Original Paper

The Dilemma of Identifying Copyright Infringement Liability of

Network Platform under Algorithm Recommendation Model

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Abstract

In the digital age, the application of algorithm technology realizes the efficient transformation from "people looking for information" to "information looking for people", which greatly expands the transmission boundary of articles and video content. However, to some extent, this kind of change also intensifies the problem of copyright infringement on the network platform. Once online copyright works are published, they can be widely disseminated, and it is difficult to remedy the damage suffered by them. The existing laws and regulations have deficiencies in this regulation. This paper starts from the dilemma of network copyright protection under the algorithm recommendation mode, and puts forward some relief measures such as platform filtering obligation based on the actual situation.

Keywords

Algorithm recommendation, Network platform, Copyright, Tort liability, Safe harbor principle

1. Introduction

Algorithms are closely combined with platform applications, which have a profound impact on public and private areas of social life. Driven by the wave of digitalization, algorithm recommendation technology has become a key driving force of information dissemination, which not only reshapes the way of information acquisition, but also expands the communication boundary of works virtually. However, this technological progress has also brought new challenges to copyright protection. The identification of copyright infringement liability of network platform under the algorithm recommendation mode has become an urgent problem in legal practice and theoretical research.

The purpose of this paper is to deeply analyze the dilemma of online copyright protection under the algorithm recommendation mode, and examine the adaptability and limitations of the existing legal norms. Firstly, the paper analyzes the internal mechanism of the algorithm recommendation system, and reveals the technical logic and value orientation behind its so-called "pseudo-neutrality". Further,

this paper discusses the problem of "should know" in the face of copyright infringement, and the challenge of "notice-delete" rule in the modern mode of information dissemination.

On this basis, this paper puts forward countermeasures such as strengthening the censorship obligation of network platforms and establishing the copyright filtering obligation, in order to provide a more solid legal foundation for the copyright protection of network platforms, and promote the healthy development of intellectual property rights and the advancement of science and technology.

2. The Dilemma of Network Copyright Protection under the Algorithm Recommendation Model

2.1 The "Pseudo-neutrality" of Algorithm Recommendation

2.1.1 Algorithm Recommendation and Its Mechanism

The network platform collects user data to build user portrait, including the user's basic information, interests, knowledge and other content, and provides the user's preference information accordingly. The algorithm recommendation system realizes the personalized configuration of information resources through the combination of big data logic and artificial intelligence logic in the field of information dissemination. This personalized configuration not only improves the efficiency of push and enhances user stickiness, but also brings problems such as gatekeeping transfer and filter bubble, which have caused the disorder, differentiation and differentiation of social thought value to a certain extent.

In the context of the rapid development of Internet information and information technology, domestic and foreign information platforms such as various media headlines and commercial wechat public accounts take "traffic is king" as their goal orientation, and their content distribution and information recommendation mechanisms are mostly affected by this. From the technical logic point of view, algorithm recommendation is not completely unconscious. It is not only a set of specific technical coding and calculation procedures, but also a system architecture including the team and its news values.

Before selecting information for the user, the recommendation system must use the known information of the user to complete the prediction of the recommended object. At present, the recommendation system has different classifications from different perspectives, and different scholars give it different connotations. At present, the traditional algorithm recommendation mode mainly includes the following three types:

① Recommendation based on content filtering. This model uses the user's history or historical preferences as a reference basis to recommend highly relevant content to the user. The user's interaction record in a certain period of time is obtained through the user's feedback, and then the user's preferences in these records are learned and marked as features. For example, user A likes video a, and the recommendation system selects videos that are similar to video a from a large number of videos.

