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Digital Art Creation under AIGC Technology Innovation: Multidimensional Challenges and Reflections on Design Practice, Creation Environment and Artistic Ecology

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Abstract

With the rapid development of science and technology, artificial intelligence generated content (AIGC) technology has gradually become a great help in the field of digital art creation. It not only changed the mode of traditional artistic creation, but also brought unprecedented multi-dimensional challenges and reflections to design practice, creative environment and artistic ecology. This paper will discuss these two aspects and discuss the opportunities and difficulties faced by digital art creation under the technical innovation of AIGC.

Keywords

AIGC, art design, artistic creation, multidimensional challenge

1. Introduction

1.1 The Definition and Development of AIGC Technology

AIGC, namely AI Generated Content, refers to the content generated by artificial intelligence technology. It is also considered as a new content production mode after PGC and UGC, and AI painting and AI writing all belong to the specific forms of AIGC. In 2022, the development speed of AIGC is amazing, and the iterative speed is exponential. Among them, the continuous improvement of deep learning model, the promotion of open source model, and the possibility of large-scale model exploration for commercialization have helped the rapid development of AIGC (Fang & Wei,2021） . Last year, the winning of artificial intelligence painting works and the appearance of super chat robot Chat GPT opened the prelude to the era of intelligent creation.

In the long course of the development of artificial intelligence, how to make machines learn to create has always been regarded as an insurmountable barrier, and “creativity” is therefore regarded as one of the most essential differences between human beings and machines. However, human creativity will eventually give machine creativity and send the world into a new era of intelligent creation. From machine learning to intelligent creation, from PGC, UGC to AIGC, we are about to witness a profound productivity change.

Massive data and intelligent organization of dual-drive content production are the basic characteristics that distinguish AIGC from other concepts. Compared with PGC with high threshold, long period and professionalism, and UGC with high personalization, extensive participation and strong interactivity, AIGC amplifies the advantages of automatic content generation and AI autonomous learning, highlights the compatibility of productivity, productivity, the combination of output and content quality, and greatly overcomes the interference of subjective conditions and the limitation of information fusion. AIGC has

special attributes such as high content diversification, strong autonomous learning ability, wide operational range and remarkable production efficiency. In particular, the continuous breakthrough of AIGC multi-modal learning technology and cross-modal generation technology not only realizes the basic transformation between modes, but also extends a number of high-potential scenarios with practical significance. In a narrow sense, AIGC pays more attention to the generation of images, texts, audio, video and other contents, which is equivalent to the concepts of Synthetic Media and Generative. The generalized AIGC also includes strategy generation (such as game strategy generation in Game Al) and code generation (such as GitHub Copilot).

1.2 The Importance and Potential Influence of AIGC Technology in Digital Art Creation

The intervention of artificial intelligence not only poses unprecedented challenges in artistic creation methods, but also causes profound philosophical thinking in artistic practice and aesthetic judgment. When the algorithm of AI has the ability to simulate or even create art, how can we redefine the role of the creator and the core value of artistic works? Looking back at the history of art, technology seems to be one of the driving forces of artistic development. In this process, the combination of artistic creation and science even crossed the boundary of traditional artistic creation, giving birth to a brand-new symbiotic world, the so-called “third space” of art and technology. On the bridge between the torrent of change and interdisciplinary, the combination of AIGC and art once again connects the tradition and the future, triggering the collision of ideas and the shaping of ideas, and opening a new exploration stage-artistic intelligence.

1.3 Research Purpose and Significance

Nowadays, AIGC technology and artistic creation are gradually merging to form a closely connected organic whole. In the face of this new creative mode, we must deeply reflect on the difference and connection between it and the traditional artistic creation mode, especially when artistic creation is gradually out of the independent control of human beings. Only by deeply understanding the relationship between AIGC technology and artistic creation and the changes it brings, can we better explore a dialectical future artistic prospect.

2. Overview of AIGC Technology

2.1 Core Principles and Key Technologies of AIGC Technology

Generative countermeasure network is one of the core principles of AIGC technology. GANs consists of two parts: Generator and Discriminator. The generator is responsible for generating new data, and the discriminator is responsible for judging whether the generated data is true or not. The two compete with each other and constantly optimize, and finally generate high-quality data.

