

Research on the Copyright Protection of the Artificial Intelligence Generated Products in China

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Abstract: With the change of the development stage of artificial intelligence makes the question of how to protect artificial intelligence-generated products imminent. Whether or not the AI-generated works can be included in the protection of copyright law is based on the prerequisite of what criteria are used to judge their originality. Based on the specificity of the subject matter of AI-generated materials in the law, it is more justifiable to judge their originality from objective criteria. In the allocation of the rights of AI-generated products, the rights should be attributed to the users in accordance with the priority of the agreement between the relevant right holders. In addition, the establishment of the registration system of AI generated products is conducive to cost saving and efficiency, and helps to promote the long-term development of AI technology.

Keywords: Artificial intelligence, Artificial intelligence Generated Products, Originality, Copyright.

1. Introduction

In the Colorado State Fair 2022 art creation competition designer Jason Allen won first place with his entry *Theatre Dopera Spatial*, a digital painting generated using artificial intelligence to draw. Jason Allen utilized Midjourney software to enter text and use the AI to generate an image that matched the representation. The results of the competition sparked a heated discussion, causing AI-generated products to once again inspire the public to discuss them. The essence of AI-generated products is that the computer system itself generates works based on massive data and algorithmic design, utilizing neural network learning technology. Although there is no obvious difference between AI-generated works and works created by natural persons in terms of expression, they still lack the full integration of original intellectual thinking in essence, so it is increasingly difficult to determine the copyright attributes of such works. The development momentum of artificial intelligence technology is so rapid that artificial intelligence is gradually being emphasized by countries around the world, and is the new focus of international competition, and in the *Notice on the Development Plan for a New Generation of Artificial Intelligence* [1], which was released and implemented by China in 2017, it is more reflective of the high importance that the country attaches to the artificial intelligence technology and its related industries. From the point of view of the existing legal system, the relevant provisions for artificial intelligence generated products are still to be perfected, and there are still many disputes in the academic community about its characterization and ownership, therefore, it is necessary to explore the legal protection of artificial intelligence generated products.

2. Dilemma on the Copyright Protection of the Artificial Intelligence Generated Products

The deep integration of artificial intelligence and various fields has broken the traditional mode of human creation, and the generation of artificial intelligence generated works has brought challenges to the existing copyright law, and also

revealed the difficulties faced by the copyright law for its protection.

2.1. The Problem of Determining the Originality of Artificial Intelligence Generated Products

Whether the artificial intelligence generated products has originality, is to make it constitute a work subject to copyright protection of the necessary conditions, in short, artificial intelligence generated products does not have originality, then it must not constitute a work. [2] Therefore, the determination of the originality standard of the artificial intelligence generation becomes very important. Academics have not reached a unified opinion on the originality judgment standard of AI generated works, one is centered on the author's independent creation, emphasizing that originality must reflect the author's thought and personality of the subjective standard, the other is from the work itself does not pay attention to the process of the objective standard, one of the main reasons for the formation of different points of view is that at present, the AI generated works have not yet been stipulated in the law, and copyright law in the The definition of traditional works, in addition to originality and reproducibility, also restricts authorship, which must be created by a natural person. [3] Therefore, some scholars from the perspective of the author of independent creation, that artificial intelligence does not have an independent "thought", the product generated by the computer belongs to the results of the computer production, is created by non-human creation, does not satisfy the "author" in the copyright. In addition, it is argued that the products generated by artificial intelligence do not belong to "works". However, this viewpoint, which judges originality from subjective criteria, emphasizes too much that originality can only come from the spiritual contribution of human beings and reflects the subjective personality of the author, which is inconsistent with the basic goal of cultural pluralism and improvement of the public's well-being pursued by the copyright law. What's more, as far as the development level of today's AI technology is concerned, it is not difficult to make AI-generated works similar to human works in terms of appearance. As early as 2016, the birth of "Weiwei", a poetry-composing robot developed by the Center for Speech

and Language Experimentation (CSLT) at Tsinghua University in China, represented that AI could already narrow the difference between AI-generated works and human works on an objective level, which meant that humans could not distinguish between humans and AIs through linguistic conversations. [4] According to the results published on the CSLT website, 31% of the poems created by "Weiwei" are considered to be created by humans. Therefore, if the subjective conditions of the AI are taken into account and the author's independent creation and expression of thoughts are considered as the element of originality, the determination of originality of AI-generated works will be caught in a logical dilemma, which will fundamentally deny that AI-generated works have originality and thus the possibility of being protected by the Copyright Law as a work of authorship. [5]

