initially, Stable Diffusion introduces Gaussian noise to a blank canvas and, through a series of reverse diffusion steps, incrementally reduces this noise while concurrently guiding each iterative phase of the image towards meaningful visual content, informed by conditional inputs. This comprehensive procedure (Fig. 1), directs the denoising iterations within the latent space via the decoding of a foundational checkpoint (CKPT) large model in conjunction with text prompts, ultimately culminating in the conversion of noise into pixel images through the use of a Variational Autoencoder (VAE).

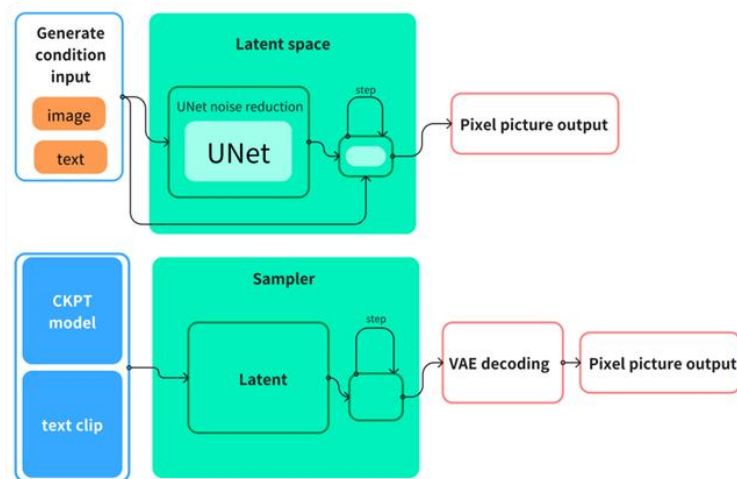


Fig. 1 the Basic Generation Mechanism of the Stable Diffusion Model

The crux of the Stable Diffusion model lies in its iterative optimization strategy during the diffusion process. Instead of spontaneously creating images *ex nihilo*, it employs a stepwise "decoding" of underlying image structures, with each phase refining details based on the learned distribution of images from previous stages. By leveraging the strengths of architectures such as Variational Autoencoders (VAEs) and Generative Adversarial Networks (GANs), alongside diffusion probability models, Stable Diffusion achieves a remarkable fusion of efficiency and high-quality image synthesis. This sophisticated integration not only accelerates the creative process but also enhances the aesthetic depth and diversity of the generated art, thereby pushing the frontiers of artistic expression in the digital age.

3. Changes in the Form of Film and Television Character Creation in the Era of Artificial Intelligence

The birth of AIGC brings a brand new paradigm for the creation and dissemination of film and television characters. Through deep learning of a large number of traditional art works, AIGC can not only simulate traditional art styles, but also create eye-catching visual experiences, injecting new vitality into the dissemination of film and television. In the process of creation, through the deep learning algorithm, AIGC can adjust the role in real time according to the feedback and participation of the audience. Relying on the computer hardware, cloud platform and network edge node computing, AIGC provides technical support of strong computing power, high precision and deep simulation for the creation of art, thus realising the efficient generation of art works. To a certain extent, AIGC has become an important part of artistic productivity.

It can be seen that the emergence of AIGC greatly improves the convenience of creation, and the technology uses a huge data set and advanced algorithms to deeply analyse art works, art history and theoretical knowledge, etc., and extracts creative elements and methods from a large number of past film and television works to provide film and television creators with a wide range of creative materials and creative inspiration, and AIGC can help character creators to explore and create diverse AIGC can help character creators explore and create diverse artistic styles. The Crow' created by computer artist Glenn Marshall won the Best Short Film Award at the 2022 Cannes Film Festival. The short film was generated by AIGC technology and created using OpenAI's CLIP, in which the form of the crow is constantly changing like a dancer, showing a barren but novel artistic style that inspired many viewers. art style, which inspired the viewing interest of many viewers (Fig. 2). It can be seen that by learning and imitating artworks from different periods and connecting traditional and modern art styles, AIGC can create a new art model and give creators a more unique expression.



