

The Impact and Concerns of AI Drawing: Exploring the Emergence and Development of Artificial Intelligence-Generated Artworks

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Abstract: With the rapid development of AI technology, ChatGPT, an artificial intelligence chat robot released by OpenAI on November 30, 2022, exploded on the Internet. After ChatGPT exploded on the Internet, AI painting gradually came into people's sight. At the same time, the debate about AI painting has also become a hot topic of daily discussion. By researching and summarizing the literature on the Internet and analyzing the concepts related to AI painting, this paper will focus on the drawing principle of AI painting and the pros and cons of AI painting as the main research questions, and then the impact on the emergence and development of AI painting have a discussion. While allowing more readers to understand the duality of the impact of AI painting, it also emphasizes that artificial intelligence lacks the emotional depth of art created by humans. This paper proposes that artificial intelligence can enhance the potential of human creativity, but the quality and creative context of the main works come from the infinite possibilities of human artists. The future prospects of AI-generated art are expected to be complex and evolving, but subject to constant examination.

Keywords: AI drawing, artificial intelligence-generated artworks, impact of AI on art, technological flaws in AI drawing, copyright issues in AI-generated art

1. Introduction

AI drawing is a program that produces paintings or illustrations through artificial intelligence-generating technology. As an emerging and rising technology, AI drawing has gained attention from many scholars around the world in the art market field because it is used in film production, game design, and other art-related areas. Around the topic of AI drawing, numerous scholars who are still learning the technique of drawing or painting should understand the underlying logic of AI drawing because they are unlikely to realize the influence of AI drawing. AI art has been broadly characterized by inputting and transforming textual prompts into images or artworks so far. This document proposes insights about the impact of AI drawing on art and society while pointing out the technological bipolarity, copyright issues, limitations, and differences between AI drawing and human creativity. These matters reflect the complexity of the development of AI technology and its impact on various aspects of society; for example, whether AI drawing techniques will substitute human artists [1]. As technology advances, there will be an ongoing juristic exploration to balance the data collection and protection of the rights of creators. Even so, AI drawing can resume being further explored in art,

technology, and psychology to help further apprehend the effect of AI drawing on society and the field of art. Specifically, it is compulsory to conduct more studies to innovate and improve the technology of AI drawing capabilities to express emotions and make drawings more empathetic and artistic [2].

2. Analysis

The seeds of AI-generated art were sown in the 1960s with the emergence of computer technology. Early experiments like AARON, a program developed by Harold Cohen, illustrated computers' potential to create visual compositions. AARON was capable of generating complicated patterns and abstract shapes, demonstrating the feasibility of using a computer algorithm to produce art.

As computing techniques grew stronger, artists and related professionals engaged in algorithmic art, an approach focused on algorithms producing creative results. A notable example is the "Algorithmic Art" exhibition in 1965, which showcased algorithm-generated artworks. This era established and brainstormed the concept that machines could contribute to artistic creation. Programs like David Cope's "Experiments in Musical Intelligence" demonstrated how AI could compose music in the style of prominent composers. The creation of paintings, music, and poetry by AI algorithms shows the potential for AI to initiate artistic styles and generate original content.

The development and release of ChatGPT by OpenAI in 2022 marked a significant milestone in AI-generated art. ChatGPT's emergence democratized AI-generated art creation. Artists, even those without deep technical expertise, could now produce visual artworks by providing descriptive prompts. The accessibility and user-friendliness of AI-powered creative tools lowered the barrier for entry into the realm of AI art, resulting in a surge of interest and participation.

Midjourney and Stable Diffusion dominate the AI drawing market, which uses an algorithm called Generative Adversarial Networks (GANs), composed of two neural networks: a generator and a discriminator. The generator uses potential variables as output and then generates images. The discriminator then evaluates whether these generated photos are similar to authentic images. In AI drawing, the generator generates images closer to the prompt based on the feedback given by the discriminator. Stable Diffusion uses a TextEncoder called clip to convert the input text into digits. The AI generates a noisy image from the web database based on the input text. The amount of information in a picture is extremely high because each pixel point consists of three colors: red, green, and blue. Therefore, the AI cannot compute this overly large data, so a latent space exists within the model to process and compress the photo data [3]. The latent space would use U-Net and Scheduler to denoise the garbled characters, and then the sampler, step, and CFG will be proofread against the subject and repeat the denoising steps over and over again to complete the mapping. Whatever drawing tools are used, they are fast and productive. The advent of the technical era has brought a severe crisis to many drawers and art enthusiasts and made people doubt whether AI drawing will replace human creation in art. At the same time, it also makes people gradually realize the impact of AI drawing.

The clearness of the pros and cons of AI drawing is needed to understand the impact of AI drawing on today's society. The most apparent advantage of AI drawing is its low cost and efficient productivity, and its threshold is shallow [4]. Users need to keep inputting keywords until they are satisfied. AI drawing would keep learning and updating the image, giving the user distinct results to resume the selection. In contrast, traditional painting requires a lot of time and effort from the artist to complete a high-quality artwork.

