

The Research On The Ownership Of Copyright Of AI-generated Content

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Abstract. Generative Artificial Intelligence (GAI) has significantly enriched society by producing a wide range of high-quality cultural products, offering aesthetic experiences comparable to traditional creations. However, the issue of ownership in legal practice remains ambiguous due to the involvement of multiple creators in the production process. To address this, the copyright granting process can be divided into initial authorization and subsequent rights transfer to delineate the rights of various parties involved. Current theories suggest that the commissioned works model effectively safeguards the interests of all parties by granting initial authorization to the hardware owner of the artificial intelligence while protecting the rights of the AI user through contracts. Moreover, lawmakers should enhance the current copyright law system, emphasize the importance of human involvement in generative artificial intelligence outputs, and establish collaborative mechanisms at the societal level to balance the interests of all parties involved. This approach will provide clarity and fairness in the ownership and distribution of rights associated with AI-generated products.

Keywords: Generative Artificial Intelligence, Copyright, Originality, Intelligence Achievement.

1. Introduction

With the rapid advancement of artificial intelligence, it has permeated various industries, such as music, painting, and writing. Its prevalence has significantly transformed the ecosystem of numerous industries, necessitating further improvements to the related legal systems [1]. Taking into consideration the copyright ownership of text-to-graphics generated by artificial intelligence in Beijing Internet Court, this issue has emerged as a prominent topic in both theoretical and practical domains. Uncertainty surrounding copyright ownership can lead to imbalances in safeguarding interests among designers, operators, and users of artificial intelligence systems. If left unregulated, this issue may impede the progress of artificial intelligence development while contradicting the legislative purpose of protecting authors' copyrights. Currently, there are several theories regarding copyright ownership for AI-generated content, including the post-works theory [2], legal person works theory [3], interest rights protection theory [4], neighboring rights protection theory [5], and commission works theory [6]. However, there is no legal provision defining the status of artificial intelligence itself. Moreover, these aforementioned theories all have certain theoretical limitations. In light of this situation, this paper investigates copyright ownership for AI-generated content and concludes that determining ownership through the commission works theory, via initial authorization to hardware owners coupled with contractual safeguards for users' rights and interests, seems more reasonable. Simultaneously, this paper proposes a plan to enhance the existing system by addressing the inherent defects in the theory of commissioned works. The aim is to provide recommendations for determining copyright ownership of AI-generated content.

2. The Dispute over the Ownership of AI-generated Contents–Viewed Through the Mode of Initial Authorization and Subsequent Rights Transfer

Many ongoing disputes concerning the protection of artificial intelligence products primarily center around legal doctrinal prerequisites for the originality of the work. This focus on whether the work qualifies for protection often overlooks the pragmatic implications of copyright law [7]. This paper argues that from the perspective of the whole process of rights allocating, the existing theories can be distinguished by the mode of initial authorization and subsequent rights transfer.

2.1. Initial Authorization and Subsequent Rights Both Belongs to AI Developers

The perspective that both the initial authorization and subsequent rights are vested in the AI developer stems from the post works theory. This theory posits that artificial intelligence controlled by human does not suffice to attain an independent legal status. Thus, to align with the essence of copyright law in safeguarding the interests of humans, it asserts that if the content produced by artificial intelligence is autonomously created by the AI itself, then its copyright should be attributed to the AI developer.

The theory focuses on the process of content generation, emphasizing that their creation hinges on the algorithm programmed by the programmer and the subsequent training. According to this, the programmer endows originality in the process, thus asserting the right to ownership. However, it overlooks the black-box nature of contemporary generative artificial intelligence, wherein, developers cannot predict the final output form of the content even if the same parameters are input. Consequently, this paper argues that the majority of AI-generated content occurs after user parameter input and aesthetic screening. Furthermore, the theory fails to account for the essential material prerequisites for generative artificial intelligence, including the significant computational power involved. In accordance with Article 18 of the Copyright Law, if a work is contingent upon the material resources of a legal person and be responsible by legal person, the copyrights are vested in the legal person, not the developer.

2.2. Initial Authorization and Subsequent Rights Both Belong to the Copyright Owner

The legal person theory considers the owner as the author. Copyright law provisions regarding works of legal persons imply that a specific subject can still qualify as an author without direct involvement in the creation process. In practice, it is observed that the majority of such subjects are typically associated with investors [8]. Developers often operate under the guidance of investors or legal person and rely heavily on the computational resources provided by them [8]. Research on computer application software development technology based on artificial intelligence suggests that the generation of AI-generated content lies in the model training process, where developers act as trainers by feeding curated data to the machine. The selection criteria are determined by the legal person, suggesting an imposition of the legal person's intentions. Consequently, this paper argues that there is no inherent barrier preventing the legal person from being recognized as the author. With the increasing complexity of current generative artificial intelligence and the escalating computational demands, a new trend has emerged in the market where specific computational resource providers are now established to cater to the needs of internet companies. This development has led to a scenario where software and hardware may not necessarily be owned by the same subject simultaneously, posing a challenge to the existing theory.