2.2. The problem of defining the identity of copyright subjects in artificial intelligence

On the basis of the artificial intelligence generated products meets the standard of the work, the artificial intelligence generated products is directly generated by the intelligent software is an objective fact, whether the artificial intelligence as a suitable subject can be given the identity of the main body is another issue that needs to be discussed urgently. Article 11, paragraph 2 of China's Copyright Law also clearly stipulates that the author needs to be the creator of the work. [6] Although artificial intelligence can create works with originality through deep learning, in the final analysis, artificial intelligence still does not have rational ability, independent consciousness, free will, at this stage, the public is more inclined to regard it as a tool and means to achieve the purpose of the human being, and is subject to the domination of the public, but the artificial intelligence can not be used as a suitable subject to solve the situation of disputes of ownership or infringement problems, so at this time, the artificial intelligence can be traced back to the natural person behind to determine the identity of the copyright subject, with the help of the suitable subject at the legal level, that is, the design of the artificial intelligence is required to be the creator of the work. Therefore, at this time, the natural person behind the artificial intelligence can be traced back to determine the identity of the copyright subject, with the help of the legal level of the eligible subject, that is, the designer, user or investor of the artificial intelligence, which have substantial interests in the artificial intelligence generated by the relevant rights to determine the rights and responsibilities of the issue. In other words, the AI itself cannot be the "author" of the AI-generated products, and it is not feasible to make the AI-generated products have the elements of copyright protection by granting the AI the status of a subject.

2.3. The problem of determining the attribution of rights in artificial intelligence generated products

Artificial intelligence does not have legal personality, and if copyright is directly granted to the artificial intelligence software itself, it is against the copyright legal system based on the protection of the rights and interests of natural persons. Under the premise of denying the artificial intelligence itself as a legal subject, it is more reasonable to grant copyright to the natural person subject or group organization behind it. Therefore, tracing back to the roots in the special work of AI-generated works related to the interests of people around the AI investors, AI designers or AI users. [7] in the legislative

purpose of the copyright law, from the micro point of view not only to encourage individuals to create should also protect their copyright interests, from the macro level to protect the interests of industrial development, to promote the widespread production and dissemination of works of policy objectives. Therefore, artificial intelligence as a tool to be dominated, does not have the subjective consciousness of its economic incentives does not make sense, so the copyright given to natural persons, help to achieve the effect of incentives. However, in the academic community there are still many controversies surrounding the attribution of the rights given to artificial intelligence investors, designers or users. To pay labor as the standard artificial intelligence designer in the process of creating artificial intelligence to pay labor, and the code program is the main way to generate human artificial intelligence generated products, so the copyright should be awarded to the artificial intelligence designer. There are also scholars in respect of free agreement between the three to deal with disputes over ownership, for the lack of agreement, the establishment of artificial intelligence investors (usually refers to the owner) rights attribution is conducive to the settlement of disputes. [8] At the same time, artificial intelligence whether to create works of decision-making power is mainly in the hands of artificial intelligence users, if the user is ignored will reduce the enthusiasm of the user artificial intelligence to create works. Therefore, in the denial of artificial intelligence has the qualification of legal subjects on the basis of exploring how to artificial intelligence generated by the attribution of rights is also one of the problems to be solved.

3. The Need for Artificial Intelligence Generated Products to be Protected by Copyright Laws

Although there are currently many problems facing how AI-generated products are protected by copyright, from the perspectives of the purpose of copyright legislation, the development of innovative technology and the adaptation of the law, and the market incentive system, copyright protection for AI-generated products is indispensable for the enrichment of spiritual civilization and the development of the cultural and scientific fields.

