Copyrights Infringement Risks in AI-generated Cover Songs: An Analysis Based on Current Legislation

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Abstract: In the age of "Big Data", the accelerated iteration of AI models characterized by ChatGPT has fueled both excitement and fear. With the diversified application of generative AI models, last year witnessed a surge in AI cover songs. Compared with the discussions around the content generated by AI, the prior training process receives less attention. This article aims at analyzing the copyright law issues related to AI cover songs. By examining current legislation in different countries, the author believes that the training of AI cover models risks violating both property rights and moral rights stipulated in copyrights laws. Moreover, it fails to fit in the fair-use defense in most states. Considering the emotional values preserved by AI cover songs as well as the spirit of copyright laws, this article argues that basically, the training of AI cover models should be solely for non-commercial use. An unregulated approach toward AI cover songs can otherwise hinder innovations and disproportionately harm the interest of minority groups.

Keywords: AI cover songs, copyright law, fair use, TDM

1. Introduction

The exponential speed of advances in Artificial Intelligence (AI) has sparked both excitement and anxiety. With the release of the ChatGPT prototype on November 30, 2022, the concept of "Generative AI" has gone viral and has been widely applied to multiple fields such as entertainment, finance, and healthcare [1]. On the one hand, the advent of generative AI frees people from mundane and time-consuming jobs. At the other end of the spectrum, it raises various ethical concerns including but not limited to plagiarism, privacy, and the ultimate substitute of human beings [2].

The threat posed by generative AI is nothing new to the music industry as applying AI to music has always been met with curiosity and grand passion [3]. In addition to composing novel melodies, 2023 witnessed a surge in AI-cover songs, referring to replacing the original singer's voice with a new vocal of anyone else. In China, Stefanie Sun, a Singaporean singer known for her highly recognizable timbre became the most popular choice for AI trainers, with the most trending video garnering over 2.5 million views to date. Likewise, AI-generated Rihanna singing "Cuff It" and AI Kendrick Lamar rapping Ye's "Off the Grid" whip up hysteria upon release [4].

For all the rave review from the public, the astonishingly high user traffics resulted in much resentment from music companies and original singers. Universal Music Group (UMG), the world's biggest music rights company, denounced AI music as "fraud", declaring a moral and commercial responsibility to block the unauthorized use of their artists' music [5]. Award-winning singer Sting

also battled to defend his songs against AI [6]. That being said, the struggle between human capital and AI seems to tilt toward the latter. Despite UMG's request for the removal of the AI song "Heart on My Sleeve", similar videos are reuploaded relentlessly on social media platforms. Quoted Ge Wang, Stanford University associate professor, "The cat is not going back in the bag," and it is high time for people to tackle "a ton of legal, ethical and artistic considerations" along with it [7].

Available studies put emphasis on the copyright of AI-generated content (AIGC), centering around whether copyright can be attributed to AIGC and the issue of copyright authorship [8]. Far less noticed were the intellectual property rights (IPRs) violations during the AI-training process. Researches involve a discussion of the potential infringement focusing mainly on property rights, yet a detailed analysis of moral rights is absent. Besides, unlike texts and images where pertinent IPRs holders are relatively limited, a piece of music work is a product of dozens of people ranging from lyrist, and composers to singers and recorders. In terms of the tool utilized in AI-cover songs, it is the users instead of the software developers that collect data to complete the AI training process, thus distinguishing the agency from ChatGPT and Midjourney where the task of teaching AI is fulfilled by powerful organizations. For these reasons, this article intends to single out the copyright risks embroiled in AI-cover songs and propose a solution how to strike a balance between diverse stakeholders.

2. Infringement of IPRs in AI Cover Songs

Generative AI models are powered by machine learning (ML), which is not a novel technique yet its striking scale and quality put it under the spotlight again [9]. Accolades won by AI painters are a case in point that the convincing mimics produced by AI are capable of fooling human panels [10]. Despite the variances between machine learning approaches, the commonality lies in that robust training datasets set up the building blocks for an ideal output [11]. Take ChatGPT, it has been fed with 300 billion words and 570 gigabytes of text data, entailing an estimated cost of $63 million in total [12, 13].

However, in the context of AI cover models, the datasets required are far less demanding. A period of 1-2 hours of sound material is acceptable provided with a clear sound quality [14]. This relatively low threshold draws ordinary people to take a shot at training their own AI models where several types of IPRs may be violated.