⁽²⁾ Recommendation based on collaborative filtering. The core of this recommendation is to evaluate the interdependencies between users and content, and further predict the association between new users

and content. It includes content-based collaborative filtering recommendation and user-based collaborative filtering recommendation. Among them, content-based collaborative filtering recommendation focuses on the similarity between contents. For example, users A and B both show a high preference for music a and b, so it can be considered that music A and b have some similarity. When a new user C chooses music A in the system, the system will also recommend music b for him. 1 User-based collaborative filtering recommendation is similar. The system considers users A and B to be similar. When user A selects music a, b and c, and user B selects music a and b, the recommendation system recommends music c to user B.2

Due to the complex changes in the social environment, the recommendations generated by the system for users often lag behind the changes in personal preferences, and user preferences may be affected by the surrounding environment. Therefore, some scholars have proposed a recommendation method based on social network content. This method effectively alleviates the problems of cold start and data scarcity.

(3) Mixed recommendation. Content-based recommendation technology takes a long time to process large scale information content, resulting in reduced timeliness of information; Collaborative filtering technology is prone to cold start and data scarcity when facing new users and new content; The hybrid recommendation technologies, and different algorithms are integrated into the recommendation system, which is divided into different stages of mixing. "Pre-fusion" fuses multiple recommendation algorithms into one model. For example, in the process of product recommendation model according to their historical purchase records, and the recommendation algorithm in the mixed model generates the recommendation result through adaptive learning; "Post recommendation" by comparing the effect of different recommendation algorithms to obtain a sequence of recommended objects with high reliability, and finally recommend this sequence to the user (Yu, M., He W. T., Zhou, X. C. et al., 2022, pp. 1898-1913).

The recommendation algorithm relies on the user's own preferences to push relevant content. When the user's preferences happen to involve copyrighted works, the content recommended by the platform may be infringing works published without the consent of the copyright owner. When it comes to the identification of copyright infringement liability on the Internet, what kind of liability the platform bears has become the focus of judicial practice.

2.1.2 The "Pseudo-Neutrality" Recommended by Algorithms

Recommendation algorithms, seemingly objective and unbiased algorithm recommendation systems, may in fact have unfair effects on certain groups or individuals due to factors such as data bias, algorithm design and user behavior. At present, algorithmic information segmentation mode has the advantages of mining user needs and improving user stickiness, and occupies the dominant position of mobile information distribution mode. The distribution mode recommended by algorithm is different from the traditional media and relational distribution. It collects user data, deeply analyzes user behavior to form user portrait, and distributes information in a customized way, which has the characteristics of individuation and automation.

The automated program does not mean the neutrality of the algorithm recommendation. The operation of the recommendation algorithm is the interaction of user behavior, algorithm and platform. From the perspective of the operation mechanism of the recommended algorithm and the control ability of the platform to the algorithm, the algorithm recommendation has "pseudo-neutrality".

The operation mechanism of algorithm recommendation is an important reason leading to its "pseudo-neutrality". The above operating mechanism depends on the user portrait, which is formed with a certain underlying logic, and the underlying logic is input by the algorithm designer, which often reflects the value orientation of the network platform. Secondly, the personalized recommendation information is not all the content of the user's real preference, there are many traffic oriented information or major news, with the purpose and value orientation of the platform. In order to make the user label more accurate, the optimization and correction of the algorithm are essential, which also reflects the value orientation of the platform. For example, Tiktok platform, through its algorithm recommendation system, is committed to meeting the needs of users to record their lives, and adopts algorithms such as heat weighting and superimposed recommendation to enhance user interaction and content dissemination; CCTV represents the algorithm recommendation logic of the national mainstream media, which not only pursues traffic, but also pays more attention to the value and depth of content. Central video algorithm adds positive energy, social evaluation and value dissemination and other elements, through the content perception ability to automatically screen and recommend quality content, in order to promote the formation of rich and diversified content ecology. When building the algorithm recommendation system, both platforms pay attention to the combination of technology and value. Through algorithm optimization, Tiktok has strengthened the personalized recommendation of content and the dissemination of positive energy; While CCTV, through its algorithm, strengthens the social responsibility and value leadership of mainstream media, and promotes the construction of high-quality video social media.