Natural language processing is another core principle of AIGC technology. NLP technology enables computers to understand and generate human languages by processing natural languages, and provides strong language support for AIGC technology.

AIGC technology adopts a data-driven way, and trains the generation model through a large amount of data, so that it has the ability to generate new content. The data-driven feature makes AIGC technology more flexible and adaptable, and can be applied to various scenarios.

2.2 Application Cases of AIGC Technology in Different Files

Based on the automatic, large-scale and intelligent content generation characteristics of AIGC, the multi-modal, self-organization and virtual-real integration of information resources are prominent, with typical applications such as NFT, digital people, AI painting and AI composition.

Application scenarios mainly include(Guo,2022):

(1) Industrial manufacturing: AIGC technology is applied to realize digital production and improve production efficiency and product quality.

(2) Architectural design: digital twin model is applied to architectural design and construction management to improve engineering efficiency and construction safety.

(3) Automobile design: Intelligent design software is applied to design and optimize automobile parts to improve the performance and safety of automobiles.

Figure 1: Application in Different Digital Design Fields



(4) Aviation design: the digital factory is applied to realize the integration of scientific research, production and service, and improve the efficiency of project management and the ability of technological innovation. In the aerospace field, AIGC helps the remote work in deep space environment by deeply learning the existing knowledge maps, fusing and modeling complex systems, and making correlation analysis and intelligent understanding of extraterrestrial data through the advantages of the underlying technology of integrated development.

(5) AI cultural relics restoration: through digital collection and digital restoration, cultural relics are reshaped and recreated in the digital world.

(6) AIGC+ news: AIGC participates in the whole process of product penetration in the new room; In the editing process, tools such as video subtitle generation are used to save manpower and time costs and maximize copyright value. In the communication link, AIGC is applied to the new reporting field with AI synthetic anchor as the core, which brings better visual experience and greatly improves productivity.

(7) AIGC+ film and television: In the early stage of the script, Al quickly produced the script according to the preset style by analyzing and summarizing the massive script data, which shortened the creative cycle. During the shooting, AIGC broke the limitation of physical scene and broadened the imagination of the work by synthesizing face and scene.

(8) AIGC+ Entertainment: With the help of AIGC technology, the entertainment industry has broadened its radiation boundary by generating interesting images and previews, creating virtual idols and developing C-terminal digital avatars.

Figure 2: Integration of AIGC with Entertainment, News and Film Industry

Figure 3: AIGC Integration with Entertainment, News, and Film Industries

2.3 The Unique Advantages and Limitations of AIGC Technology Compared with Traditional Creative Methods

At present, AIGC technology has injected new forms and perspectives into artistic creation, bringing unprecedented creative possibilities to artists. However, the analysis and understanding of art is still inseparable from the deep foundation of human subjective experience(Liu,2023). Looking forward to the future, with the continuous progress of AIGC technology, we can expect the algorithm to improve its independent creative ability and enhance its deep learning and understanding of art. This will make the works of art generated by AI more unique and innovative, which is indistinguishable from the creation of human artists. At the same time, the technology of perceptual recognition will be further strengthened, so that artificial intelligence can analyze and imitate the style of artistic works more deeply, so as to capture and understand human emotions and creative motives more accurately. This will help AI to better combine with human creators in artistic creation and jointly create more rich and diverse works of art.. However, in this challenging era of artificial intelligence, artists should adhere to the spirit of humanistic care and independent

thinking. In the process of artistic creation, we should ensure that human emotions and aesthetic judgments occupy a decisive position, so that technology and humanity can jointly bloom more brilliant artistic light.

3. The Analysis of the Present Situation the Phenomenon of Low-quality A-pitures and Its Influence on the Artistic Creation Environment

3.1 Low-quality AI Map Flooding Phenomenon and Causes

With the rapid development of artificial intelligence technology, especially the wide application of deep learning technology in the field of image generation, the phenomenon of AI graph flooding is a social phenomenon that gradually appears. In recent years, with the rapid development of deep learning technology, AI has made remarkable progress in image generation. By training complex neural network models, AI can learn and imitate features in a large number of image data, thus generating realistic images. At present, there are many AI image generation models in the market, such as GAN (Generation Countermeasure Network), Stable Diffusion, DALL-E and so on. These models have their own characteristics, but they can all achieve high-quality image generation to some extent.