2.1. Right of Reproduction

Text and Data Mining (TDM) generally involves four steps: data extraction, textual analysis, relationship calculation, and the discovery of unknown knowledge. Either storing information or format conversion and data analytics fall under the category of reproduction [15]. Therefore, for artworks within the term for copyright protection, feeding AI models with unauthorized information can constitute a violation of the reproduction right.

One worth discussion issue is temporary production, which is prevailingly recognized as a permissible exception to the right of production in the field of international copyright law [16]. To meet the standards of temporary reproduction, the reproduction act must be transient and the copies have no economic value [17]. For the first element, though the copies created during the training process have no need to be retained after running through the neural network, they cannot be erased automatically [18]. Instead, computers are capable of accessing and reappearing these copies at any time. [16] Further, as an essential stage of TDM, the data report formed on the basis of data extraction has a certain economic value. [16] For these reasons, the IPRs infringement caused by TDM cannot be exonerated by a temporary reproduction exception.

2.2. Right of Adaptation

While it is commonly agreed that the process of ML violates the reproduction right, opinions are divided on whether it infringes on the right of adaptation. During the preprocessing stage, the information fed will be transcoded where the format of the training works is standardized into a machine-readable and understandable version. The creation of modified copies thus hints at the adaptive use of work [16]. On the flip side, some scholars argue that the preprocessing behavior is still copying since the modified copies are solely powered by the machine's own algorithms [19]. AI, unlike humans who are hailed as "a thinking reed" could not have an intention to adapt a work. Hence, the conversion process is not an adaptation. Another fact that back this argument is that in the European Union (EU) law, the transformative uses of works that amount to "genuine" adaptations are broadly qualified as reproductions [20].

This article believes that the shift from human language to computer language is a violation of adaptation right. The machine-readable formats change the genre of the training works. It thus forms new works that exhibit originality, yet keeps the essence of the training works basically unchanged [19]. The counter-argument ignores complex human interventions that occurred before the commencement of ML [21]. Take Stable Diffusion, an AI model that trains on a large-scale dataset named LAION-5B, it is not the original text that serves as the learning material for the AI model. Instead, Stable Diffusion transforms the text data to so-called "latent representations", during which the encoding text is added with noises and undergoes compression [22]. Without these additional operations initiated by humans, there are no foundations for ML to start. Therefore, the training process of the AI model does violate the right of adaptation.

2.3. Moral Rights

Under the personality theory of property that was famously advocated by Georg Wilhelm Friedrich Hegel, copyrightable works are an embodiment of an author's subjective judgment. What accounts for the profundity and appeal of an artwork is the inspiration drawn from a human's personal experience [11]. The innate link between the author's individuality and the expressive works thus gives rise to the rights of attribution and integrity. These Moral rights are acknowledged in Article 6 of the Berne Convention, the leading international copyright treaty. Thus, the 181 Berne member states are all required to provide protection of moral rights that at least meet the minimum standard set in the international treaty [23].

Specifically, a right of attribution means the author is entitled to claim authorship, normally manifested as having the author's name on a work [23]. Such right is often neglected and violated when training AI models. One typical instance was the song "Big Balls" created with pre-existing AC/DC lyrics. AC/DC as a band was attributed when the song was uploaded to YouTube. Nevertheless, detailed information concerning the songs used to train the algorithm and the authors of the lyrics used is totally absent [24]. This situation is compounded by the vast multitude of contributors to a music work, rendering the realization of attribution right unpracticable [24]. Even the prima facie infringement of the right of attribution is established, how and when should authors be attributed remain ambiguous [24]. Another hindrance to the protection of moral rights is that datasets are usually kept confidential thanks to their commercial value, IPRs holders thus lack access to discover the unauthorized use of their works [24].

Another type of moral right that risks violation is the right of integrity, which is aimed at maintaining the author's reputation [23]. AI cover models allow users to subject a singer's voice to any songs, some of which are churned out and of low quality. Forcing such music upon a first-class vocalist is unfair and equates to an insult to a musician's years of dedication. Deadlier still is the convincing imitation skills developed by AI, which can induce audiences to treat the fake voice as a

genuine artist [24]. As a result, the artist's reputation can be critically derogated over time, akin to the damages under defamation law.

