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Copyright Issues in the Artworks Generated by Artificial Intelligence

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Abstract:

This article explores the upcoming issues and legal challenges in copyright law brought by AI-generated artworks. As AI technologies improve, the creation of art by AI has raised problems regarding authorship, originality, and the application of existing copyright frameworks. By analyzing cases happened in different region about copyright in AI-generated art, it is discovered that different attitudes toward AI-generated artworks under current copyright framework. While the United States show a relatively conservative stance, insisting that the role of author must be human, other countries such as Can dada and China began to admit the authorship of AI, accepting AI as a way to achieve creativity and originality. Based on the existing situation, the article provided possible solutions, aiming to protect copyright of creative artworks generated by AI and accept AI as artistic tool that could increase efficiency and creativity.

Keywords: Artificial Intelligence; Copyright; Artworks

1.Introduction

As the field of AI has developed quickly these years, generative AI systems such as ChatGPT, Gemini, and Bing has emerged. Tasks such as writing articles, chatting, making posters are all-well-completed by these AI systems. Moreover, artistic creation, which is always being considered as results of human's creative thinking and innovative thoughts, is also captured by AI systems such as stable diffusion and DALL-E. By using algorithm and learning a large amounts of artworks on internet, these AI systems could create photos and drawings through simple instruction. Although the quality of AI drawing still requires improvement, experts believe that in the future, AI drawing would be similar to human drawing. However, this new technological advancement and cultural shift could bring huge impact on current copyright frameworks. While public is enjoying the convenience of creating their own artwork, professional drawers are finding ways to restrict the use of AI in artistic field because AI-generated art might cause violation of their legal rights. Several cases of the conflict between AI system and the copyright of drawers have occurred, signifying the potential impact of generative AI toward the existing intellectual property law. How to improve the existing copyright law in order to balance the rights of artists and the renovation of generated AI has become a significant issue for legal system of each country.

Harrison Ottaway and Jonathan (2023) carried research on copyright influence of Generative AI systems, exploring questions like how the use of generative AI models infringe the copyright in previous works, with a focus on text-to-image generative AI systems, and particularly an AI model called Stable Diffusion. Furthermore, Zhe DAI (2023) studied the copyright protection of AI-generated works under Chinese law, finding out the reasons behind specific issues such as judging originality. The author gave clear opinion about how to protect copyright of AI-generated works. Similarly, Lund, B. D. et al. (2023) discussed OpenAI's ChatGPT and referred to some potential ethical issues. Hed points out that generative AI posts challenges to academic practices, especially concerning on authorship and copyright. The author advocates for a clear guideline that address challenges brought by AI in academic field. All these researches are of great significance because they remind us of the influence and potential risks of generative AI models. While Lund discusses the broader academic implications, Ottaway and Feder focus on the legal challenges in Western jurisdictions, and Dai and Jin provide insight into China's unique approach to AI and copyright. Together, they underscore the need for legal and academic institutions to adapt to the realities of AI's growing role in content creation. However, copyright dilemma in the art works generated by Artificial intelligence remains unclear. Therefore, we aimed to find ways to deal with the difficulties generative AI facing in current copyright framework.

2. Generative AI and Law

Generative AI represents a significant improvement in artificial intelligence field. In the past, AI contains only predictive and classificatory systems. Now, by utilizing learning model based on extensive datasets, AI could create new content just like human. The core of AI is neural network architectures, including Generative Adversarial

Networks (GANs), diffusion models, and transformers (Bengesi et al., 2024). The development of generative AI could be attributed to algorithmic innovations, increased computational power, and abundant data.

Generative AI has a wide range of application such as in art field. Models like ChatGPT, DALL-E, and stable diffusion would be capable to create complex contents such as drawings, pictures, and videos, which blurs the lines between human creativity and AI's ability. Taking Stable Diffusion as an example, the diffusion model it uses has revolutionized art creation. The model first adds noise to the original data, then learns how to remove the noise in order to recover the original data. By embedding a language model, the system could achieve text-to-image generation of arts. (Zhang et al., 2023).

These AI models enable artists, designers, and even people without artistic skills to create their own works efficiently using prompts. However, the rise of generative AI in art field also brings ethical and legal questions. The concerns regarding to copyright is the most critical, which could strongly influence the commercialization and promotion of AI. The implication of copyright law become increasingly significant. The traditional concept of authorship and creativity need to be reevaluated. This shift requires deeper exploration into how copyright law could adapt to new technology and artistic creation.

3. Copyright issues in the artworks generated by Artificial intelligence

The broader utilization of generated AI not only post question to the definition of creativity and authorship, but also challenges the tradition law framework of intellectual property. Copyright in the context of artificial intelligence (AI) typically refers to the legal rights granted to creators of original works involving AI technologies or generated by AI systems. One of the most important questions is whether AI-generated works are protected by copyright. Especially for AI-generated arts, the boundary of copyright is hard to draw under current framework, where human's intelligence is considered to be crucial in artworks, and the standards could vary across different regions. While some jurisdictions are exploring the legal frameworks to accommodate the emerging trend, others remain ambiguous or silent on this issue. The complexity lies in the fact that AI, as a non-human entity, challenges the traditional understanding of authorship and creativity. Thus, it would be crucial to examine various jurisdiction and criteria from different countries used to decide the authorship of AI-generated art, and make change to copyright law in order to protect intellectual property of authors while improving the innovation of AI-generated art.