3.1.1 Specific Manifestations of Low-quality AI Images

Making fuzzy effects: In AI software, fuzzy effects can be realized by specific algorithms, such as Gaussian blur and radial blur. These algorithms soften the edges and details in the image by adjusting the parameters such as blur radius, so as to achieve the blur effect. Fuzzy effect is often used in graphic art design to create hazy beauty or hide unnecessary details.

Blur of AI-generated images: Blur may be a common phenomenon in AI-generated images. This may be due to the fact that when AI generates an image, it does not handle the details accurately enough, resulting in some parts of the image appearing blurred. Especially when AI tries to generate complex scenes or images with rich details, this fuzzy phenomenon may be more obvious.

Missing details: After the image generated by AI is enlarged, some details may be blurred or missing. This is because AI may not be able to accurately capture and reproduce all the details when generating images, resulting in a decline in image quality.

Geometric shape distortion: in the image generated by AI, geometric shapes (such as circles, squares, etc.) may be distorted. This may be due to the limited ability of AI algorithm to capture and reproduce geometric shapes when processing images, which leads to jagged and deformed shape edges. For example, the circle drawn by AI may not be round enough, with obvious jagged edges or slight deformation of the overall shape.

Inconsistency between texture and pattern: The image generated by AI may be inconsistent in texture and pattern. This may be because the AI algorithm can't accurately simulate the changes of textures and patterns in nature when generating images, which makes the textures and patterns in the images look unnatural or repetitive.

The light and shadow effect is unnatural: the light and shadow effect in the image generated by AI may look unnatural. This may be because AI can't fully simulate the light changes and shadow effects in nature when simulating light and shadow, resulting in the light and shadow effects in the image inconsistent with the actual situation.

Color distortion: AI-generated images may also be distorted in color. This may be because the AI algorithm can't accurately capture and reproduce all the color information when processing colors, which leads to the deviation between the colors in the image and the actual situation.

To sum up, the specific manifestations of blur and distortion of AI images include blur effect production, blur of AI-generated images, lack of details, distortion of geometric shapes, inconsistency of textures and patterns, unnatural lighting effects and color distortion. These phenomena may be caused by the limitations of AI algorithm in processing images, and may also be related to the quality and processing methods of image data.

3.2 The Specific Impact of Low-Quality A-pictures on the Artistic Creation Environment

With the rapid development of artificial intelligence (AI) technology, AI-generated images (referred to as A-pictures) are increasingly widely used in the field of artistic creation. However, low-quality A-pictures

(that is, AI-generated images with immature technology, lack of artistry or originality) have brought many influences on the artistic creation environment, both positive and negative.

3.2.1 The Change of Artistic Creation Mode

Inspire creative inspiration: Although the low-quality A-pictures may not be satisfactory in technology and artistic expression, they can still provide artists with new perspectives and inspiration as the products of new creative tools. Artists can find new elements, compositions or color combinations from these images, and then integrate new ideas into their works.

Promote technological innovation: the appearance of low-quality A-pictures often exposes the limitations and shortcomings of AI technology in artistic creation. This feedback mechanism urges technical developers to constantly improve algorithms and models and improve the quality and efficiency of AI drawing. In the long run, this will help promote the continuous progress and innovation of AI technology in the field of artistic creation.

3.2.2 Artistic Innovation and Diversity Influence

Lowering the artistic threshold and value: the proliferation of low-quality A-pictures may lead to the lowering of the artistic creation threshold, so that some people who lack artistic literacy and creative ability can easily produce seemingly “professional” works. This not only weakens the uniqueness and irreplaceability of art, but also may cause the public to question and misunderstand the artistic value.

Weaken the original spirit: The rapid development of AI drawing technology makes copying and imitation easy. Low-quality A pictures often lack originality and personalized expression, which weakens the artist's original spirit and creativity to some extent. When a large number of low-quality A pictures flood the market, artists may feel that their creative achievements are diluted and ignored, thus losing their creative motivation and enthusiasm.

Destroy the ecological balance of art: the artistic creation environment is a complex and delicate ecosystem, including artists, works, audiences and other elements. The proliferation of low-quality A-maps may destroy the balance of this ecosystem. On the one hand, they may occupy too much market resources and attention, making works of real artistic value marginalized; On the other hand, they may reduce the audience's artistic appreciation ability and aesthetic level, and make the artistic atmosphere of the whole society impetuous and shallow.