Fig. 2 The Crow' in the short film

4. AIGC Empowers the Upgrade of Film and Television Roles

In the context of the digital era, the application of AIGC technology is also gradually changing the way of creation in the film and television character industry. Take Cili's participation in the performance of "Beneath the Inhuman" as an example, in 2023, Cili participated in the performance of the TV series 'Beneath the Inhuman' as a hyper-realistic digital human researched by the technology team of AliDaWenEntertainment, and successfully portrayed the image of 'Erzhuang', a double-ponytailed psychic girl who has lost all her limbs and relies on brainwaves to communicate with the outside world, and became the first digital actor to participate in a live-action drama series in China. He successfully portrayed 'Erjang', a two-pony-tailed girl who lost her limbs and relies on brain waves to communicate with the outside world, and became the first digital actor in China to participate in a live-action drama. It is evident that with the integration of AIGC, there will be more possibilities for the creation of film and television roles.

4.1 Character Concept Creation Stage

At the early stage of film and TV character conception, AIGC technology can provide a rich source of inspiration for character conception and accelerate the process of character establishment by deeply mining and analysing a wide range of cultural and artistic databases. At the same time, with its predictive model, AIGC provides an iterative design mechanism that allows the creative team to flexibly choose and optimise between multiple design options, ensuring the harmony and unity of the character and the overall narrative, and building a solid foundation for the integrity of the character.

For the creation of traditional film and TV characters, AIGC is able to analyse and integrate classical cultural elements, giving the characters novel visual expressions and deep cultural meanings. For example, the AI dancer Ruier, who performs with choreographer Yang Dance in the Henan Spring Festival Gala in 2024, takes the phoenix, an ancient Chinese legendary bird, as the main image element, and Ruier can be seen wearing a gorgeous phoenix-tailed dance dress and performing a digital role with the real dancers. Real dancers performed the digital dance programme 'Phoenix Dance in the Nine Heavens' together, which not only added artistic infectivity to the stage, but also allowed culture to be reshaped and reborn in digital images and virtual reality.

AIGC is also a powerful aid when it comes to portraying cutting-edge film and television characters with a strong sense of the future and technology. It integrates the latest technological trends and pop culture elements, and uses personalisation algorithms to inject unique character attributes into the character design, enhancing the uniqueness of the character. For example, AYAYI (Fig. 3), the first 'hyper-realistic digital person' in China in 2021, demonstrates foresight and a sense of science and technology in character concepts, and perfectly interprets the aesthetic needs of Generation Z in terms of aesthetics. Through the combination of real and virtual design concepts and high-intensity realism, AYAYI depicts a new image of the meta-universe for the

brand and its partners. AIGC is also able to create a new image for brands and partners in the meta-universe through the combination of real and virtual design concepts and high-intensity realism. In addition, AIGC is also able to make the characters become a medium to guide the audience to think deeply by touching on the issues of future society and technological advancement, such as the virtual beauty expert Liu Nightxi incubated by the team of Creative One Technology, whose team's work 'The Geomantic Mystery' embodies the thinking and imagination on the ethical issues of the future society. The integrated artificial intelligence and virtual reality technologies can further expand the boundaries of character expression, and strengthen the characters' sense of technology and innovative value.



Fig. 3 China's first 'hyper-realistic digital person', AYAYI.

4.2 Characterisation Stage

For the creation of film and television characters, the significance of the character through the 'act' to show the character is crucial, Engels wrote in the letter to Lassard: 'The character of a character is expressed not only in what he does, but also in how he does it.' Just as theatre studies follow the three elements of stage action include: what to do; why to do; and how to do. How to do, i.e. the way a character behaves, can naturally and effectively reflect a character's inner logic of thinking, and contains the character's naturally revealed deep-seated character traits. In the stage of character behaviour, AIGC technology can establish the language and behaviour system that matches the character of the animated character, dispersing the character's character traits in a variety of interactions and ensuring the logical rationality of the character's behaviours and dialogues. For example, the character Gogo in the 2023 micro-sketch 'The Goddess Grocery Store', Gogo is an 'actor' generated with the help of advanced AI technology. Unlike the previous digital people who relied on the appearance of real actors and were analysed, scanned and modelled

through CG technology, every detail of Gogo was independently generated by the AI, including behaviours, dialogues, etc., not only visually close to the character, but also in terms of the character's behaviour and dialogues. Every detail of Gogo is independently generated by AI, including behaviour, dialogue, etc., which is not only visually close to the real person, but also effectively participates in the advancement of the plot and character performance.

