Original Paper

Research on Copyright Recognition of Content Generated by Artificial Intelligence

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Abstract

With the rapid development of artificial intelligence technology, artificial intelligence has developed into "expressive artificial intelligence", artificial intelligence-generated content (AIGC) is more and more widely used in various fields. However, there are still some disputes and confusion about the copyright ownership of these machine-generated content. This paper first introduces the basic concepts and characteristics of artificial intelligence-generated content under the current background. Secondly, this paper discusses the positioning of AIGC in the copyright law and the difficulties in protecting the rights and interests through the different views and legislative practices on the copyright recognition of artificial intelligent-generated content in the world. Finally, in view of the current disputes, such as "creative requirements" and "human participation", this paper puts forward the possible ways to solve this problem in the future, including improving the copyright law to clarify the right ownership and responsibility of AIGC, learning from foreign experience, and establishing the copyright ownership system of AIGC, etc., which provides a useful reference for the formulation and practice of relevant laws and regulations.

Keywords

Artificial Intelligence, Generate Content, Copyright, Rights and Interests Protection

1. Introduction

With the widespread development and utilization of AI tools, artificial intelligence-generated content has become an important field in today's digital age. At present, there are a large number of artificial intelligence software and platforms on the market that can automatically generate content such as text, images, audio and video and distribute it through Internet channels, and the copyright of these generated content is difficult to determine. In the traditional creative process, copyright usually belongs

to human creators, who have produced the work through their own intelligence and creativity. However, when AI began to participate in the generation of content, the issue of copyright ownership became ambiguous. An inconvenient question also arises: Who owns the copyright to the AI-generated content? This issue involves many aspects such as intellectual property protection, creators' rights and interests, and laws and regulations. This paper will focus on legal and ethical aspects, as well as comparison and analysis at an international level. At the same time, we will also discuss the impact of technological development on copyright ownership, and look forward to the future development direction and trend.

2. Artificial Intelligence-Generated Content Overview

2.1 Definition and Scope

AIGC (Artificial Intelligence Generative Content) is a kind of new artificial intelligence technology, it is a technology based on machine learning and natural language processing, be able to generate text, images, audio and video, such as various types of content, This content can be news articles, novels, music, or software code. By analyzing large amounts of data and text, the AIGC system has learned to imitate human creativity, with characteristics of anthropomorphism, innovation, and high quality of generated content. In the past few years, AIGC has been widely used in many fields, such as natural language processing, machine translation, intelligent customer service, advertising and marketing.

2.2 The Dispute and Confusion of Copyright Ownership

The controversy and confusion of copyright ownership mainly stems from the difference between the creation process of artificial intelligence-generated content and the traditional creation method. (Wang, 2023) Traditionally, copyright has usually belonged to human creators, who produced their works through their intelligence and creativity. However, when AI is involved in content generation, whether it is creative and original becomes the focus of controversy.

The process of AI content generation is usually based on large amounts of data and algorithms to generate new content by learning and imitating existing works. (Sun, 2023) This raises a number of questions: whether the generated content can be considered independent creations, whether it qualifies for copyright protection, and whether the developers and owners of AI should be considered creators. Different countries and regions have different views on this issue. Some countries believe that only human creators can enjoy copyright, and AI is only seen as a tool or an aid to creation. Other countries believe that AI-generated content can be considered independent creations, entitled to copyright protection, and may ascribe copyright to the developer or owner of the AI.

In terms of law and ethics, artificial intelligence has ostensibly closed the gap between purely mechanical activity and human thought, and content generated using artificial intelligence seems to have traces of Chilean creation. Existing copyright legal frameworks are often designed for human creators and are difficult to adapt to the particular circumstances of AI creation. How to balance the creative contribution of AI with the rights and interests of human creators, how to ensure reasonable copyright protection, and how to harmonize legislation and practice at the international level are all

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challenges that need to be addressed.