2.3. Initial Authorization and Subsequent Rights Belong to the Hardware Owner

The view that both the initial authorization and subsequent rights belong to the hardware owner of artificial intelligence is shared by two doctrines, namely the interest rights protection theory and neighboring right protection theory. The interest rights protection theory posits that although AI-generated content may meet the formal requirements of a work, significant theoretical conflicts arise when applying copyright law to explain them. Therefore, it reverts to the essence of AI in civil law

and defines AI-generated content using the concept of interests. Under the interests rights, ownership does not have specific requirements regarding the identity of the original subject and interests. Thus, whether the interests qualify as works under copyright law does not impede the right to profit from the property. Regarding initial authorization, this theory asserts that copyrights should be granted to the hardware owner from a societal interest maximization perspective [9]. The goal is to incentivize the manufacturing, development, and enhancement of computers.

The neighboring right protection theory, on the other hand, focuses more on safeguarding investors' interests during the process [5]. In the current market, developers primarily benefit from coding rather than generating works. For investors or hardware owners, profit is predominantly derived from the generating. Therefore, to safeguard investors' legal investment income, AI-generated content should be reasonably protected. Additionally, protecting AI-generated contents as subjects of neighboring rights aligns with the principles of the neighboring rights system. This principle asserts that works failing to meet the originality standard of works cannot be protected, which precisely reflects the current status of AI-generated content.

In summary, considering the conflicts that arise from applying copyright law and actual economic needs, both theories argue that enforcing copyright law would result in numerous contradictions, thus requiring the adoption of alternative theories. However, this approach presents a significant drawback as it gives up the protection patterns provided by the traditional copyright law system. While AI-generated content exhibits work-like characteristics, copyright law protection methods should be applied to safeguard it. Yet, by mirroring civil law, the two doctrines result in differences in the way and level of work protection. The content of interests and neighboring rights significantly differs from that of copyright, thus failing to provide the necessary protection for the products.

2.4. Safeguarding Users' Interests Through Contracts While Initial Authorization Vests in the Hardware Owner

The concept of granting initial authorization to the hardware owner while safeguarding the interests of users is supported by the theory of commissioned works. Artificial intelligence, as a technical tool, exists to implement predetermined human goals, similar to the relationship between commission and trust. According to the legal person theory, the hardware owner establishes the objectives and conditions for the development of artificial intelligence, similar to humans setting intentions for machine creation. Consequently, the commissioning agreement virtually assigns copyright to the hardware owner of the artificial intelligence system [10]. In today's market, developers primarily train models to meet demand, often modifying them based on customer needs. If copyright remains with the owner, it artificially inflates users' expenditures. Thus, in accordance with copyright law provisions for commissioned works, hardware owners and users can sign contracts in which the copyright of works automatically generated by artificial intelligence transfers to the user. This ensures a fair balance of rights and interests among developers, hardware owners, and users, making the commissioned works theory more reasonable from a practical standpoint [6].

3. Theoretical Justification of the Commissioned Works Theory

3.1. The Practical Meaning of the Commissioned Works Theory

3.1.1. Satisfying the needs of the market for AI-generated contents

In the current market, most works are created to meet market demands, with creators usually being separate from users. Thus, the utility of these works is often realized through transactions. In the realm of software, particularly artificial intelligence systems, the application of AI software ontology extends beyond the developer's usage. Instead, developers frequently modify and debug the fundamental AI framework to align with customer requirements, leading to the automatic generation of new content tailored to customer preferences. This trend is particularly pronounced in the news media sector, where AI is increasingly employed for news report writing. Notably, companies such

as the Associated Press have partnered with AI companies to automate news generation. Platforms like Wordsmith are capable of producing over 3,000 news articles per quarter. Acknowledging the nature of AI achievements, it is crucial to balance the interests of AI developers, investors, and users. Priority should be given to institutional arrangements for the ownership of AI-generated works through freely agreed-upon contracts to mitigate disputes and address practical challenges [11].

