The Influence of AI Painting on Traditional Digital Painting and Comparative Analysis of the Advantages and Disadvantages

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Abstract: With the emergence and development of computer technology, digital technologies such as image processing, image editing, image synthesis, and digital painting have become increasingly mature. After entering the computer age, they have also become a new media technology, and with the progress of digital technology, corresponding diverse branches have continuously emerged. As the influence of modern and contemporary art gradually expands, the public's mastery of digital technology gradually matures, and artists also begin to create art through digital technology and other forms. This paper first analyzes the background and rise of digital painting, and then compares and analyzes the differences between digital painting and traditional painting. Then, it analyzes the advantages and disadvantages of the application of AI painting in the field of art and the use process. Finally, the irreplaceability of digital painting is summarized. Although artificial intelligence has brought some convenience in painting and reduced the amount of engineering brought by repeated painting, it cannot completely replace digital painting.

Keywords: Digital painting, Digital art, Fade out

1. Introduction

From digital painting created through traditional art forms, to digital sculpture created through computer software, and simulation of touch through virtual reality technology, and even AI creation through artificial intelligence. [1]As a virtual technology, but it will give us feedback and feelings in reality, digital technology is slowly breaking away from the label of "media" and forming new forms of art.[2]

With the progress of society and the development of the times, thanks to the rapid improvement of technology in the electronic information and semiconductor industries, the fast and convenient Internet and its surrounding products such as smart phones, smart TVs, and smart audio and video facilities have entered the families of the general public, bringing functions and effects to thousands of households, and even changing the daily behavior of the public. In the process, due to the growing of electronic digital technology, society has gradually entered the time of big data. With the increasingly mature technology of data push, data information is highly precise and targeted at individuals. In the time of big data, the rapid growing of digital technology has made various digital

auxiliary technologies and digital application software increasingly mature. In this development context, some digital information technologies are gradually breaking away from the label of "media" and forming new forms of art. Behind such development, there must be many human efforts and propaganda. However, with the sudden rise of artificial intelligence, buildings collapsed overnight, and people began to rethink the current and future directions of emerging digital art forms. At the same time, a series of problems such as plagiarism, originality, and disguise continue to occur and trigger deep thinking in this context.

Digital painting is an emerging art form that has emerged through the use of computer digital information technology. Digital painting uses input tools such as computers, digital tablets, and stylus, as well as various output software with different functions. Through its built-in various digital tools.Traditional painting and painting techniques such as watercolor, oil painting, carving way, and pigments which are applied. Many works that include digital style like brushes to the behalf of traditional ways of medium such as oil, acrylic acid, crayons, charcoal, pens, and even spray guns. Each digital paint tool has its own inherent outcome. And the computer editing technology built into the computer, which is calculated and changed by the computer itself. Traditional painting is painted using physical media, rather than more modern styles like numbers. Digital painting is different from other ways of digital art, especially computer-generated art, because it does not involve computer working from models to images. Artists use their painting ways to create fancy digital paintings directly on the computer. All digital painting programs allow user to mimic the use of physical media through thousands of brushes and painting effects by programming. In the digital painting programs and digital painting apps, users can use a combination of texture and shape to create their own painting styles. Digital painting is not about severing traditional painting, but rather filling the vacancy between traditional painting and digital painting through its own ability.[3]

Since 2022, with the emergence of ChatGPT, AI painting software and web pages that automatically generate images by inputting text descriptions have suddenly emerged like mushrooms after rain. Firstly, Disco Diffusion is an AI image generation program that began to appear in 2022. It can render the corresponding image by proposing the processed information based on the keywords describing the circumstances. In April of the 2022, the renowned AI team which called Open AI also released a new model, the DALL·E 2nd generation, and named by the famous painters, and supported generating images with good effects from text descriptions. However, in early 2022, using Disco Diffusion could not only generate some vibe-draws, but it was still difficult to generate faces、fingers、details. However, few months pasted, the DALL·E 2nd generation was able to generate accurate facial features and something more. Now, Stable Diffusion has undergone a significant work well in the level of the fluency of painting, and with emergence on this phenomenon level program has gradually brought AI painting into people's sight. But the origin and emergence of AI painting have a long history, and its emergence may break people's understanding of it. Computers appeared in the 1960s.In the 1970s, an artist named Harold Cohen began creating the computer program "AARON" for painting Just different from current AI painting output digital works, AARON controls a robotic arm to draw through computer programs and code. Therefore, AI painting did not appear suddenly, it still has a certain historical heritage.[4]