The fatal flaw of AI drawing is the lack of technology; for example, the hand drawn by AI is deformed in most cases. AI relies on the previous two-dimensional artwork and then processed and collaged, leading to flaws in the painting, which means it needs to have the concept of three-dimensional space for better performance [5]. AI art is created from a web-based database used by

the system's authors, but no copyright license has been received. Most of the recent factual cases where AI art has been sold show that the copyright for the artwork belongs to the artist who used AI technology to create the artwork. Even if the actual cases do not point to copyright infringement, it is still an undisguised fact that using images from online databases in the AI creation process may involve the copyright of the original authors' creations. Even if it is difficult for the original authors to enforce their copyrights legally, it is ethically essential to recognize that the technology uses the original authors' works for computational output without their copyright permission.

AI drawings have considerably impacted the field of art, including the legal issues raised along the way. Originality is the key criterion for determining whether an AI drawing constitutes an art piece, but people's views alter. As AI technology advances, it will be able to imitate human thought and meet the essential criteria of creativity. However, another argues that AI drawings are ultimately robotic work and do not have thinking or originality. Regarding the consideration of copyright, there is a view that developers and users should share copyright, but it is affected by issues such as intent to collaborate and profitability. It also makes sense to attribute copyright to the user, as they determine how the AI generates the work. This is conducive to protecting the rights of users and enhancing the development of the AI painting industry. The results generated by AI are derived from other completed paintings, and it is nearly impossible to trace information about the original authors from a technical point of view today. As a result, the copyright issue in AI painting remains values for further observation. People need to clarify the legal restriction to promote the development of the AI drawing field by setting boundaries at the legal status for future exploration [6]. Therefore, with the resolution of legal related issues, AI drawing will definitely bring a new painting industry in the future, especially the animation industry. In areas where animation is not popular, AI drawing can bring excellent scripts into the public's field of vision. Compared with human painters, AI drawing can save a large part of the cost. If the legal issue cannot be resolved, then the projects involved in AI drawing will not be recognized by customers and consumers. Even though people are usually very interested in new products, ignoring morality can make people very disappointed [7].

3. Conclusion

Along with AI technology's rapid development, its copyright issues and technical flaws will be waived in a few years. At that time, the high productivity and low threshold attributes will lead to AI drawing replacing and eliminating some artists, especially commercial artists. However, AI art still needs more autonomy and creativity than humans possess, which is the part that AI drawing cannot replace.

Due to the emergence of AI drawing, people will become somewhat dependent on AI drawing. Such a dependence will not allow AI drawing to get long-term development because the images from big data have to be updated; if this problem that may arise in the future still needs to be solved, then its technology will have a limit. At that point, an artistic revolution will occur - a stagnation of artworks. In terms of prospects, it is clear that the impact of the development of AI drawing will be negative, as it will lead to the demise of art. Even so, if we only consider the present, AI drawing is an effective tool in today's fast-paced era of commercialization. Its low-threshold, high-efficiency attribute lowers the "art" pre-requirements, allowing people who have never received conventional art education and related experience to complete various simple and complex works. With such a convenient function as inputting text and outputting pictures, its technical flaws and imperfections are minimal. Undoubtedly, the development of AI drawing technology will replace some painters because the principle of AI drawing is taking pictures from the database and making a "collage", which lacks creativity. However, AI drawing cannot replace all human artists for two reasons. Firstly, a growing trend in the field of art is the integration of AI as a collaborative tool to augment and enhance the creative process of human artists. In this point of view, AI could lead to brainstorming

and the emergence of new artistic expressions that blend the boundaries between human imagination and computational algorithms while extending the boundaries of the styles of the field. Secondly, in using AI technology for painting and creation, there is always no guarantee and certainty of human beings in the visual interaction and information transfer because AI do not have feelings. Computation without human emotion cannot be called a kind of thinking, let alone creation. Therefore, AI drawing cannot fully express the visually conveyed message that is delivered by humans.

References

- [1] Wang Fangfang. *Thoughts triggered by AI painting*[J]. *Technology and Finance*,2022(10):60. DOI:10.3969/j.issn.2096-4935.2022.10.020.
- [2] YI Zhongtian. *On Artistic Standards*[J]. *Journal of Xiamen University (Philosophy and Social Science Edition)*,2001(4):55-60. DOI:10.3969/j.issn.0438-0460.2001.04.008.
- [3] Miao H, Wang Jinglei. *The operation law and application of AI painting creation*[J]. *Screen Printing*,2023(7):96-98. DOI:10.20084/j.cnki.1002-4867.2023.07.026.
- [4] Cui Shuang. *The impact of AI drawing on the animation industry*[J]. *Comic Action*,2023(4):20-22. DOI:10.3969/j.issn.1672-6812.2023.04.009.
- [5] Wang W. *Analyzing the Dilemma of AI Painting at Present*[J]. *Art Contemporary*,2023,22(3):64-67.
- [6] YAN Shaokang. *Exploration of AI painting copyright issues*[J]. *Art Technology*,2022,35(21):220-222. DOI:10.3969/j.issn.1004-9436.2022.21.072.
- [7] Wei Zhenzhen, Zhou Dian. *Exploring the artistic attributes and creative practice of AI painting*[J]. *Art Technology*,2023,36(2):117-119. DOI:10.3969/j.issn.1004-9436.2023.02.039.