3.1.2. It meets the needs of AI generator designers and users for interest protection

With the development of the AI industry, enterprises focusing on the development of AI software systems may not necessarily need to directly use AI software systems. Conversely, many enterprises that require AI software systems for personalized content creation may not be able to afford the research and development costs independently. According to the basic principle of the copyright system, the copyright of the AI "works" should belong to the author. As a result, enterprises using AI software systems may not have corresponding rights to the works created by the system, effectively increasing the cost of using the works. From the perspective of industrial practice, such issues actually involve two layers of copyright relations, which are addressed according to the different norms of the Copyright Law. The first layer pertains to the right to use the artificial intelligence software system itself. As a software work, the artificial intelligence software system does not transfer the copyright, and the user often obtains the right to use the software work through a license agreement without transferring the copyright. The second layer concerns the use of artificial intelligence as a creation tool. The developer of artificial intelligence software works remains the author, and the process of artificial intelligence automatically generating content is essentially the process of the author using this technical tool to implement the creation. At this time, according to the provisions of Article 19 of the Copyright Law on the commissioned works, the author can sign an entrusted creation agreement with the user of the AI software works in advance, and generally attribute the copyright of works automatically generated by the AI to the user during the usage period. It is allowed to agree on the interest ownership of artificial intelligence works between designers and users through free trading, which is more in line with the value nature of copyright following the law of the market [12].

3.2. Legal Interpretation of the Defects of the Protection Mode of Commissioned Works

3.2.1. The defects of the commissioned works

Today, generative AI cannot obtain the identity of the author, and has been recognized by many countries and regions. Even if the expression form independently generated by generative AI does not qualify as a work, it may still be eligible for pretention under the Civil Code as intangible property, rather than automatically falling into the public domain. As for the identification of artificial intelligence assisted generation and independent generation. Most copyright claims for content generated by artificial intelligence are typically contingent on demonstrating that the content has been disclosed or proved to be independently generated by artificial intelligence. From the perspective of the creator, the author must directly shape the expression of the work, with any assistance beyond the creative input serving to establish an indirect connection to the work. From the perspective of the creative process, the author must lead the creative activities, and the tools can only play the auxiliary mechanical executive functions in it [13].

3.2.2. Advantages over other models

The principle of commissioned works is not applicable to the ownership logic of artificial intelligence "works". The ownership of commissioned works involves the initial acquisition of copyright based on the principle that the employer assumes responsibility for the gains and losses resulting from the employee's actions, while recognizing the program designer as the author. Programmer are identified as the authors in commissioned works because the writing and debugging of computer programs are performed by individuals, and these activities are considered as "original expression". Although from the perspective of originality, the ai "works" directly contain the personality elements of the specific designer because of the comprehensive concept, and then make them to obtain the qualification of the works. However, from the perspective of the ownership

of works, based on the dichotomy of thought expression, the scope of copyright protection mainly involves specific expression rather than follow and comprehensive ideas. Therefore, when artificial intelligence independently completes the expression of the work from natural person and it is identified as a work, it does not conform to the legislative principle of the work [6].

Differences exist between works created by legal entities and those generated by artificial intelligence, primarily manifested in two aspects: Firstly, there is a limitation in defining the subject within the framework of legal entity works, as they cannot clarify the copyright ownership of the works created by natural person using artificial intelligence. Secondly, the scope of corporate works is far less than that of works generated by artificial intelligence. Legal entity works typically encompass written works, while audio-visual, musical, and artistic works are generally attributed to natural persons as authors, without direct regulation under legal entity works. However, the content has expanded beyond simple short poetry creation or news writing to music, painting, film and other fields, and will continue to expand. Therefore, although there are some similarities between corporate works and AI-generated works, they cannot be simply equivalent [4].

Both the theory of fruits protection and the theory of neighbor protection believe that many problems in copyright law should be avoided and other theories should be applied. However, both views deliberately avoid whether AI has the identity of an author, weakening the work attributes of AI products. This kind of system construction will bring a fundamental impact to the current system, so it also has its undesirable merits.

The relationship between human beings and artificial intelligence is similar to that between entrustment and trustee. Developers and designers of artificial intelligence systems establish the creation goals and tasks for the computer in its initial stage. The former can be seen as humans setting the "creative intention" for artificial intelligence, while the latter involves humans providing the "creative conditions" for computers. This way, a virtual contract between artificial intelligence and humans can be effectively established. When the AI system generates an original work, it is more appropriate to assign the copyright to the hardware owner of artificial intelligence, thus formalizing the initial copyright authorization of the work before potentially transferring it to the user through an agreement. As for the designer and the operator, who is the hardware owner of the AI, it is established through the contract between the designer and the operator [10].