4. Creative Practice: How AIGC Technology Affects Artists' Working Style and Creative Process

4.1 AIGC Technology in Artistic Creation Application Scenarios and Specific Practice

4.1.1 The Application Scenario

Content creation: AIGC can generate creative texts, stories, press releases, poems and so on according to given topics or keywords. For example, ChatGPT and other models can quickly generate the first draft of an article for the creator to further modify and improve.

Code generation: AIGC can also help generate code fragments, programs, algorithms, etc., and provide developers with innovative ideas and solutions for programming.

Artistic creation: AIGC can generate high-quality and unique image works, including paintings, illustrations, designs and artworks. Artists can use AIGC technology to quickly generate sketches or inspiration materials, and then carry out in-depth creation.

Digital life: AIGC can generate virtual characters, faces, role models, etc., which are used in film and television production, game design and other fields. These virtual images are highly realistic and personalized.

Audio generation

Music creation: AIGC can create music, songs, sound effects and other audio content, providing a novel and diverse music experience for the music industry. Musicians can use AIGC technology to generate music fragments or accompaniment, and then arrange and sing.

Film production: AIGC can generate films, animations, short videos, etc., with professional-level picture effects and plot presentation. Creators can use AIGC technology to quickly generate video materials or trailers, and then edit and make them later.

Cross-modal generation: AIGC can also combine different modes of content to create unique cross-domain works, such as converting text into images and audio into video.

Game development: AIGC can generate 3D models, scenes, animations, etc., bringing innovation and diversity to the game industry. Game developers can use AIGC technology to quickly generate game characters, props and scenes to improve the efficiency of game development.

Virtual reality: In the field of virtual reality, 3D content generated by AIGC can provide users with a more immersive experience. Users can interact and explore with 3D objects generated by AIGC in the virtual environment.

4.1.2 Specific Practice

In the practice of text generation, ChatGPT and other models are used to write articles and generate press releases. Users only need to input keywords or topics, and the model can quickly generate relevant text content.

In the practice of image generation, the Stable Diffusion model of Stability AI can generate high-quality image works. An artist or designer can generate the required image material by inputting descriptive text or selecting a specific style.

In the practice of audio generation, AI music creation software such as Amper Music can generate music fragments or complete songs according to the melody, chord or style input by users. Musicians can use these tools for music creation or inspiration.

In the practice of video generation, Sora video generation model published by OpenAI can generate high-definition video according to the text input by users. Users only need to input a descriptive text, and the model can generate video content with smooth scene switching, clear details and accurate emotional expression.

In the field of game development and virtual reality, AIGC technology is widely used in the generation of 3D models and scenes. Game developers can use AIGC technology to quickly generate game characters, props and scene models to improve the efficiency and quality of game development.

4.2 Challenges and Opportunities Brought by AIGC Technology in Artistic Creation

4.2.1 Challenges

Learning cost: artists need to invest time and energy to learn and master AIGC technology, including the algorithm principle, operation interface and functional characteristics behind it. This may be a big challenge for some traditional artists.

Speed of technology update: AIGC technology is developing rapidly, and new models and tools are constantly emerging. Artists need to keep an eye on the industry trends and update their technology stack in time to remain competitive.

The balance between creativity and technology;

Over-dependence: AIGC technology can produce high-quality content, but over-dependence may lead to the loss of artists' creativity and personality. How to maintain the uniqueness and innovation of art with the help of technology is a problem that artists need to face.

Creative inspiration: Although AIGC technology can provide inspiration materials, how to turn these materials into works of art with depth and significance still needs the creativity and imagination of artists.

Copyright ownership: The copyright ownership of the content generated by AIGC is still controversial. When using these contents, artists need to pay attention to copyright risks and avoid infringing on the rights and interests of others.

Ethical considerations: The application of AIGC technology may also cause ethical problems, such as generating false information and misleading the public. Artists need to maintain a high sense of moral responsibility and social responsibility when using technology.

Market cognition: At present, there are different degrees of cognition about AIGC technology in the market, and some viewers may be skeptical or exclusive about the works of art generated by AI. Artists need to work hard to improve market acceptance and let more people understand and appreciate AIGC art.

Business model: artists need to explore business models suitable for AIGC art to realize the commercial and social values of works of art.

