

Research on Copyright Protection of AI Creation

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Abstract. While it is now common for artificial intelligence to be involved in creative work in the news and visual arts, AI creation faces the ideological and institutional barriers of Intellectual Property Law only protecting human creativity. Therefore, the copyright protection of the AI creation has not formed a unified view in law. In this paper, the author discusses the copyrightability of AI creation, the qualification of the legal subject of AI, and the ownership of AI creation's copyright with a view to provide reference on the copyright protection of AI creation in a way that does not conflict with traditional rules.

Keywords: AI, legal subject, copyright, ownership.

1. Introduction

In recent years, artificial intelligence (AI) has permeated all aspects of human cultural creation. In May 2017, Microsoft released *Sunshine Loses Glass*, a collection of 139 modern poems by AI robot called little ice in Beijing, while Tencent developed its own software, Dream writer, to be used in mass production of financial news reports. Software funded by Microsoft, called the other Rembrandt, can randomly generates new, creative Rembrandt-style works of art by copying and accurately analyzing Rembrandt's paintings.

The participation of AI in the creation of literature and art, and the emergence of AI creation have also brought new challenges to the current practice.

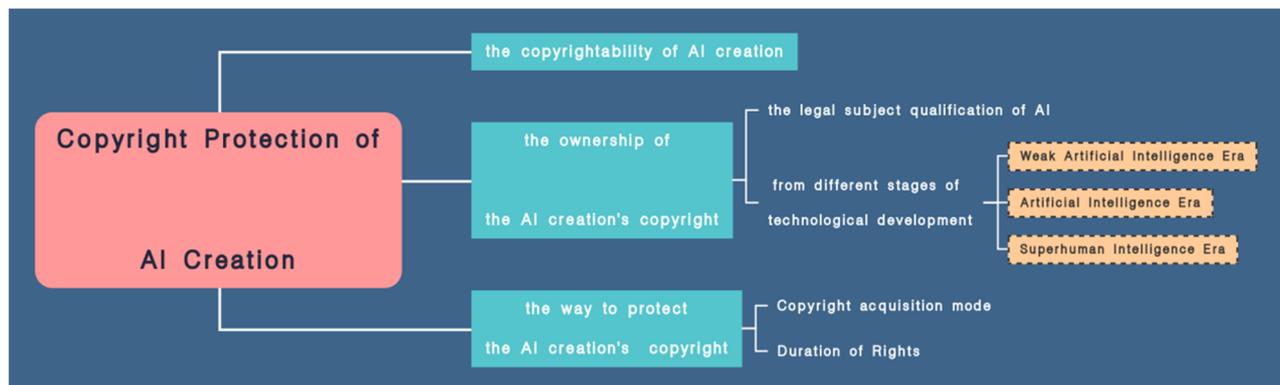


Figure 1. Structure of this article

2. The Copyright Ability of AI Creation

In order to study the copyright of the works produced by artificial intelligence, the necessity of copyright protection should be clarified firstly, and then whether the AI creation is a copyright work and can be protected by copyright law should be discussed.

2.1 The Necessity of Copyright Protection for AI Creation

The development of artificial intelligence can be divided into three stages: weak artificial intelligence, artificial intelligence and superhuman intelligence. We are approaching the era of artificial intelligence, but the era of superhuman intelligence is still far away. From the stage of technological development, the system design entering the public domain may be applicable to the era of superhuman intelligence. But in the era of artificial intelligence, the development of innovation needs to have sufficient incentive mechanism. Besides, the AI creation contributes to the cultural

diversity of human society and giving it copyright protection is also in line with the Intellectual Property Law's basic goal of encouraging innovation.

2.2 The AI Creation is a Copyright Work

Copyright Law of China refers to works of intellectual creation in the fields of literature, literature and science that are original and can be reproduced in some form. AI creation must have two conditions to become the work of legal protection: one is original, the other is replicable. These are the copyrightable requirements of the work.