There are already a number of character AIs that can be used, such as Beta Character AI, launched in September 2022 by former Google AI developers Noam Shazeer and Daniel De Freitas, which allows users to create, interact with, and customise AI characters based on detailed information provided about the character (such as name, personality, background, and other characteristics), as well as a character dialogue intelligences based on the Generali Grand Model introduced by Aliyun in 2023, which enables anthropomorphic, scenario-based, multimodal dialogue and interaction capabilities by inputting basic information about the character and sample dialogues, as well as the ability to further supplement the character's information after the model has been generated. By customizing the dialogue content according to the character's personality and plot background, it can enhance the authenticity of character interaction, avoid the situation where the character's interaction in each scene relies solely on the character designer's imagination and thus behaves irrationally, deepen the audience's understanding of the character's psychological level, and promote the multilevel construction of the character's relationship in the animation, so as to enhance the attractiveness of the character and the audience's emotional resonance.

4.3 Film and Television Subsequent Dissemination Stage

From the aspect of character image and character traits for further exploration, AIGC technology is able to build digital IP for film and television characters through in-depth excavation and presentation of animation characters in the animation audience feedback session, using machine learning algorithms to accurately capture and mimic the character's core character elements such as language style, emotional changes, and behavioural patterns, to create digital images unique to the animation characters, e.g., *The Legend of Concubine Zhen Huan*, which was released by Shanmans Culture on the 11th anniversary of its broadcast. On the occasion of the 11th anniversary of the opening of the broadcast, Shanman Culture released the digital person Zhen Huan, which gives full play to the cross-border advantages of the classic IP, and brings fans of *The Legend of Zhen Huan* beyond the expectations of the sensory experience. These digital bodies not only visually maintain consistency with the characters, but more importantly, in the interactive communication, they can embody the characters' unique charisma and the story's emotions, and provide viewers with an interactive experience that transcends the boundaries of the screen, and is close to the real thing. This provides the audience with an interactive experience that transcends the boundaries of the screen and is close to reality.

Through this application of AIGC's digital persona, the characters are able to come to life in virtual events, social media interactions, and even customised trailers, which not only continues and expands the narrative, but also facilitates the viewer's deeper awareness and emotional connection to the characters. Through these interactions, viewers are able to understand the characters' backgrounds, motivations, and growth trajectories more comprehensively from different perspectives and contexts, which enhances the overall appeal of the story world and the viewer's sense of immersion. In addition, this interactive promotion strategy based on the character's personality can stimulate the creativity of the fan community, leading to a boom in user-generated content (UGC) and further expanding the social influence and cultural discussion of the anime.

5. The Impact of AIGC on Film and Television Creation

The development of technology often brings about far-reaching impacts and changes, and AIGC technology, as an important achievement in the field of science and technology, is particularly significant in its application and potential in the field of art creation. However, in terms of film and

television creation, how creators can make reasonable use of AIGC technology for creation instead of falling into abuse, and how to avoid being eliminated by the progress of the times, etc., is still a topic worthy of in-depth study and exploration by scholars and creators in related fields.

First of all, the main purpose of the learning simulation function of AIGC technology is still to provide new possibilities for film and television creation, rather than directly replacing film and television creators. Through advanced technologies such as deep learning and neural networks, AIGC can imitate the styles of many artists' works and provide more inspirations for creators, but the works generated based on big data can never exceed the aesthetic system and emotional value of human beings, and only through the full cooperation of creators and technology will the artistic creation in the AI era have more possibilities beyond the inherent framework. Taking the new cultural animation series 'Ode to a Thousand Autumns' launched by CCTV in February 2024 as an example, "Ode to a Thousand Autumns" is China's first AI animation series of literati video, which uses AI technology to restore and reproduce more than 200 poems in the language textbooks, and by combining traditional culture and modern animation technology, it lets the poems out of the textbooks come to the audience's eyes in the form of animation, and 'Ode to a Thousand Autumns' is an animation of the field of poetry. 'Ode to Poetry' is a new attempt to create animation in the field of poetry. Its innovative production method and theme selection, as well as the rhyme and beauty of poetry brought by the form of ink and Chinese style animation have brought a new research direction in the field of film and television animation.