In the United States, the stance has been relatively conservative, emphasizing the necessity of human authorship for copyright eligibility. The U.S. Copyright Office has repeatedly refused registration for AI-generated works, explaining that human authorship is a prerequisite for copyright protection. This was highlighted in the refusal of copyright registration for DABUS, a generated -AI system, where it was decided that the "work made for hire" doctrine could not apply since it requires binding legal contracts, which an AI could not enter into. The Review Board maintained that copyright protection is limited to "original works of authorship," a term broadly interpreted but historically applied only to works created by humans. (United States Copyright Office, 2022)

Contrastingly, Canada has shown openness to recognizing AI contributions in copyright co-authorship. In a landmark case, the Canadian Intellectual Property Office (CIPO) registered a copyright for a Starry Night-inspired painting titled "Suryast," listing both a human, Mr. Ankit Sahni, and an AI application, RAGHAV Artificial Intelligence Painting App, as co-authors.(Canadian Intellectual Property Office, 2021) This registration marks a significant departure from traditional interpretations of authorship, suggesting a more inclusive approach to AI-generated works, at least when there is significant human involvement.

China provides a compelling case study that decrease the gap between strict human authorship requirements and the acknowledgment of AI's role in the creative process. In the case of LI v. LIU, the Beijing Internet Court found that AI-generated art could be copyrighted if there was substantial human intellectual input throughout the creation process. The court ruled in favor of the plaintiff, who used an AI service to generate a picture, based on his extensive input including the selection of the AI service provider, inputting specific prompts, and setting technical parameters to achieve the desired outcome. (Beijing Internet Court, 2023) This case emphasizes the importance of human creative decision in determining copyright eligibility, even when AI would be used to deal with those decisions.

In Europe, copyright law traditionally emphasizes human authorship as a prerequisite for protection, which poses challenges for AI-generated works. The European Union's legal framework, particularly through directives such as the Copyright Directive, requires that a work must be an "original intellectual creation" by a human to be eligible for copyright. This has led to ongoing debates about whether AI-generated content, which might lack direct human input or creativity, could be protected under existing laws. The approach in Europe suggests that unless there is significant could human involvement in the creation process, AI-generated works might not receive copyright protection, leaving such works potentially vulnerable to

unauthorized use and exploitation (Ramalho, 2020).

In Japan, the situation is somewhat similar, as Japanese copyright law also requires that a work must be created by a human to qualify for protection. However, Japan has been more proactive in discussing the implications of AI on intellectual property rights. Japanese law emphasizes the importance of human creativity and originality, which excludes purely AI-generated works from copyright protection. Despite this, there is recognition within the Japanese legal community of the need to address the growing role of AI in content creation. Future legal reforms might consider new categories of protection for AI-generated works, but as of now, the lack of human authorship continues to be a significant barrier to copyright protection in Japan (Ramalho, 2020).

These examples highlight the varying approaches jurisdictions are taking toward copyright protection for AI-generated art. Although some regions, such as America, have not admitted AI-generated art as protected work by copyright law because of focusing on human authorship, we see the possibility of applying copyright protection. In China, court admitted the copyright of AI-generated artworks if there are human participation and creativity, and in Canada, AI could own authorship of an artwork together with a human author. Regions like Europe and Japan, even though do not have cases that admit the authorship of AI, are having hot discussions on the availability of protecting the copyright of AI-generated works.

In order to meet the requirement of copyright protection, the AI system should be employed by human creator only as a tool to achieve the purpose or creativity of the author. This requires the creator to post a unique thought or idea to the AI, and refine the prompt in order to create a satisfying work. Moreover, the creator needs to generate enough images and select the best one from them. Modifying the parameters, training the AI and embellish the image created by AI using other tools could all be seen as a part of individual intellectual effort. This scenario aligns with the traditional use of tools in the creation of art, which human artist exercises control and makes creative decisions, using the AI as a means to achieve their vision. In such cases, the art is seen as a product of human creativity, while AI serves a similar role to that of a brush or camera in the hands of an artist. On the other hand, without meaningful human intervention-simply providing some string to the AI system to generate a work without devoting effort, time, and ideas-an AI-generated artwork would probably not be protected, since we could not distinguish whether the AI acts merely as a tool or as the principal creator of the work.

4. Possible ways to deal with the Copyright dilemma

In order to address the copyright challenges raised by Generative AI, there are several possible solutions that could be implemented. By establishing an artwork database, harmonize standards for AI copyright protection globally, and promoting ethical and technical education on AI, AI-generated art could avoid similarity with existing works and ensure originality, have universal copyright framework, and enable creators and artists to better utilize AI as tools and improve creativity.