3.2.3. Establishing the rationality of the "machine author"

Under the evaluation criteria of subject and object separation, it is not contradictory to examine the copyright of algorithm creation while also recognizing the limited qualification of artificial intelligence as a "machine author". The authorship qualification of artificial intelligence is not taken into account when assessing the originality of algorithm creations. Its significance lies in not having to delve into the true will and creative intent of artificial intelligence, while emphasizing the crucial role of readers in determining originality. Recognizing AI as a "machine author" does not imply acknowledging AI's subjectivity and free will akin to human beings. As some scholars have highlighted, when it comes to the legal subjectivity of artificial intelligence, we can neither outright dismiss the possibility of granting legal personality to artificial intelligence nor hastily bestow upon it the same legal personality as a natural person [14]. A more appropriate solution is to give artificial intelligence an atypical and functional legal personality under the premise of adhering to the inherent subjectivity of people, so as to deal with the legal problems caused by the extensive participation of artificial intelligence technology in social life. This implies that even if AI is qualified as a legal subject in some case, there are still people behind the subject: people are ultimately the ultimate holders of actual rights and obligations.

In the modern copyright system, authors engaged in writing no longer possess the natural qualification of copyright subject. Confirming the author's identity is akin to recording and describing the creative process, reflecting a sense of identity and establishing value. When the connection between the author and the work is severed, the author's role shifts to that of an identity marker, aiding readers in locating the work. On the other hand, in the process of commercializing works, the profits from works as commodities do not flow to the authors but to investors. However, to ensure

legal sales, a comprehensive authorization chain must be established starting from the completion of the works. The author is undoubtedly the earliest individual to come into contact with the work, making the authorization chain from the author the most secure within the system. In this sense, the author becomes a tool for the ultimate copyright stakeholder to ensure the legitimacy of their interests. Thus, in the copyright ownership mode, the author's role is symbolic, serving as the initial link in the authorization chain for profit distribution, which is essentially symbolic. The legal subject qualification enjoyed by human copyright owners will not be legally dissolved due to the existence of "machine author". Therefore, the ownership right of AI products' copyrights should be protected using methods similar to those for entrusted works [10]. Regarding the ownership of AI works, it is important for the AI designer and operator to establish ownership of the AI hardware through contract negotiations, ensuring the protection of their respective rights. Subsequently, the hardware owner and the AI user can negotiate ownership should belong to the hardware owner. It would be more reasonable to reach an agreement to entrust ownership to the user through the initial authorization of the AI hardware owner.

4. Conclusion

This paper studies the copyright ownership of generative AI products and supports the theory of commissioned works from the legal perspective. This has led to disputes regarding the protection of authorization, the transfer of subsequent rights, and differing viewpoints including the theory of official works, the works of legal persons, the fruits, and the protection of adjacent rights. Upon analysis, this paper argues that the existing copyright system should emphasize the importance of human involvement in the artificial intelligence-generated work. Since AI systems typically generate works through training and learning, the creative process may involve the contributions of multiple participants, including programmers, data providers, training algorithms. Among them, human creators enjoy the rights and interests of the creation, and take responsibility for the consequences. Therefore, based on the existing copyright system and with reference to the forms of works stipulated in Article 3 of the Copyright Law, special classification or special protection forms should be established to ensure proper recognition and protection. Simultaneously, attention should be given to the innovation and human contribution in the artificial intelligence generation, clarifying the contributions and responsibilities of all parties involved in the creation process, including the technological innovation of developers and the contributions of data providers. This approach integrates copyright protection with human intervention, guidance, or creative intention, thus highlighting the importance of human involvement in the creation process. In addition, copyright protection and supervision should be strengthened to prevent copyright infringement. Cooperation at the international level should be promoted to formulate unified standards and guidelines, ensuring that AI creations receive consistent copyright protection around the world. This should be done according to the actual situation, allowing the copyright system to adapt to the changing social environment.

Secondly, at the social level to balance the interests of all parties. Establish a cooperation mechanism to encourage collaborative efforts among artificial intelligence developers, creators and related institutions. This will promote the protection and utilization of artificial intelligence creations, fostering innovation and knowledge sharing. In the process of Internet governance, the "stakeholders theory" governance model should be employed to balance the needs of different stakeholders, enabling the flourishing development of the Internet. Additionally, it is crucial to strengthen the public's understanding of copyright protection for artificial intelligence creations and enhance their awareness through educational and publicity activities. While protecting copyright, consideration should also be given to the public interest to ensure the dissemination and rational use of knowledge.

Author Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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