2. The uniqueness of digital painting

Digital painting and traditional painting complement each other, but the main difference between the two lies in the nonlinearity in the painting process. Artists can usually arrange their paintings on independently editable layers when performing digital painting. Similarly, The ability to undo and redo strokes allows artists to repeatedly modify their works and focus their energy on thinking about the artwork itself,and it can make the painting process more controllable and effective. However, due to surface differences and lack of physics, digital painting is restricted in using the techniques and

research ways of traditional painters. Digital artists who specialize in digital painting can use tools far beyond those of traditional artists, some of which include: virtual palettes containing thsands of colors, almost any size of canvas or medium, and non-linear painting functions that can correct errors, as well as   pencils,erasers,spray guns, brushes, and various 2D and 3D outcomes. A digital drawing board allows artists to simulate real pens and drawing surfaces through precise hand movements. Even traditional surfaces have changed to digital painting. Artists will sse a mouse, drawing board, or tablet to use virtual strokes instead of a canvas or paper, which will be displayed by touching the surface of the tablet or clicking the pen. Tablets may be sensitive to pressure, allowing artists to change the intensity of the selected media on the screen. Some media such as tablets or digital drawing boards have over 20000 different levels of pressure sensitivity.[5]

Although digital painting has lost its unique material beauty due to the limitations of media and materials, it forms an infinitely replicable "attribute" and its related data chain, presenting more specific lines and colors. At the same time, it is rich in regular combinations, forming a unique visual effect different from hand-painted works. Although the attribute of infinite replication may lower the market price of digital painting, it is only the implementation cost of replicating this digital painting art, rather than its own artistic value. When artists combine all of their inner thoughts and ideas according to a certain pattern of data, or quantify and present various emotions such as passion, indifference, and oppression on the screen, giving people a visual effect rich in technological beauty, digital painting becomes unique from traditional painting. This uniqueness is a concrete manifestation of the development and evolution of art with the times, and is also an inevitable product of the information age, which includes multiple innovations in artistic concepts and creative methods. Its regular data chain combination is not an artist's imagination out of thin air, but a technological extension based on traditional painting and aesthetic characteristics. In this sense, mechanical replication not only fails to dissolve the characteristics of printmaking, but also expands the expression space for artists' free thinking in the cold data, highlighting the non mechanical characteristics of painting art expression.[6]

With the continuous development of artificial intelligence technology and its application in practical cases in social life, AI painting as an newborn art form, is challenging traditional artistic concepts in the field of art. Digital painting and AI painting are both digital art forms supported by digital computer technology, which are similar but different. Digital painting is created by artists using computer software to create their own ideas, while AI painting is created by inputting ideas into programs for drawing. Artificial intelligence painting enables everyone to use AI for creation, reducing the threshold for artistic creation and improving the production efficiency of art for artists.Nowadays, artificial intelligence painting is no longer a niche field in art painting. This program is open source, allowing people to convert text to images and obtain AI artwork by inputting descriptive text. Although current AI technology cannot perfectly reproduce descriptive text input by users, it also faces some technical limitations, For example, algorithm defects that cannot handle complex scenes, detailed actions, or subtle color changes well, people still immerse themselves in the fun of participating in generative art. During the promotion and use of AI technology, it has gradually replaced many heavy, mechanical, and low skilled jobs. Painting art, due to its unique professionalism and creativity, was once considered a relatively safe field that is not easily invaded by AI. However, the emergence and popularity of a large number of AI painting works generated through mechanical training have caused many artists and industry stakeholders to worry that people will be reverse trained into servo mechanisms of technology during the use of AI, which will degrade their creative ability. The theory of art extinction is once again rampant. In addition, the essence of AI painting is machine learning. It needs to borrow the image data set of existing art works for training.These data can be catch through the Internet without the permission of the original author. Although AI painting is not a direct replication of existing works, it does draw inspiration from the art of training it.Original

authors cannot retrieve their works, nor can they prevent AI from stopping copying and imitating them. This also draws attention to the ethical crisis of AI painting in the field of copyright.[7]

Technology is changing life, and we are in the vortex of the times. We are facing a global revolution, and the expression of art is constantly improving. Digital art is an inevitable result of the development of the times and a new creative field that combines technology and art.Digital art is currently in the stage of self-development, with a gradual and orderly expansion speed, and has developed a set of characteristics that are different from shelf art. For example, fractal art has the characteristics of randomness, infinite expansion, and infinite amplification without distortion, which cannot be achieved by any art on shelves. This type of vibrant art is of great concern to the art community. The presentation forms of digital art painting are diverse.From a patch of dust to a building; The diversity of this form of expression provides more possibilities for artistic creation. The same painting displayed on different materials will bring different styles and experiences in appearance and texture.Digital art has proven that things from different fields can also interact to create more possibilities. With the help of digital technology, art has departed from traditional cognition and produced more painting languages suitable for the digital age. Digital art is not limited to any material or form, providing infinite possibilities for creation. Both art pieces and beautiful objects in daily life can be created using digital art. This way of getting close to life, experiencing life, and creating life is a constantly innovative attitude towards life, and also a process of looking back at one's original intention.