To begin with, it is crucial to establish an artwork database to avoid generative AI artworks infringing on other artworks. When determining copyright of artwork, originality and creativity are always considered by courts. However, the AI-generated works are hard to be compared with traditional artworks that are created by human when facing copyright problem. Even human highly participates in the creation of artworks, the detailed process of how the image is non-transparent. (Hassija et al., 2024) During the generating, as well as the training process of AI, the complexity of its system and the usage of other artworks as training data make the copyright problems more severe. (Ottaway& Feder, 2023) Thus, providing copyright protection to AI-generated works or admit the authorship of AI could challengeable, since it is difficult of judge to determine the originality of the artworks.

Due to these reasons, a database that contains abundant artworks could be established to help solving these problems. This database contains most artworks that is protected by copyright law. It could compare a AI-generated work to other works in this database and find out the similarity between them by using Scale-Invariant Feature Transform (SIFT) algorithm, which could extracts feature points from images and uses them to compute similarity scores (Sri et al., 2022) This database enables judges and courts to better determine the originality and creativity of artworks generated by AI and determine the authorship and copyright. By implementing such a database, stakeholders—including creators, copyright holders, and legal authorities—would have access to detailed records of AI-generated content, which would facilitate the enforcement of copyright laws and potentially streamline the resolution of disputes. This approach would not only safeguard the interests of original creators but also promote the responsible use of AI in creative industries, encouraging original and creative AI-generated artworks to be protected by copyright law.

Moreover, it is advisable to make a contingent action across different countries to protect AI copyright by establishing standards. As globalization accelerates and AI technology becomes increasingly prevalent, the lim-

itations of national legal frameworks to fully address copyright issues associated with AI-generated content are becoming apparent. International cooperation is essential to tackle these transnational challenges effectively. The copyright issues of AI technology necessitate the creation of unified and flexible international standards to reduce legal conflicts and manage uncertainties regarding copyright ownership and usage efficiently. (Ottaway& Feder, 2023)

International standards should clearly define the principles of copyright ownership for AI-generated works, covering aspects such as the use, licensing, and transfer of these works. This would provide clear legal guidance for creators and users worldwide. Additionally, establishing mechanisms for combating cross-border copyright infringement and enforcing rights is crucial and requires close cooperation and information sharing among courts and legal institutions across different countries. (Dai, 2023)

The process of establishing these international standards should leverage existing experiences in intellectual property protection while considering the unique and rapidly evolving characteristics of AI technology. This requires the active participation and collaboration of international organizations, governments, enterprises, and the academic community to promote a fair, transparent, and efficient international system for AI copyright protection. Thus, it is crucial to encourage people to use AI appropriately so that they could create greater works.

Proper use of AI and public understanding of AI copyright issues are crucial. A culture of responsible AI use needs to be promoted globally, ensuring creators are aware of the limitations and boundaries of their technological tools. This includes educating users about copyright laws, ethical considerations, and best practices for AI-assisted creation. Education and awareness are key to fostering innovation and protecting intellectual property rights. Resources and support should be provided to help individuals and organizations utilize the power of AI in a manner that respects intellectual property rights, thereby fostering innovation (Lund et al, 2023).

By establishing a community that values both human creativity and technological advancement, we could ensure that AI serves as a tool that enables greater creative works, rather than posing a threat to the integrity of intellectual property. Overall, through international collaboration and public education, we could better address new issues and challenges in AI copyright protection, providing robust legal support for the innovative applications of AI technology.

5. Conclusion

This article has systematically explored the intricate challenges and evolving legal landscape about the copyright protection of AI-generated artworks. As AI continues to blend the lines between human and machine creativity, the urgency for a reevaluation of existing copyright frameworks has been more apparent. This need is driven by the growing capability of AI systems like ChatGPT, DALL-E, and Stable Diffusion, which are good at producing works that potentially rival human creativity in complexity and nuance.

The value of this research lies in its comprehensive analysis of how different jurisdictions are navigating the copyright issues posed by AI-generated content. For instance, the contrasting approaches of the United States, Can dada, and China provide a rich context for understanding the potential for harmonization of international laws concerning AI and copyright. The U.S. remains conservative, requiring human authorship for copyright eligibility, whereas countries like Canada and China have shown more flexibility, recognizing the contributions of AI under certain conditions, especially when significant human involvement is evident.

However, this study has its limitations. The rapid development of AI technologies means that legal precedents and regulations are continually evolving, which could render some analyses quickly outdated. Additionally, the variability in international copyright laws presents a significant challenge in formulating a universally acceptable framework.

Looking forward, the path is clear for more international collaboration. Establishing global standards for AI-generated content and an international database for AI-created works could help manage and protect copyrights effectively across borders. Furthermore, promoting ethical practices and a deeper understanding of AI's capabilities among creators will be crucial. These steps will ensure that AI tools are used responsibly and innovatively, supporting the legal protection of creative works while fostering global cultural and technological advancement. This holistic approach will not only safeguard the interests of creators but also enhance the integrity and richness of global artistic and intellectual contributions. In the future, more researches will be crucial for refining the legal frameworks related with AI-generated content, exploring the intersection of creativity and machine learning, and ensuring that the advancements in AI could protect and enhance creative expression globally.

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