2.2.1 Personality basis of Copyright

The current Intellectual Property Law is built around human intelligence. There is no doubt that all copyright theories emphasize that a copyright work must be a work of human creation. A work must be the intellectual product of a human being, and only the intellectual activity of a human being can be called a creation. A work that does not embody the intellectual activity of a human being, even if it can be called a masterpiece of art, is not a work of Copyright Law. In the practice of Copyright Law, the most typical example is the monkey selfie copyright registration case. An ape in an Indonesian primeval forest takes a selfie using the camera equipment of British photographer David Slater in 2011. To this end, the US Copyright Office stresses that only works created by humans are protected. On the one hand, the copyright office does not register works produced by natural forces, animals or plants. On the other hand, the copyright office does not register works that are produced by mechanical means, automatically or randomly, without any creative input or intervention by human authors. According to this view, AI does not have the personality attributes of human authors, and therefore we don't have to consider the creativity and originality of their works.

In my opinion, AI creation is actually the intellectual achievement of human-computer cooperation, and does not lack the personality basis of Copyright Law. Although the creation behavior is not completely completed by the program developers, and the deep learning of AI makes results cannot controlled by human. However, it is undeniable that human developers are involved throughout the entire creative behavior. First of all, the artificial intelligence target is completely set by the program developer. AI only executes the algorithm and completes the setting of the program developer. Secondly, in the process of the creation, a large amount of text corpus and the language model itself all contain the creative labor of human authors. AI creation is not same as the works defined by the US Copyright Office that have no creative input or intervention by human authors. Moreover, at the current level of technology, AI cannot create completely on its own without program developers. The idea that AI is responsible for the AI creation overestimates the intelligence and weakens the core role of the developers.

2.2.2 From the Author's Personality to the Audience's Aesthetic

AI creations and human works are difficult to identify in the form of ideas expression and their originality requirements. Because both of them can reflect certain thought, feeling or cognition in the external form of expression. Moreover, the objective criterion of the reflection of thoughts, feelings or cognition should be changed from the author's personality to the audience's aesthetic appreciation, which means that the reflection of thoughts or feelings not only refers to the expression of the author's personality through his works, but whether the work can produce the esthetic effect to the audience.

The aesthetic theory that explains the meaning of works from the reader's point of view emphasizes that the meaning of works of art lies not in the text itself or the author's consciousness, but in the aesthetic activities of the audience. If we define the elements of work according to the reader response, the theory of Copyright Law will come into being based on the human reader (audience) rather than the human author. This theory can solve the problem of the legal status of AI creation perfectly. That is, whether it belongs to a copyright work is not based on whether the work comes from human, but from the point of view of the human audience, whether it produces aesthetic spiritual effect.

2.2.3 Sweat of the Brow

Sweat of the Brow is regarded as the basic principle of Copyright Law. According to the principle, copyright is meant to protect and reward the efforts of an author. The rationale of the doctrine is that copyright is a reward for the hard work that went into compiling facts. To judge the copyright ability of the AI creation, we can follow the Sweat of the brow to establish the objective criteria for judging the originality. We can't deny its copyright just because the subject of the AI creation is not a natural person. In the traditional copyright analysis framework, this kind of work is actually a deductive work of AI on design copyright.

3. The Ownership of the AI Creation's Copyright

The ownership of rights is the core of copyright protection for AI creation. Firstly, we should make clear whether AI has the legal subject qualification. Secondly, we should analyze the relationship between AI and the software developers in different stages of technological development, then clear the ownership of the AI creation's copyright.

3.1 The Legal Subject Qualification of AI

At present, there are two views on the subject qualification of AI in the intellectual property field. One is in favor of the view that AI should be endowed with legal personality, which is called limited personality or secondary personality. The another believes that AI, which is controlled by civil subjects such as natural persons and legal persons, is not enough to achieve independent subject status. No matter how the AI machine assumes the responsibility, the ultimate responsibility bearer is human, which makes AI's legal personality appears redundant.

I believe that as far as the current development of AI is concerned, AI is not true intelligence and has not yet developed to the extent that it needs legal personality. Because the core of intelligence is the subject's freedom and the subject's self-recognition and active application of this freedom. In other words, the intentional behavior that AI generates today is completely different from the intentional, conscious behavior of humans. Although AI began to have the ability of self-learning, its instrumental characteristics have not been strongly weakened. AI is not enough to achieve independent status. Therefore, it is possible to solve the new problems brought about by AI creation under the existing legal framework, and it is necessary to avoid introducing new subjects and new rules to maintain the stability and continuity of the legal system.