3. International Perspectives and Practices on Copyright Recognition of Artificial Intelligence Generated Content

3.1 Views and Practices of Copyright Recognition Abroad

Copyright laws in the United States generally ascribe copyright to human creators, treating AI as a tool or an aid to creation. In 2022, the United States Copyright Office reruled the copyright protection of artist Kristina Akashtanova's comic book Charia at Dawn: Since the work was created with the involvement of the AI painting tool Midjourney, Kristina Kashtanova owns the copyright on the coordination and arrangement of text and visual elements, but it does not apply to the generation of the AI painting tool. The American version of Global stated in the file that the image works created using tools such as Photoshop were manually involved from the initial conception to the entire production process, therefore, the works are protected by copyright, and the works completed by AI tools such as ChatGtp and Midjourney are completely automatically completed by machines during the entire creation process, and the training data is completely based on the existing works of humans, so they are not protected by copyright law. In addition, the U.S. Copyright Office also stipulates that visual and textual works applying for copyright protection need to clearly indicate which parts are completed by AI and which are completed by humans, and if the parts completed by robots exceed the maximum limit, they should not be placed in the works for copyright law application. According to the United States Copyright Office, copyright law can only protect human intellectual creation, the results formed by natural phenomena or animal and plant activities cannot be registered for copyright, content generated solely by artificial intelligence usually does not meet the requirements of copyright protection, because they lack human creativity and originality.

Some European countries hold different views on the copyright ownership of AI-generated content. For example, the United Kingdom adopts the computer-generated works system, which believes that the copyright of computer-generated works belongs to the person who needs to arrange the creation of the work, that is, artificial intelligence itself cannot become the copyright owner of its automatically generated works, but artificial designers or enterprises can have this right. Ireland's Copyright and Related Rights Act 2000 states that when a work is "computer-generated and its author is not a person," the owner of the work is "a person who has made the necessary arrangements for the creation of the work." France, on the other hand, argues that AI-generated content can be regarded as independent creations, with copyright protection, and that the copyright belongs to the developer or owner of the AI.

3.2 Relevant Provisions of Copyright Law in China

At present, the current legal documents issued in China have not given a conclusive evaluation of whether the AI products are in line with the works in the sense of the "Copyright" law. In the existing cases in China, completely opposite views have also been formed on whether AI-generated works are "works". It can be seen from the law that the works referred to in China's Copyright Law "refer to

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intellectual achievements with originality in the fields of literature, art and science and can be expressed in a certain form", so the works have two essential components: "originality" and the content belongs to "intellectual achievements".

Although China issued the "Measures for the Management of Generative Artificial Intelligence Services (Draft for Comments)" in 2023, the document only stipulates that the provision of generative artificial intelligence products or services should comply with the requirements of laws and regulations, respect social morality, public order and good customs, and the pre-training and optimization data used for generative artificial intelligence products shall not infringe. It is not clear how to identify the copyright of artificial intelligence-generated products and how to resolve infringement disputes.

4. Controversy over the Ownership of Copyright in Content Generated by Artificial Intelligence

4.1 The Applicability of Copyright to AI Generated Content

The current copyright law mainly revolves around the rights and responsibilities of human creators, but with the development of AI technology, the following issues have arisen on the adaptability of copyright: First, the definition of the identity of the creator. In AI-generated content, the AI itself and the developers and users of AI should be considered creators. Second, clarify the scope of copyright protection. Copyright laws of most countries in the world generally give creators the exclusive right to their works as a way of recognizing power, but for the content generated by AI, how to define its scope and duration of protection is a difficult problem. Third, responsibility and rights. According to the principle of consistency of rights and obligations, if AI is regarded as a creator, how should it assume obligations while enjoying the rights of the work and deal with the infringement liability arising from the work?

China's copyright law stipulates that the natural person who creates a work is the author, but legal persons and unincorporated organizations can also be regarded as the author under certain circumstances and bear the corresponding legal responsibility. But AI as a new technology, its development and expansion expand the potential object of intellectual property protection. Therefore, it is necessary to clarify the scope of copyright protection and liability allocation for AI-generated works based on the clarification of technical principles, and explore what rights ownership and liability allocation rules can meet the legal needs of protecting the rights holders of AI-generated works while being consistent with China's practice of artificial intelligence development (Tang & Niu, 2023).