Secondly, the progressive features of AIGC technology make film and television creation more innovative and forward-looking, and are able to give current film and television creation a more contemporary character. Through intelligent algorithms and big data analysis, it provides creators with more precise and in-depth creative guidance. Netflix released the experimental animated short film 'Dogs and Boys' in January 2023. The animation depicts a cosy scene between a young boy and a robotic dog, and the drawing work of the scene is mainly done by AI. However, the design of the characters and animal roles still retains the hand-drawn delicacy and vividness. In terms of picture performance, 'Dogs and Boys' shows a high production standard, the AIGC technology is quite outstanding in the drawing of animation scenes, and the overall drawing style blends very naturally, in addition, the story depicts the relationship between humans and machines, which together with the AIGC technology used in the animation itself creates an ingenious conceptual environment to arouse people's thinking about the relationship between humans and machines in the current era, which is exactly the This is a concrete demonstration of the significance of the AIGC era.

In addition, the emergence of AIGC has had a huge impact on the whole environment of art creation, triggering thoughts and discussions about originality and ownership. *Théâtre D'opéra Spatial*, also known as *Space Opera*, is a painting by game designer Jason Allen, which was generated by Allen using the AI drawing tool *Midjourney* and then touched up in *Photoshop*. In August 2022, an art fair in the US Colorado hosted an art fair, and *Space Opera* won the digital art category of the fair (Fig. 4). The event also led to many deeper discussions about the integration of art creation and technology, including whether human artists would be replaced by AI and whether high-skilled jobs would also be eliminated by AI, and the anxieties of the times about the new technology gradually festered.



Fig. 4 AI work 'Space Opera House

The current application of AIGC technology faces many challenges and risks. On the one hand, the problem of copyright protection of original works needs to be solved urgently, although AIGC technology can imitate and learn from art works, over-reliance on this technology is destined to lead to the lack of originality and frequent problems such as copyright disputes. Therefore, there is a need to strengthen the regulation and management of AIGC technology and formulate corresponding laws, regulations and policy measures to effectively protect the rights and interests of original creators. In 2019, Anna Jobin and other scholars have summarised a series of relevant ethical guidelines in Europe and the United States in accordance with the frequency, and summarised eleven principles that should be followed in the development of AI: transparency, justice and fairness, non-harmfulness, responsibility, privacy, interests, freedom and autonomy, trust, dignity, sustainability, and solidarity. This principle also applies to AIGC, which is popular in the field of film and television creation. Only in a creative environment where human beings and AI are on an equal footing with each other, the development of AIGC will not become unbalanced, and traditional art creators will not lose their creative incentives, so as to realise the unity of value between the tool and the creators.

6. Conclusion

In summary, the rapid development of generative artificial intelligence (AIGC) in the art field has demonstrated its great potential as an emerging artistic productivity, bringing new horizons to the art world. In the creation of film and television characters, AIGC uses a huge database to explore the essence of culture, integrates novel visual effects and deep cultural background into character design, enhances the three-dimensionality and vitality of the characters, and pushes the creation of film and television characters to a higher level of innovation and diversity.

Nevertheless, the application of AIGC technology in film and television character creation is also accompanied by originality, copyright and ethical challenges. Therefore, in practice, it is necessary to pay attention to the protection of intellectual property rights, carefully deal with the possible impact of AIGC on originality, and adhere to the ethical principles of artistic creation.

In the future, the film and television industry and academia should focus on the reasonable and creative application of AIGC in character creation, and ensure that technological advancement serves artistic expression while maintaining the ethical ecology of artistic creation through continuous research and practice. Under such a framework, the cooperation between AIGC and

traditional art creators is expected to open up a new era of respecting tradition and embracing innovation to promote the development of art, and bring unprecedented cultural and aesthetic experiences to audiences.

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