3.   The irreplaceability of digital painting

Digital painting is increasingly entering the public's field of vision, and in contrast, AI painting has emerged in recent years. The convenience and popularity of AI painting have raised some doubts about whether AI painting will replace digital painting as digital painting? However, overall, the biggest change brought about by the emergence of artificial intelligence and artificial intelligence painting is the increased availability and convenience of computer production tools, which lowers the threshold for artists who have just entered this industry to demand "technology" and makes their individual production efficiency higher.They no longer need to spend a lot of time repeatedly painting some details that can be generated by template and pipeline, reducing the amount of engineering brought about by repeated painting. At the same time, by combining the big data brought by AI with the vast knowledge base behind AI, the threshold for accessing and collecting information has been lowered, making it easier to obtain "knowledge" and "information". However, despite several cross generational updates, AI painting systems still cannot spontaneously understand our needs.

There is a certain technical and operational threshold to fully utilize the abilities of AI painting and AI assistance. AI painting has simplified the technology to generate images by inputting text, but there is still a question of how to solve "how to make AI understand what I want?". In actual work, if there is a designer who always requires the first party to explain to themselves what they really want, then they may have been eliminated long ago. In the process of using AI painting for four or five months in depth, in fact, if you want to obtain a design draft that meets your expectations through AI painting, the time spent on debugging the AI painting application is not less than directly drawing it, and sometimes even more time and energy is spent. It is still a challenge for AI to understand some details of the design and maintain consistency.[8]

On the contrary, the irreplaceability of digital painting is partly reflected in the low entry threshold, and the transformation from traditional painting only requires the foundation of traditional painting. Perhaps as a profession such as an illustrator or cartoonist, digital painting will gradually introduce AI painting as an auxiliary tool, as AI painting is more convenient and in line with the progress of the times compared to digital painting. But digital painting, as an art form, will not disappear, just as traditional painting has not disappeared under the impact of digital painting, but rather the two coexist.

AI painting will achieve certain or even overwhelming success in the future market, but it will never replace digital painting and eliminate the status of traditional painting in the artistic field. However, people's views on digital painting may also be influenced, shifting from creating more to enjoying it. Just like music, computer-generated music makes creation easier and gradually becomes mainstream in the market, but traditional music has not disappeared and is still appreciated by many people. The strong compatibility and more convenient sharing channels of digital painting reduce the value of the original painting. A work can be infinitely replicated in its original form, making many people feel that it does not have uniqueness like traditional painting, so it is not as valuable and collectible as traditional painting. However, in reality, the artistic value of both is the same. People still purchase digital paintings like traditional paintings, but the forms are more diverse and sometimes unexpected. For example, the original artwork of game character skins sold in the game, or the cover of a certain music album. When people purchase these products, a portion of them will purchase their digital paintings, and with their strong dissemination power, the value of digital paintings has not disappeared due to their replicability.

4. Conclusion

Returning to the topic raised at the beginning, "Will digital painting in digital art gradually fade out of people's sight and disappear due to the influence of AI painting?". It is not difficult to find that even with the support of AI painting as a hot topic in this era, digital painting will continue to output information content and related works with its strong advantages and a large group of practitioners. The biggest flaw of AI painting is that it cannot serve as a person for communication, and the ultimate goal of artistic creation is to "serve people" and "people-oriented". AI painting cannot understand people's needs as a person, cannot empathize with their emotions, and cannot serve their needs and growth for creation. This is the core value that a creator can provide to users. In this regard, the cost of communication between people and AI through AI painting is far less direct than that through digital painting.

AI painting allows creators to do less. They no longer need to draft, draw lines, or lay colors, the only thing they need to do is to revise the AI work to make the products of program operation conform to the paradigm of human society and human mechanisms. In such a design and creative process, human weight is weakened. AI painting technology gives people a premonition of indescribable impact, which is also difficult to dissolve. After several years of evolution, such concerns have gradually become apparent. From modeling, commercial illustration to architectural art, we are witnessing artificial intelligence gradually invading and leaving footprints in the field of art. But returning to its essence, AI painting still serves as a tool to assist creators in their use. AI painting and digital painting are not runners on the same track, but rather more like the relationship between traditional painting and digital painting, achieving, learning from, and relying on each other.

The contemporaneity of digital painting and AI painting is undeniable. Digital painting and AI painting provide people with convenient creative methods, but they still cannot replace people in creating. People gain the meaning of creation in the process of creating, and also entrust creation and aesthetics in invention. Perhaps we need to spend some time dividing this era, using half of it to bake bread and the remaining half to observe the world.

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