4.2 The Debate about AI as A Creator

Modern artificial intelligence technology can carry out a series of complex mental activities, including cognition and analysis, which lays the foundation for the subjective status of artificial intelligence (Qin & Zhao, 2023). When computers developed bionic capabilities, people began to notice the contradiction between the intellectual property theory behind artificial intelligence technology and the traditional intellectual property theory. Traditional intellectual property theory scholars believe that copyright law should have an identifiable human author, the author can own the copyright, the

computer does not own the personality necessary for property. Countries mainly hold two opposing views on the qualification of AI "agents". Some scholars who support AI as a creator argue that, at the level of creative expression, AI can produce high-quality, innovative work, and therefore should be considered an independent creator entity. On an objective level, Compared to human creators, AI has less influence on factors such as themes and styles. It is therefore easier to achieve objectivity and impartiality. Some scholars argue against AI as a creator: First of all, AI lacks emotions, self-awareness and other unique human characteristics, so it should not be regarded as a creator in the true sense of the word. Second, once AI is considered a creator, it brings with it a host of liability and ethical issues, such as who should be responsible for AI-generated content and how to ensure that the content meets ethical standards. Other ideas: Cooperative model. One way to compromise is to see AI as a partner to the human creator, recognizing AI's contribution to the creative process, but still seeing humans as the subject of the creative process. Regulatory and defining criteria: An appropriate legal framework needs to be established to regulate AI-generated content and clearly define whether AI can be considered a creator.

Looking at the above points of view, only the view of the cooperation model places the creators of AIGC in the technical premise of the production of works to identify, that is, to examine the role of artificial intelligence in the creation process. The creation principle of AIGC technology is: first collect enough effective experimental data, and then train the model. Through repeated iteration and adjustment of model parameters, the model can master the creation law and skills to generate output. But this process of AI data collection and processing cannot be done independently, it lacks a coherent mode of thinking from "cognition to judgment", and usually requires the participation of algorithm engineers. It can be seen that although the content generated by artificial intelligence cannot meet the originality requirements required for works in the usual sense, it only shows that artificial intelligence does not have an independent subject status, and it cannot independently carry out creative activities without human control, and cannot be the pure creator of AIGC. In the process of artificial intelligence creation from model adjustment to specific creation, there is no lack of signs of human participation in the designer's participation. Whether the subject can become a creator needs to be judged by the participation factors (Yu, 2022).

4.3 Debate on the Objectification of AIGC Copyright based on Originality Criteria

The copyright objectiveness of AIGC is a prospective issue for further exploration of its copyright ownership, exercise and limitation, which must be clarified first (Yang & Wang, 2023). At present, it is generally accepted that whether a work has originality is the primary criterion for determining whether it can enjoy copyright. Therefore, the objectivity of AIGC copyright can be analyzed from the perspective of originality criterion. There are two international standards for the recognition of originality: originality subjectivism standard and originality objectivism standard.

The subjectivist standard holds that the process of independent creation is essential to the composition of a work, this standard is based on philosophical theories such as Locke, Kant, Hegel, and others on property rights and author rights, it holds that the creation of works is a process from scratch, in which the work must be endowed with a clear purpose of creation and the emotional expression of the creative subject, rather than the originality of the work simply from the perspective of the result. In the pre-modern form of copyright law, the immaterial object is not regarded as a thing, but more as a concretely accomplished act, whose expression is embodied in the immaterial creation process in the material form (Brad & Lionel, 2012). As seen from the creation of artistic works, whether it is a painter or a calligrapher, what they have is not limited to the work itself, but more in their creative expression. At the same time, subjectivism adopts the dual structure, combining the property rights of works with the personality rights, and attaches great importance to the protection of authors' intellectual achievements. Its purpose is to encourage people to engage in intellectual creation activities through the protection of authors' rights and interests.

The objectivist standard holds that objects with the appearance of works can be regarded as works, this standard holds that in concrete practice, it is more feasible to use objective standards, that is, the appearance of the finished works, rather than the subjective psychology in the creation process (Yang, 2021). Because the subjective creativity generated by the creator in the creation process is often difficult to identify after the fact, the certification is more difficult. The work itself, as the final result of the creative process, can be effectively and objectively identified; on the other hand, as the main product, it is a bridge between the creator and the viewer. Objectivist standards shift the identification of originality from the process of creation to the final form consideration of the completion of the work, in fact, in response to the gradual change in the way of intellectual property protection under the new technology industry model, its attention is shifting from intellectual labor and creativity to a relatively closed entity.