The platform has the realistic control ability of the algorithm, which further explains that the neutrality of the algorithm recommendation is difficult to be established. Many scholars believe that if the platform can set, select and control the algorithm, then the neutrality of algorithm recommendation is difficult to be established. Today's headlines held a sharing and exchange meeting on algorithms in 2018, which made it clear that today's Headlines recommendation algorithm has been adjusted and modified four times since the first version of development and operation in September 2012. Moreover, the algorithm distribution is not to give all decisions to the machine, we will continue to correct errors, design, supervision and management of the algorithm model. Jinri Toutiao's recommendation products adopt real-time training, which can quickly capture user behavior and feed back to the recommendation effect. It also provides user feedback channels, allowing users to give feedback on the recommended

content. The platform will adjust the recommendation strategy according to user feedback. Although the algorithm can complete part of the recommendation work, Toutiao will also conduct content intervention to ensure the quality and diversity of the recommended content, and avoid the problem of the algorithm becoming narrower. Its president has also publicly pointed out that it will "integrate the right values into technology and products", and continue to strengthen the manual operation and review of the platform's algorithms.

2.2 The Dilemma of "Should Know"

Article 1197 of the Civil Code clearly stipulates that if an Internet service provider knows or should know that an Internet user infringes the civil rights and interests of others by using its Internet service, and fails to take necessary measures, it shall bear joint and several liability with the Internet user. The regulation is known as the "red flag principle", which means that if the fact of copyright infringement is obvious, waving like a "red flag", Internet service providers should not turn a blind eye to it or avoid legal responsibility by saying that they did not know about the infringement (Jiang, 2016, p. 624). The "red flag principle" requires Internet service providers to exercise a reasonable duty of care and not adopt an "ostrich policy" of turning a blind eye to clearly infringing content or links.

However, in the algorithm recommendation mode, it is more difficult to determine the subjective fault of Internet service providers. Because the process of information input-information output is opaque, it is difficult to judge the degree of intervention and control of the platform in the dissemination of infringing content, and the "black-box operation" makes it difficult for the public to snoop on its mechanism.

In judicial practice, when determining the "should know" of an Internet service platform, it mainly relies on the following three regulations: First, an Internet user infringes the civil rights and interests of others on another's website; Second, network service providers know or should know that network users use their network services to infringe on the civil rights and interests of others; Third, the network service provider fails to take necessary measures to delete, shield or disconnect the infringing information of the network user infringing on the civil rights and interests of others.

According to this, if the network service provider knows or should know that the network user has infringed the civil rights and interests of others on its own website, and fails to take necessary measures, it shall bear joint and several liability for the damage caused by the infringed party and the network user who has infringed the civil rights and interests of others.

This gives rise to another dilemma of determination. The term "necessary measures" can be understood in two ways. The first means measures that are commensurate with capacity. Taking Beijing Worldwanxiang Culture Media v. Beijing MicroTV as an example, the court held that the platform can take necessary measures such as deleting, blocking and disconnecting links. As an Internet service provider operating an information storage space, Webov has no obligation to review and monitor works uploaded by Internet users in advance. Worldwanxiang Culture Media complained about the Douyin user's infringement once, and subsequently took necessary measures to delete the relevant videos. The court concluded that the company had taken the necessary measures and did not make any subjective mistakes. Another understanding refers to the effective measures that can stop the infringement. Take Han Han v. Baidu as an example. For the infringing documents involved in the case, Baidu advised users on several web pages not to upload infringing works, launched an anti-piracy system, deleted the infringing documents in time specifically for the dispute in this case, and used the author's name and the title keyword of the work to screen the documents. The company took various measures, but failed to effectively stop the infringing acts. As can be seen from the two very different judgments, determining whether the "necessary measures" have stopped the infringement is closely related to the existence form of the infringing content and the situation of the network service platform itself.