4.2.2 Opportunities

Improvement of creative efficiency: AIGC technology can greatly improve the creative efficiency of artists, reduce repetitive work and cumbersome processes by automatically generating content and assisting design, so that artists can have more time and energy to concentrate on the excavation of creativity and inspiration.

Expansion of creative forms: AIGC technology provides artists with more diversified creative forms, such as cross-modal generation and real-time interaction. These new creative forms can stimulate artists' innovative thinking and promote the continuous expansion of artistic creation boundaries.

Personalization and differentiation: AIGC technology can generate personalized content according to users' needs and preferences, providing artists with more opportunities for differentiated competition. Artists can make use of this feature to create works of art that meet the market demand and audience preferences.

Market expansion and internationalization: With the popularization of AIGC technology and the expansion of its application scope, artists can use this technology to expand a broader market space. At the same time, AIGC technology has also broken the geographical and language restrictions, providing artists with more opportunities for internationalization.

To sum up, artists face both challenges and opportunities when using AIGC technology. Facing the challenge, artists need to keep the spirit of learning and innovation, and constantly improve their technical ability and artistic accomplishment; Faced with opportunities, artists need to actively grasp and make full use of the advantages brought by AIGC technology to promote the prosperity and development of artistic creation.

5. Art Ecology: Analysis of the Overall Impact of AIGC Technology on the Ate Market and Its Advantages and Disadvantages

5.1 The Influences of AIGC Technology on the Supply-demand Relationship and Consumer Preference of Digital Art Market for Different Groups of People

The relationship between supply and demand of AIGC technology and the current digital art market is different. For business, AIGC technology has a great impact on the cost and time, and the drawing is fast, and the required cost is reduced, so that it becomes the first choice for commercial use. If it is necessary to show the form that customers need, digital art is undoubtedly one of the best choices, which can express the required and stated form more intuitively, but for business, It is expensive and inefficient to make digital art, but AIGC technology makes up for the vacancy of digital art, so it becomes the first choice for commercial use. Supply and demand are two basic aspects of the internal relationship of market economy, and AIGC interacts with business, which will increase the supply of AIGC.

For non-businesses, because the copyright issue generated by AIGC technology has not been clearly restricted by the law at present, some people seek profits by selling works generated by AIGC, which has caused a great impact on the market. For those who don't know about AIGC technology, they can't tell whether it is generated by AIGC. What consumers need is higher artistic content and finer, which has had an impact on the supply-demand relationship in the original digital art market, from the original supply-demand relationship to mutual restriction, and it has become bottomless. Consumers' preferences will also change because AIGC works attract consumers by providing similar aesthetic experience at lower cost, which leads some consumers to change their original preferences and choose AIGC works with lower cost.

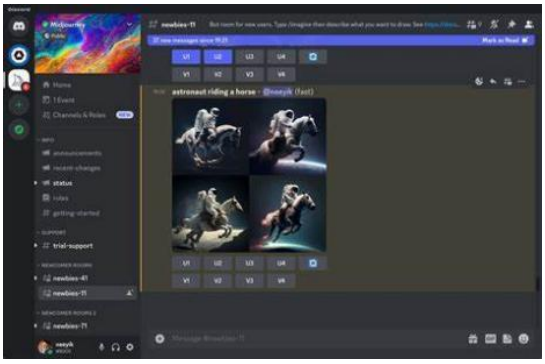
5.2 AIGC Technology Plays an Active Role in Promoting Artistic Innovation and Improving Creative Efficiency

AIGC technology also has a great success in positive aspects. In the early stage of creation, sketches (Figure 4) and design concepts can be generated quickly to speed up the early stage of creation. For projects that need a lot of repetitive design, AIGC technology can also greatly reduce design time and improve work efficiency. For digital artists, it can help artists to inspire more creative inspiration, explore new expression techniques and improve artistic composition under correct use. For beginners in the art industry, it can help

beginners to quickly show the image in their minds with the help of AIGC technology as a reference. For China's traditional culture, AI intelligent technology has powerful knowledge learning ability and reasoning ability, which can help us grasp and understand traditional cultural knowledge more quickly, and can integrate and connect knowledge in different fields(Zong et al., 2024). AIGC technology has also promoted the cross-integration of art and other fields such as science and technology, design and architecture. Through interdisciplinary cooperation, AIGC technology has opened up new dimensions and possibilities of artistic creation. To a certain extent, it improves the creative efficiency and makes people more exposed to digital art.