In the judgment of the object of copyright, subjectivism standards ignore the causal relationship between creation and works, while objectivism standards may expand the interpretation of works in copyright law to a certain extent and damage public interests. In fact, whether subjectivist or objectivist standards are adopted, they are not completely opposed in determining the objectification of copyright, and taking the two as common reference standards can well solve the problems arising in the process of judging the works of an object from a single perspective. Therefore, it provides theoretical support for the objective analysis of AIGC copyright in the field of new technology industry in line with technical rationality and institutional rationality.

4.4 Content Issues Arising from AI and Human Cooperation

AI and humans belong to different fields of things, the two objectively have different attributes, although humans can currently control AI, but the future development of artificial intelligence is unknown. The work produced by AI and human cooperation is uncertain and may face the following difficulties: first, the specific contribution and responsibility of humans and AI are defined, and how to

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deal with copyright and intellectual property rights in collaborative creation. Second, does AI generated content have sufficient originality and creativity, and whether it can be integrated and coordinated with the creativity of human creators to achieve the quality standards expected by humans. Finally, the application and specification of relevant laws, regulations and ethical standards in the creation of works by AI and human cooperation, and whether the rights and interests of relevant parties can be protected. These issues need to be explored and collaborated on in areas such as law, ethics, technology, etc., in order to achieve balance and consensus on AI co-creating works with humans. In particular, on the legal side, relevant laws and regulations and ethical guidelines need to be developed to ensure that cooperation between AI and human creators can be reasonable, fair and mutually beneficial (Feng & Pan, 2020). Understanding and respecting the positions and interests of different stakeholders and finding a balance is an important factor to consider when AI collaborates with humans to create works.

5. Take the Existing Artificial Intelligence Jurisprudence as the Starting Point

Artificial intelligence technology greatly facilitates people's life and work needs, but the problems it causes are very complex, through the analysis of AIGC copyright dispute cases is conducive to effective legal regulation. In August 2023, "Li Mou v. Liu Mou infringement of his copyright to make pictures with AIGC" was tried by the Beijing Internet Court. In this case, the plaintiff Li Mou generated a series of pictures based on the model by installing the open-source StableDiffusion integration package, and uploaded the pictures to an Internet platform. The defendant Liu used the plaintiff's AI produced pictures as illustrations in his hundreds of articles, so the defendant sued the court, asking the defendant to bear the responsibility for copyright infringement, apologize and pay 5,000 yuan in compensation. The Beijing Internet Court believes that there are three controversial points in this case: first, whether the AI product constitutes a work in the sense of China's Copyright Law; Second, if the AI product constitutes a work in the sense of copyright law, how does its copyright belong? The third is whether the accused tort constitutes an infringement, and if so, how to bear the tort liability.

It can be seen that whether AI products constitute works interpreted in copyright law, that is, whether they are original expressions, is the primary focus of controversy in copyright infringement lawsuits. Whether artificial intelligence is involved or not, copyright law protection is the original expression made by human beings in the field of literature, art and science, which involves four points: subject issue, originality, cultural field and subjective expression, which need to be judged separately according to the case. In this case, there is a direct connection between the plaintiff's choice of data input, trigger condition setting, template and speech style and the specific form of expression of the picture, which is determined by the plaintiff's personalized selection and arrangement. Therefore, the picture contains intellectual choice and has originality, and should belong to the Copyright Law of China.

6. Take Institutional Suggestions on the Copyright Ownership of Content Generated by Artificial Intelligence

6.1 Learn from the Relevant Experience of Copyright Abroad

Anglo-American law countries are at the forefront of the world in the study of artificial intelligence products, and try to respond to the issue of artificial intelligence and copyright from the legal level. In this regard, we can try to learn from the legislative experience of Anglo-American law countries. The United Kingdom recognizes the nature of the work of the product of artificial intelligence, and the copyright belongs to the person who is "necessary to arrange" in the creation of the work, but the specific author is required to judge on a case-by-case basis. Compared with traditional works, the term of copyright protection of this work is limited to a certain extent. The United States has not made special legislation on this issue, but its Copyright Law has also taken into account its own applicability to artificial intelligence products in the process of revision, and up to now, it has formed a consensus that artificial intelligence products can be granted copyright as long as they meet the standards of the Copyright Law, and there are also precedents on the copyright of artificial intelligence products belonging to the designer. Japan in the "Intellectual Property Promotion Plan 2017" shows that in the current system, artificial intelligence products can not become the object of protection of property rights, it is not an expression of ideas, can not become the object of copyright, but for the recovery of investment costs, curb free riding on public resources, products should be protected. In terms of specific protection measures, it is suggested to register by trademark registration to prevent the occurrence of impostor behavior, or to invoke the provisions of the anti-unfair competition law to give developers the right to claim damages for the unauthorized use of products. Based on the above experience of overseas practice, China can also refer to the establishment of the "calculated works system", in the process of AI creation without the designer's substantial participation, the copyright of AIGC works belongs to the developer, or the trademark registration is adopted to register, and the copyright problems caused by this can be traced to the source regulation.