3.2 On the Ownership of AI Creation from Different Stages of Technological Development

The development of artificial intelligence can be divided into three stages: weak artificial intelligence, artificial intelligence and superhuman intelligence. Different stages of technological development, the role of AI in the creative process is not the same, from the initial creation tool, to the collaborator in human-computer cooperation, to the final independent creator. Its rights should also follow this line of thinking and be discussed case-by-case according to the relationship between AI and human developers in the specific creation.

3.2.1 Weak Artificial Intelligence Era

In the era of weak artificial intelligence, people used computers to help them realize their ideas. For example, Microsoft Office *Word* can be used to create writing and theatre works, as well as Photoshop for art, Flash for audio and visual works, and AutoCAD for architectural works. In these cases, the computer is simply a tool for human creation, because creativity comes from human intellectual activity, and even without the computer, human creativity can be achieved in other ways. It's just that computers make certain types of creation practical, but they don't make them a new possibility. In the era of weak artificial intelligence, the work generated by computer software is essentially a work created by a human author, and its copyright belongs to the human author.

3.2.2 Artificial Intelligence Era

At present, AI has the ability of self-learning, but its intelligence level still depends on the amount of artificial input and its instrumental characteristics have not been strongly weakened. Deep neural networks, through unsupervised training, enable the system to discover correlations among huge amounts of unprocessed data under undetermined rules, and to create new works through rule discovery. In this process, AI just executes algorithms, selects and extracts from settings rather than setting goals or plots by itself. Although the uncertainty of the generated content causes the instrumental characteristics of AI to be weakened to some extent, and even forms an imagination similar to the existence of consciousness or wisdom. In essence, the instrumental status or a higher level of collaborator status of AI cannot be exaggerated. The idea that the rights of AI creation belong to AI, overestimates the intelligence of AI and weakens the core role of developers.

Based on the cooperation between AI and human developers in the era of artificial intelligence, it is neither realistic nor reasonable to endow AI with the status of subject in law. The attribution of specific rights can be analogized to the provisions of the current Copyright Law on work for hire. The copyright should be enjoyed and exercised by the person who develops or invests in the work to generate the software, rather than by the AI itself. If the software programmer is also the owner of the AI creation, then the copyright belongs to the programmer. If the user or owner of AI creation is not the programmer, whether the licensee or the assignee of the software can obtain the intellectual property rights of AI creation is usually determined by a license contract or a transfer contract.

3.2.3 Superhuman Intelligence Era

In accordance with the development trend of human technology, the era of superhuman intelligence will eventually become a reality. In the future, it may be the reshuffling of the law. The old law will die and the new will be born again, or there will be another rule that is above the law, or a being that is no longer called a law but has a similar function to the law. It is worth fantasizing whether there will be dualistic legal system under dualistic intelligence, but let us be clear about the future, when it does not really come, all about it is only human imagination, even fantasy. Therefore, I do not discuss the legal regulation and the ownership of rights in the future era of superhuman intelligence. The space should be left to the public imagination.

4. The Copyright Acquisition Mode and Rights Duration

Copyright Law of China adopts the principle of automatic acquisition, that is, the author automatically obtains the copyright of the work after he has created it. Copyright registration is not necessary for the generation of rights, but as evidence to prove the existence of rights and interests and to settle disputes over rights. In view of the massive existence of AI creations in the future, the works should be required to register for reference in order to confirm the rights.

There are two ways to calculate the term of copyright protection. For general works, Death Starting Doctrine is applicable; and for special works, Publication Starting Doctrine is applicable. In theory, AI creation is not appropriate to take the Death Starting Doctrine, because there is no limit to the life of AI, and its life cycle is infinite. Therefore, the AI creation should be copyrighted for 50 years, just like the work for hire.

5. Conclusion

As Charles Dickens wrote in *A Tale of Two Cities*, “It was the best of times, it was the worst of times”. As the rapid development of AI brings new opportunities to human beings, it also challenges the traditional legal system. On the issue of the AI creation’s copyright, I hold that the AI creation is a copyright work, and it is neither reasonable nor necessary to endow AI with the status of an independent legal subject. The attribution of specific rights can be analogized to the provisions of the current Copyright Law on work for hire. As for the future, we look forward to the great possibilities that AI will bring to all mankind and we also would like to believe that there will be new legal

regulations and even an existence that is no longer called law but has a similar function to the law to meet the needs of the time.

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