Figure 4: Author Generate Draft with AI

Figure 5: Midjourney User Interface



5.3 AIGC Technology May Bring Negative Effects Such as Copyright Issues and Homogenization of Creation

At present, the most controversial issue of AIGC painting technology is copyright, because AIGC painting is essentially to split and recombine artists' works on the network, so as to achieve the required images. Artists believe that copyright belongs to the original artists, while another view holds that AI editors also participate in the production and should own the copyright of the works in the process of AI creation. On some AIGC platforms such as Midjourney (Figure 5-2), It gives up the ownership of generated images in the terms of service, allowing paid members to have full ownership, which shows that Midjourney, as a developer, gives up the ownership of generated images independently. Based on the standpoint of promoting the development of AIGC, China's Copyright Law should learn from the practices of the United States, Japan and the European Union, and add the AIGC input learning and use data as “fair use” to provide clear legal guidance for the technical development of generative AI(X. Wang, 2024). The homogenization problem of AIGC is particularly serious. The author thinks that AI is reanalyzed according to the contents in the network and database. In fact, it is not an independent creation in essence, and it is suspected of plagiarism. As a result, AI painting lacks the artist's unique personality, artistry and innovation. At present, it lacks the constraints of relevant laws and industry rules and needs the joint efforts of industry, law and technology to solve it.

6. Reflection and Challenge: Fiture-oriented Digital Art Creation

6.1 Put Forward Strategies and Suggestions to Balance the Relationship Between Artificial and AI Creation

The author thinks that the essential problem between labor and AI lies in the change of jobs. For example, some small and medium-sized enterprises cut off the whole department of art design to save costs, and all the labor is replaced by AI technology, which will make the original labor unemployed, have a greater impact on society and increase the unemployment rate. The author thinks that keeping the original jobs, the labor can use AIGC technology to become an auxiliary tool for creation and improve efficiency, rather than blindly replacing it. And establish a fair evaluation system, distinguish the different values of AIGC works and human artists' works, ensure the health and fairness of the art market, improve the public's understanding of the creative process behind artistic works, and emphasize the creativity and labor value of artists. The governance of ethical issues of artificial intelligence technology aims to standardize the research, development, application and evaluation of artificial intelligence technology and promote its safety,

reliability, fairness, transparency and controllability. In order to ensure that the development of artificial intelligence technology conforms to ethical and moral standards, the government, enterprises, academia, social organizations and other parties need to cooperate to jointly promote the research and practice of ethical governance of artificial intelligence technology(Tao, 2023). The technological evolution in the new era is inevitable, and it is indispensable to keep pace with the times. Artists should adapt to and blend in with the environment.

6.2 How to Promote the Development of High-quality Works of Art and Maintain the Essence and Value of Artistic Creations?

High-quality works of art usually have the expression of the creator's own emotions and thoughts, convey the creator's inner views and feelings, and at the same time touch the audience's emotions and thinking. The core lies in innovation and originality, and even promote the continuous expansion of artistic boundaries. The author thinks that using AIGC technology to conceive or inspire the creator can be a part of promoting the development of high-quality works of art, but it should be used in moderation, otherwise it will become a homogeneous work. For example, using AIGC technology to make preliminary ideas and draw sketches, leaving the decision-making power and details of creativity to artists, which will also safeguard the artistic creation itself. It can also provide a platform for people to participate in the artistic creation process, understand the artistic development, improve the popularity and participation, and establish a relatively healthy art market, so as to provide more and larger platforms for the display and sales of high-quality works of art. These ideas will help to promote the development of high-quality works of art.