6.2 The Copyright Law Shall Improve the Provisions on AIGC Rights Confirmation

To improve the copyright law in the era of AIGC technical creation, we should first clarify whether AIGC belongs to the works explicitly interpreted in the copyright law, that is, whether the generated content should be protected by the copyright law. As mentioned above, artificial intelligence products, with the participation of participants, comply with the provisions of the Copyright Law on works and are copyrightable. In order to realize the equal protection of artificial intelligence products, judges should abandon the original concept of "non-human creation" to deny its work attributes, and judge it strictly according to the elements of the work. At the same time, the legislature should also strengthen the research on legal issues in the field of artificial intelligence, and build a specific system of copyright in line with the development of The Times. To improve the copyright law, we should first affirm the status of works, and our country has reservations about the answer to this question in the draft of the "Generative Artificial Intelligence Service Management Measures", so when affirming the

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status of works, a provision can be added to the back of article 3 of the Copyright Law, "artificial intelligence products that meet the conditions for human participation should be identified as works". Secondly, since artificial intelligence has the characteristics of high creative efficiency and the iteration cycle of technology is getting shorter and shorter, it is necessary to distinguish its copyright protection from that of traditional works, and appropriately shorten its protection period. Specifically, we can refer to the provisions of the Universal Copyright Convention on the protection period of property rights of works, and the protection period can be set at 25 years. The starting point is the first publication of the product.

6.3 Institutional Construction of AIGC Copyright Ownership

Different countries and regions have different views and practices on the ownership of AIGC copyright. When formulating specific systems, it is necessary to comprehensively consider domestic legal environment, social culture and technological development and other factors, and carry out cooperation and exchanges on an international scale to promote the formulation and implementation of relevant laws. According to the historical situation of the development of copyright law in China, the construction of AIGC copyright ownership system can be placed on two issues: one is how to let developers or users obtain rights, and the other is what way to obtain rights. In the acquisition of rights, the system of works for special positions may be applied by analogy. The technical developers of AIGC are regarded as "employers" and the users as "employees" in the system of special job works, and the ownership of the rights of the works is determined in advance in the form of clauses during the creation process, if not determined, the users enjoy the rights. The construction of the ownership system can be consistent with the system logic of special job works and can balance the interests of all parties (Zhu & Peng, 2020). In the way of obtaining rights, the registration system of works generated by artificial intelligence can be adopted. China's Copyright Law adopts the method of automatic acquisition after the completion of the creation of works, but compared with ordinary human works, the use of artificial intelligence to create works has obvious advantages of high efficiency and large quantity. By adopting the method of registration acquisition, works with low creation level can be screened out by the registration authority. For the creation of high-quality works into the market can promote the prosperity of the cultural industry. In addition, the name of the artificial intelligence program can be attached to the registration to facilitate the identification of disputes over the rights of works in the future.

7. Conclusion

Clarifying the legal attributes and copyright ownership of artificial intelligence-generated content is helpful to settle disputes and build a good cultural market order. From the perspective of economics, AIGC can also meet the actual needs of the market in the information age and promote the prosperity of the field of literature and art. Although the views on the protection of intellectual property laws in the world are not uniform, the fundamental purpose of the establishment of copyright is to protect the substance of product creation, and the market needs literary works that can promote social development.

At present, China has promulgated the "Measures" to supplement and improve the issue of the rights and responsibilities of artificial intelligence, and on the whole, the contradiction between technological development and legislative lag has been solved in a timely manner, but the provisions of the "Measures" still have a large degree of reservation. The development trend of future artificial intelligence is difficult to predict, but either way, when dealing with the complex and changeable market, we should return to the source and explore the related issues in the field of copyright from the spirit of legislation and the advantages and disadvantages of social development.

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