The dilemma of the above determination gives the judge greater discretion, so the inconsistent results also make the network platform itself confused, at any time there is a risk of helping the infringement. In addition, in order to avoid the risk, the platforms often take excessive measures to solve the problem, more than necessary.

2.3 The Challenge of the "Deletion-Notice" Obligation

The "notice-delete" rule is the liability or exemption for the storage, search, link and other services provided by the network service provider under the Internet environment. It is the core content of the "safe harbor" rule, and also constitutes an important rule for the Internet service provider to provide service exemption.

In the field of network information communication, the introduction of algorithm technology has significantly changed the mode of communication, and has had an impact on the protection of network copyright. In traditional information dissemination, users actively seek and publish information, while in the mode of algorithm recommendation, information dissemination becomes passive acceptance by users. The transmission of information is no longer simply dependent on the upload of users, and the platform uses algorithms to control the distribution of information (Jiao, 2023, pp. 145-160.). For example, the Tiktok platform will make stepped recommendations for newly published content and actively push information to users. This approach leads to an increase in the speed and scope of the dissemination of infringing information on the platform, which makes the damage of infringing acts expand rapidly and form a causal relationship.

The duty of care of traditional Internet service providers mainly revolves around the "notice to delete" rule. In order to fulfill the duty of care for users' infringements, major content aggregation platforms generally set up specific channels to receive and respond to infringement notices. These channels make it easy for rights holders to report infringements to the platforms, thus prompting the platforms to take corresponding measures to protect intellectual property rights.

In recent years, with the continuous development of the society ruled by law, the public's awareness of intellectual property rights protection has increased significantly. This change has not only increased people's attention to their own rights and interests, but also prompted more rights holders to actively take legal means to safeguard their legitimate rights and interests. As a result, the number of

infringement notices received by many well-known platforms has also increased, and the legal responsibilities and management pressures faced by the platforms have also increased. According to the 53rd statistical report on China's Internet Development released by the China Internet Network Information Center, the number of short online video users in China reached 1.067 billion by December 2023, an increase of 36.13 million over December 2022, accounting for 97.7 percent of the total netizens. According to the announcement of Douyin, from January to June 2021, the company accepted 38,918 complaints about copyright infringement by creators, and removed 23,215 related infringing videos; In daily inspections, 720,000 videos for copyright infringement were removed. In June, Google also announced that Google Search had handled one billion DMCA (Digital Millennium Copyright Act) infringement notices in a four-month period. These figures reflect the rising tide of copyright infringement in the online world, where the notice-and-remove model is difficult to sift through.

After receiving a notice of infringement, Internet service providers need to promptly take necessary measures to prevent further damage from infringement. In practice, however, the criteria of "timeliness" and "necessity" are often difficult to quantify, leaving platforms with greater room for discretion in implementing relevant measures. Specifically, how to judge what is "timely" and what measures are "necessary" may be interpreted differently in different contexts, leading to inconsistent performance of platforms when responding to infringements.

Due to the unique characteristics of network media, in the face of massive information and dynamic content, there is often a lag in the implementation of the "notice-delete" mechanism, which is difficult for service providers to achieve real-time monitoring and processing. The number of infringement notices is so huge that even after receiving the infringement notice, the response of the online platform may lag, delaying the deletion of the infringing content.

In addition, the "notice-delete" model is seen as a remedial measure after the fact, which is particularly negative for time-sensitive information, especially infringement involving reputation, privacy and other sensitive areas. At this time, the rights and interests of the right holder may have been irreversibly damaged, and the response measures of the platform may not be able to effectively provide protection. This mode only requires the network platform to undertake the negative deletion obligation after the damage occurs, which is often difficult to protect the legitimate rights of the right holder in time.