6.3 The Integration Trend of AI-assisted Creation and Digital Art Creation and the Possible Forms of Digital Art Creation in the Future

In April, 2024, the first China Digital Art Exhibition showed the new quality productivity produced by the deep integration of art and science and technology, including CG painting, digital images, interactive art and other forms, and presented the practice and educational achievements of digital art in China in the past decade. Numbers and intelligence, aesthetics and creativity are becoming the basic literacy of a new generation of China people, which feeds back our social construction and is gestating a pluralistic and open innovation ecology and a public culture advocating innovation. Xunzi believes that people can lead to goodness through learning, which shows that goodness does not depend on being born, but needs to be acquired. The same is true of artificial intelligence technology, which does not have an understanding of "goodness" from birth, so it needs the guidance of "goodness". In the future of harmonious coexistence between man and AI, man should realize that all the development of science and technology ultimately points to the process of man knowing himself through the study of artificial intelligence technology. At present, AIGC is in a period of rapid development, and it will become the content production infrastructure in the meta-cosmic era. "AI+ humanity" is the main development trend of AIGC at present, and its application in new media, film and television, painting, music and other scenes is relatively mature. In the future, digital art may not only include artists, but also more and better AIGC creators will flood in. With the progress of science and technology, digital art may break the boundaries of traditional media, and integrate sound, images, videos, 3D models and other media to create a new artistic expression. AI-assisted creation is gradually becoming an important force in the field of artistic creation.

7. Conclusion

With the progress of AIGC, we have witnessed the improvement of production efficiency and the decline of creative cost, and also witnessed the emergence of new artistic expressions, such as "multimodal dialogue art", a creative way that combines voice, image, text and perception; "AI artistic conception art"-makes the audience not fully understand its technology, but can deeply feel the emotion and artistic conception it conveys. With the influx of various innovative art forms of AIGC, we propose that AIGC technology deeply digs and integrates local cultural elements through data to ensure that the model has an ideology compatible with artistic innovation and local cultural items, thus creating works of art with both national characteristics and innovative significance, providing artists and designers with a new creative path.

In the future design education, it is necessary to achieve “skill balance”, not only to master AIGC technology, but also to dig deep into cultural connotation. As far as the current development trend is concerned, the productivity of artificial intelligence technology in generating digital art is revolutionary. In the past few years, many universities at home and abroad have set up master's and doctoral programs related to artificial intelligence to train a new generation of researchers who use artificial intelligence technology. Only when designers can fluently “speak” technical language and deeply understand different cultural connotations can they truly combine tradition with innovation. In addition, real innovation often comes from the collision of disciplines. In the future, the “art and technology collision” between design and computer science, humanities and even philosophy should be encouraged. Interdisciplinary cooperation will bring unprecedented innovative thinking to mankind and open a new creative dimension. While pursuing technological progress, practitioners should always adhere to the principle of “cultural protection”. As a matter of urgency, relevant departments should formulate relevant policies and regulations. Whether in terms of data protection or intellectual property rights, it is necessary to ensure that every technological progress is based on observing laws and respecting Chinese cultural traditions.

In order to truly realize the integration of tradition and innovation, the future AIGC needs the reform of “participatory creation”. AI works together through deep interaction with designers, and ensures that AI can understand and implement designers' more detailed and advanced requirements. Therefore, it is necessary to develop more transparent and interpretable AIGC technology, so that designers can not only interact with machines, but also think and create together with them. Personalized AIGC tools can be used as designers' assistants and provide them with appropriate suggestions on the basis of respecting their creativity. In the future, we look forward to the deep cooperation between human beings and AIGC. For example, let artificial intelligence be responsible for generating design prototypes, designers modify and improve the results, and man and machine jointly participate in design decisions, so that both sides can give full play to their respective advantages and build a harmonious and efficient cooperative relationship. Some artists have carried out fruitful creative practice with AIGC platform, which is worth popularizing. In this mode, designers can fully release their creativity with the help of technology.

With the vigorous development of AIGC in the field of art and design, the traditional angle of creation and appreciation is facing unprecedented challenges. This paper reveals that the art and design brought by the intervention of AIGC generative artificial intelligence are facing different tensions between tradition and modernity, man and machine, and subjectivity and objectivity in the process of blending with AIGC technology. The essence of solving these problems is not only a technical challenge, but also a deep reflection on the essence of human creation, cultural value and technical ethics. Ensuring the harmonious coexistence of technology and culture, innovation and tradition is a key issue in the future. Facing the challenge of AIGC, the future road is not simply to embrace or resist, but to seek the real harmonious coexistence of art, design and technology through continuous exploration, reflection and innovation. In the future research, we can further explore the combination of AIGC technology and other aspects in the design field, such as sustainable design and social impact assessment. More practical case studies and experiments will also be of great significance to the verification and practice of the theoretical framework.

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Conflicts of Interest
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