3.1. The need for a favorable AI market environment

The continuous progress and development of AI technology, whether it is the poem "Sunshine Lost Glass Window" created by Microsoft's Xiaobing robot, or the Guqin song "Candle" generated by the AI automatic composition system developed by the Central Conservatory of Music of China, have proved that AI has proved to have great influence and creative potential in the field of literature and art. At this stage, China has not issued specific laws and regulations to regulate and restrain AI-generated works, but according to Article 1 of China's Copyright Law, in addition to the protection of authors' rights, the legislation of the Copyright Law aims to "encourage the creation and dissemination of works that are beneficial to the construction of socialist spiritual civilization and material civilization, and promote the development and prosperity of socialist culture and science", therefore, it is necessary to "encourage the creation and dissemination of works that are beneficial to the construction of socialist spiritual civilization and material

civilization". development and prosperity of socialist culture and scientific endeavor", therefore, as innovative intellectual achievements, the AI Generated Products should be protected by the copyright law. The creation speed of artificial intelligence is obviously faster than that of human creation, and in the case that there is no difference between the works of artificial intelligence and human works, it will generally give up the choice of human works that need to be paid for, and the lack of timely legal protection for them will result in the misuse of the works, and the infringement of copyrights such as plagiarism and other infringement phenomena will be frequent, which will cause the interests of the relevant right holders to be jeopardized. This is not conducive to the development of intellectual property rights, and will also reduce the incentive of the rights holders behind the artificial intelligence generated works to create.

3.2. The need to adapt the development of innovative technologies to the legal system

The development of innovative technologies has led to the improvement of the copyright legal system, and artificial intelligence, as an important field of scientific and technological innovation, improving the legal system related to it can provide a stable development environment. In order to strengthen the protection of intellectual property rights, the government issued the Opinions on Strengthening the Protection of Intellectual Property Rights (hereinafter referred to as the Opinions) back in 2018. The Opinions clearly state that taking the protection of innovation as the center of gravity of the reform of the intellectual property system, promoting economic development, maintaining market order and optimizing the allocation of resources through the construction of the intellectual property system as a basis, and strengthening the intellectual property protection of the development of new technologies are the intrinsic requirements of perfecting the socialist market economic system. Innovative technology is the core driving force to promote social and industrial development, and the development of technology precedes the legal system, therefore, the legal system needs to adapt to the progress of innovative technology. Copyright law, as one of the components of the intellectual property system, follows the pace of technological innovation to be constantly adjusted and improved, but as an emerging type of artificial intelligence generated works, due to the subjectivity of the special nature of the object and the content of the copyright law to break through the boundaries of the existing copyright law, therefore, the need to update the copyright system to constrain the copyright system, by clarifying the copyright protection of AI-generated products, so that technological innovation and the legal system synergistically develop to promote the development of artificial intelligence industry. By clarifying the issue of copyright protection for AI generated works, the technological innovation and the legal system can be developed synergistically to promote the healthy development of AI industry.

3.3. The need for creative incentives

Copyright law protects works produced by creation, and the creator automatically obtains copyright upon completion of the work, providing full protection for the creator's personal and property rights. Copyright can be divided into the personal rights that the copyright holder enjoys ipso facto at the time of completion of the creation and the property

rights that he or she is authorized to obtain income from, which cannot be infringed by anyone without the authorization of the copyright holder, and which are exclusive in nature. As a result, financial gain provides an incentive for people to engage in creative endeavors and commit themselves to producing excellent works. Although some scholars believe that the essence of the establishment of copyright is to encourage natural persons to create, and artificial intelligence as a machine without feelings and subjective ideas, the positive evaluation of human beings does not have significance for it, but if only for this reason, it is unfair to deny the protection of AI generated works by the copyright law. With the progress and development of artificial intelligence technology, artificial intelligence generated in the objective form of expression and human works, for example, Sony Computer Science Laboratory in Paris developed an artificial intelligence can be used in Bach's musical style to create music neural network, 352 Bach composed oratorio into the database and other music mixed with the invitation to more than 1,600 listeners, of which more than half of the professional musicians are More than half of the professional musicians thought it was Bach's work.