3. Countermeasures

3.1 Appropriate Expansion of Review Obligations

The current algorithmic network information dissemination mode has had an impact on the copyright censorship obligations of platforms under the old technological environment: the scope of censorship obligations of platforms in the "notice-take measures" and "know-take measures" rules is no longer suitable for practical needs, and does not match the technical capabilities of network platforms (Gai & Xin, 2019, pp. 78-86). By quickly matching platform information and user preferences, algorithmic

push technology achieves accurate content delivery, which greatly expands the propagation speed and scope of works. However, it may also lead to the rapid spread of infringing works and increase the difficulty of copyright protection. To address this challenge, technological developments have also brought new solutions. The application of algorithmic filtering technology has improved the platform's ability to monitor and discover infringing works. For example, the Trusted Time stamp infringement monitoring service platform uses deep learning technology to perform intelligent analysis of video, pictures, audio and text content to achieve real-time monitoring and automatic forensics.

In 2022, the 12426 Copyright Monitoring Center, relying on artificial intelligence and big data and other technologies to monitor the whole network, monitored a total of 8.886,700 works and 42.251,100 links for suspected infringement (2022 Network Copyright Monitoring and Protection Report—12426 Copyright Monitoring Center.). At present, the network infringement data is so huge that only the two rules are limited to delete after all, and after the infringement works involved in the infringement notice are deleted, there may still be a large number of the same infringing works that have not been found by the right holder, or the network users have subsequently uploaded the infringing works, which will still be pushed to the matching users by the algorithm push technology adopted by the platform.

In addition, the platform will passively comply with the narrow censorship obligations based on its own interest considerations. In Tencent's lawsuit against Douyin for infringement of Douluo Continent, the First Intermediate People's Court of Chongqing issued a pre-lawsuit injunction against Douyin, requiring it to delete all videos in Douyin App that infringe upon the right of online communication of Douluo Continent animation works, and take immediate and effective measures to filter and block users' uploading and disseminating videos that infringe upon the right of online communication of Douluo Continent animation works. There are many similar cases in China. Youku, which owns the exclusive right to broadcast Yu Lou Chun, sent a warning letter to Station B on the same day the show was launched, but a large number of infringing videos still appeared on Station B. Within half a month, Youku complained to B station a total of 19 batches, at least 2,800 infringing links. In a short period of time, online platforms can obtain a large amount of traffic with the help of the possible infringement behavior of Internet users, passively follow the legal provisions, only take measures against the suspected infringing works in the "notice", and even delay the time, which greatly damages the revenue of the hot season of movies and TV series. It can be seen that the scope of censorship obligations under the two rules is narrow. Based on the practical needs, it is necessary to expand the copyright censorship obligations of platforms, and at the same time, it is necessary for platforms to assume greater responsibilities and take active measures to protect the legitimate rights and interests of copyright owners.

3.2 Set up the Copyright Filtering Obligation

In the early stage of Internet development, the "safe harbor principle" and "red flag principle" delineated a space of responsibility preferential treatment for Internet service providers, which could better protect the copyright of right holders in the post-regulation. However, Article 41 of the E-commerce Law, promulgated in 2018, clearly stipulates that e-commerce platforms should establish rules for the protection of intellectual property rights, emphasizing that platforms should strengthen cooperation with intellectual property rights holders to build a comprehensive protection system. This not only requires platforms to take action after infringement occurs, but also emphasizes that platforms should assume the responsibility to protect intellectual property rights in the prior stage. In recent years, the CAC has also strengthened supervision over Internet platforms, requiring them to conduct stricter review and management before content is released. The Regulations on the Management of Online Audio and Video Information Services, issued by the CAC in 2019, require online audio and video service providers to strengthen supervision over content posted by users and use technical means to prevent the spread of illegal content. The 2021 Regulation on the Management of Information Services for Internet Users' Public Accounts further stipulates that platforms need to manage the operators of information content and public accounts, protect the copyright of original works and prevent infringement. In 2022, the CAC also issued the Regulations on the Management of Internet Comment Services and the Regulations on the Management of Information Services for Mobile Internet Applications, both of which require platforms to implement a system of "review before release" of content posted by users to ensure the legality of information content and prevent the spread of illegal and undesirable information. The platforms should be responsible for the results of the information presented. The regulations reflect higher requirements for Internet platforms in terms of content management and intellectual property protection.