At present, the majority of artificial intelligence can not exclude the human factor to generate "works" completely autonomously, behind the need to be governed by natural people, reflecting the emotions and personality of natural people, so artificial intelligence generated products belongs to a kind of intellectual achievements, obviously, has economic value. The special characteristics of AI products cannot be excluded from copyright protection, and the copyright protection of AI products can bring economic benefits to the right holders behind them, thus effectively stimulating the enthusiasm of designers, investors or users and promoting the development of AI technology industry. [9]

4. Designing Copyright Law Protection for Artificial Intelligence Generated Products

4.1. Identifying objective criteria as a standard for judging originality

With regard to the originality of traditional copyright law, the academic community generally agrees to start from the two aspects of "independent creation" and "minimum creativity". On the premise that a work meets the minimum creativity requirement, even if there are similarities in content with existing works, both works can be protected by copyright law as long as it can be proved that both authors created their works independently. On the premise that the work meets the minimum creativity, even if there are similarities in content with existing works, as long as it can be proved that both authors created independently, both works can be protected by copyright law. [10] Under the perspective of artificial intelligence, when the AI-generated work does not differ from the objective form of human-created work in its expression, i.e., when the AI-generated work is different from the existing work in form, i.e., it is not made by simple copying, and it can satisfy the minimum creativity required for a general work assuming that it is created by human beings, the work is rightly recognized as a work in the context of copyright, and is protected by the copyright law. . Although the current stage of artificial intelligence does not have a natural subjective creative consciousness, this does not affect the determination

of the originality of the artificial intelligence generated products. As the operation law of artificial intelligence itself will cause the same or similar situation among the AI generated works, if insisting on the aspect of "independent creation", it will cause many disputes. Therefore, the criteria for determining the originality of AI-generated works do not need to take into account the question of whether the creator behind the work is a human being or an AI, but only the objective level of the criteria, which is a minimum of creativity and different from existing works.

In China's first dispute case on AI-generated article works (Tencent Inc. v. Yingxun Technology Co. Infringement of Copyright and Unfair Competition Dispute in 2020), the court affirmed that the intellectual activity of the plaintiff's creative team, which had a direct connection between the input of data and information, linguistic style, etc., and the specific manifestation of the article in question, had a certain degree of originality. [11] It is not difficult to see from the content of China's latest decision on the copyright dispute over AI-generated products that the court downplayed the subjective factors of natural persons such as the author's creative consciousness and emotions when determining the originality of a work, and determined whether the external manifestation of a work meets the standard of originality by means of objectivism, and the means of determining the originality of a work by comparing the AI-generated object with an existing work reflected the application of the objective judgment standard. application of the standard of judgment. [12] If the AI-generated work has a certain degree of innovativeness and is not a simple copy of other works, it can be judged as satisfying the originality element.

4.2. Determining the attribution of rights in AI-generated products

Article 11 of China's current Copyright Law treats legal persons or unincorporated organizations as authors, entitling them to copyright. This article sets a precedent for non-natural persons to have the qualification of legal subjects. On the basis of this theory, artificial intelligence-generated products may refer to the aforementioned legal fiction provisions, fully respecting the principle of conscious autonomy in the civil law system, i.e., there is an agreement between the relevant rights holders to determine the rights attributed to the artificial intelligence products according to the agreement, and in the absence of a clear agreement on the rights attributed to the rights holders, the users of the artificial intelligence are given the qualification of the subject matter as the subject matter of the rights of the artificial intelligence-generated products.

Up to now, artificial intelligence still does not have subjective consciousness, and the operation of artificial intelligence requires the intervention of natural persons, and before generating artificial intelligence generated products, the user needs to input specific operating instructions for them to operate. Artificial intelligence generated products in the artificial intelligence user to utilize artificial intelligence for the process of creation, according to the user to adjust the selection of data screening criteria, the output of the desired generation of artificial intelligence generated products. The artificial intelligence user generates an artificial intelligence product by actually operating the artificial intelligence, which can be viewed as the result of the artificial intelligence being used as a tool by the user. Artificial intelligence users in the artificial intelligence creation process brings together the creative will of the artificial intelligence users, with the ability

to command and supervise the creative process. For example, Google launched the creation of novels of artificial intelligence LaMDA Wordcraft, creators (users) input text, LaMDA according to the existing text to generate new ideas, or to help rewrite the existing text, thus helping to provide creators with ideas for writing, the artificial intelligence user in order to make it in line with the general readers reading aesthetic of the generated text collation and proofreading, from the results of the filtering and editing of From the results, the AI user edits the generated text to produce works with aesthetic value.

Artificial intelligence user compared to investors in the process of generating the output of more intellectual input, its role in direct artificial intelligence generated products is more direct, the two in the attribution of the rights of the user than the investor is more priority. Artificial intelligence user's intellectual activity is indispensable in the process of generating artificial intelligence products, and the work has a direct causal relationship. Therefore, the intellectual activity invested by the AI user has a certain creative contribution to the generation of the work compared to other related right holders. In addition, from the perspective of promoting the development of AI technology and economy as well as the realization of incentives, attributing the rights of AI-generated works to users is more in line with the legislative purpose of copyright and the development of the industry. Users, as consumers, will adjust the content of AI generated works according to consumer preferences, improve the quality of AI generated works, and complete the renewal of the AI industry while benefiting from it. Although the current AI creation technology is still in an upward stage, resulting in the quality of AI-generated products varying, in the face of the massive output of works market, excellent works rich in creativity and aesthetics are naturally worth protecting. If in the case of other relevant subjects of interest already artificial intelligence software or machine equipment ownership, the copyright of artificial intelligence generated works attributed to the relevant subjects of interest will face a double empowerment situation. [13] Therefore, in order to maximize the realization of market benefits, better play the value of the use of artificial intelligence should be attributed to the user of artificial intelligence products.

4.3. Establishment of a registration system for AI-generated products

The period of protection for works in China begins when the creation of the work is completed, and the completion of the author's act of creation means that the author obtains copyright and is protected by the copyright law. In the case of affirming that AI-generated products enjoy copyright, by adopting the registration of AI-generated products to obtain copyright protection, examining whether the AI-generated products have originality, and supervising the AI-generated products through the public, it can effectively prevent and regulate the impact of AI-generated products on the copyright law triggered by the development of AI technology. Artificial intelligence software generates artificial intelligence products through system operation, and whether the generated products can satisfy the attributes of works in copyright can only be decided after the judgment of originality and human confirmation, therefore, it is necessary to register and protect the artificial intelligence products under the condition of originality as a condition for the inclusion of artificial intelligence products in the protection of copyright.

A prerequisite for registration protection is that the copyright administration department should establish a database of exclusive AI-generated works. This will distinguish AI generated works from human works, and at the same time, the registration of data information can also prevent infringement disputes in the field of AI creation. However, based on the operation of artificial intelligence software with high efficiency, high speed, high mass production characteristics, in the consideration of social resources and registration costs, only after the generation can not actually obtain the copyright, should be generated by artificial intelligence related to the right to apply for registration, the registrant is not clear, the right should be attributed to the user. When applying for registration, it is necessary to set out the details of the AI generated object, the right holder, the time of generation, and the AI software, etc. After reviewing its originality, the announcement will be made after meeting the standards. After the expiration of the opposition period, the copyright of the AI product is formally registered and a proprietary mark is established, and the record is backed up in a database for easy retrieval and identification. In addition, the registration process can clarify the information on copyright ownership, prevent infringement disputes, and encourage AI users to be aware of their rights, safeguard their own interests and proactively take measures to register and protect their AI creations, which is conducive to promoting the development of AI creation technology.

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