In fact, the lack of prior regulation is difficult to effectively curb the chaos of online infringement. Online infringement is easy to spread quickly, and the "notice-delete" after-action relief depends on the quick response of right holders and platforms. If one party does not respond in time, the network infringement will continue to spread, causing huge damage.

Online platforms are facing increasingly high legal requirements and social responsibilities in copyright governance. It is necessary and feasible to start the copyright filtering obligation. Some courts have advocated in their judgments that short video platforms should adopt copyright filtering measures to protect copyright, and some short video platforms have begun to develop and use relevant technologies to filter infringing content in order to fulfill their copyright protection obligations (See Shenzhen Tencent Computer System Co., LTD., Tencent Cloud Computing (Xi'an) Co., LTD. V. Beijing Micro Broadcasting Technology Co., LTD., and other disputes over infringement of the right to information network Communication, Xi'an Intermediate People's Court, Shaanxi Province (2021) Shaanxi 01 Zhiming Chu No. 3078 Civil Judgment.). The implementation of copyright content filtering measures is mainly based on intelligent content analysis filtering method, which carries out multi-angle in-depth analysis of copyright work information through language analysis, image processing, algorithm learning and other technologies, automatically identifies the content characteristics that need to be filtered and builds the corresponding works database (Cui, 2017, pp. 215-237).

Whether the network service platform needs to bear a higher duty of care for the content recommended by the algorithm technology, so as to ensure the legitimacy of the recommended content, is an important issue that is highly controversial at present. Algorithm recommendation technology has deeply penetrated into the operation and management of short video platform. The platform uses algorithm technology to distribute big data content, and carries out personalized and accurate push by analyzing the interaction between users and content. The recommended content includes both high-quality original works and unauthorized infringing content (Zhang & Wang, 2022, pp. 54-74). In the process of developing a specific algorithm technology scheme, the designer will determine the evaluation criteria and objectives that reflect the value orientation of the platform operator, which has a decisive impact on the construction and development direction of the algorithm. To some extent, the "pseudo-neutrality" of algorithms encourages copyright infringement. Therefore, algorithmic recommendation technology is one of the reasons why copyright filtering obligations are initiated.

Of course, the creation of copyright filtering obligations does not mean that all works should be censored. On the one hand, it is impossible for platforms to filter all works at the huge cost of technology and detection. On the other hand, although the copyright law stipulates that copyright owners enjoy copyright in their works, it does not mean that the network platform, as a private subject, has the obligation to ensure the realization of the rights and interests of all copyright owners. The realization of copyright also requires copyright owners to actively defend their rights (Zhu, 2024, p. 16). Not all copyrighted works have significant risk of infringement, and network infringement is more common in popular copyrighted works. Copyright filtering technology should focus on such objects.

4. Conclusion

Personalized algorithm recommendation technology has become a key tool for network platform to attract users and realize economic benefit growth. However, while improving the user experience, this technology also provides convenience for copyright infringement. In the current field of copyright protection, the protection of network copyright is undoubtedly an important issue.

Although the "pseudo-neutrality" of the algorithm recommendation technology has made the traditional defense of "technology neutrality" no longer applicable, the current legal norms for the infringement liability of network platforms still mainly rely on the "notice-delete" rule as a post-facto remedy. For the network platform that widely adopts intelligent algorithm recommendation, post-event regulation is no longer enough to effectively curb the spread of infringement and damage.

The improvement of legal regulation is a dynamic process, which needs to absorb the comprehensive consideration of multiple factors such as technology, economy and society. The legal framework for copyright protection on online platforms must be flexible and forward-looking enough to adapt to the rapidly changing digital environment.

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