3.   An Analysis of Fair Use

The fair use doctrine plays an important role in striking a balance between protecting the author's rights and public interests. It rests on the pursuit of fairness and justice, aiming at prohibiting abuse of IPRs by imposing restrictions on them [19]. In most instances, people who seek to use works are economically at a disadvantage, dwarfed by rich and powerful publishers. The fair use system hence tips the balance by limiting the "hegemony" enjoyed by IPRs holders. However, when it comes to AI models invented by technology companies, the users now transform from the underdog to the dominant part. Under that circumstance, the legal scale has no justifications to tilt toward users that are in the advantageous position of capital.

That being said, the AI cover model set itself apart from other models as the training works are collected by the actual user. On the official page of sovits 4.0, a free AI speech conversion model, it reads that the project serves merely as a framework, functioning on the premise of users' independent training process including dataset extraction, dataset processing, and so on [25]. In this regard, AI cover models in fact belong to the traditional situation where the legislations award certain legal advantages to users for the common good.

3.1.   "Four Factors" Test—The United States (US)

Fitting the purpose of the copyright law alone does not legalize AI cover songs, it must fulfill the specific requirements of the fair use doctrine. One internationally agreed on standard set initially in the Berne Convention is the "three-step test", which evolves in the subsequent international treaties and is open to cover all categories of IPRs [26]. Unfortunately, the meaning of the test remains unclear for all its development and the only official interpretation made by the World Trade Organization (WTO) in 2000 seriously narrows the scope of fair use [27]. Until now, whether a specific act constitutes fair use depends on a case-by-case analysis [28].

The most famous criterion adopted by courts is the "four factors" in the US, which include "the purpose and character of the use", "the nature of the copyrighted work", "the amount and substantiality of the portion taken" and "the effect of the use upon the potential market" [28]. In Authors Guild v. Google, Inc, the technology company developed "Google Books", whose database was trained on millions of complete works. By leveraging TDM, the project was equipped with a search function that provides users with quick access to the key terms and useful insights from paper books. The courts concluded that the snippet functions established by Google have a highly transformative purpose and constitute fair use [29].

However, AI cover models are not that case. For starters, it seems that the intermediate copies formed during the processing stage are operational use, which is normally qualified as transformative use. Yet from the perspective of Hegelian's personality theory, the intermediate copies reflect AI's understanding of the music, which contains the human element the same as the original work [11]. Furthermore, Unlike Google Books which are put to some socially beneficial end, the training of AI cover models is not to supply end users with data. Instead, it is aimed at creating new works by deriving key insights from the feeding sound recordings [11]. Given the high views and the resultant financial benefits earned by AI trainers, it is directly against the non-profit educational purposes that are explicitly permitted [30].

The other three factors leave unfulfilled as well. Regarding the second factor, music that typifies creative works is favored by the courts' protection [28]. The third factor plainly weighs against fair use as entire sound recordings are required when training an AI cover model. Finally, As AI cover

songs which greeted with tremendous hype and compliments become cash cows for AI trainers, the adverse market effect can be easily proved by commercial use [28]. For these reasons, this article believes that the fair use doctrine can be not applied to AI cover songs.

3.2. TDM Exceptions

Against the backdrop of the "Big Data" age, several states and organizations issue mandatory exceptions in response to TDM's enormous potential. One trial-blazer is the United Kingdom (UK). In 2011, Professor Ian Hargreaves commissioned by the Prime Minister published "Digital Opportunity: A Review of Intellectual Property and Growth", which suggests allowing TDM techniques that are compatible with the underlying purpose of the copyright system. The "Copyright and Rights in Performances (Research, Education, Libraries and Archives) Regulations" introduced in 2014 insert a TDM exception after 29, containing three elements: First, people who make a copy should have lawful access to the work; Second, the computation analysis based on the work should solely for research or non-commercial purpose; Finally, a sufficient acknowledgment should be given, hinting at a protection of author's moral rights.

In an attempt to unlock the power of AI and solidify the UK's reputation as one of the "global AI superpowers", the UK Intellectual Property Office (UKIPO) conducted a consultation on "artificial intelligence and intellectual property" in 2021. The outcome yield in 2022 was substantially pro-tech: the proposed new exception would extend to all purposes including commercial uses. Further, anyone more than just researchers were eligible for the exception. Another big stride referred to the lack of an opt-out system, which provoked a backlash from creative industries [31]. This proposal came to a halt in 2023 when the Minister for Science, Research and Innovation explicitly took a stand against it considering the serious objection from creative industries.

Taking a look at other legislations concerning TDM exceptions such as the EU and the German law, despite their different terms regarding the work's access, the genre of the work, and the acceptable use, what lies in common is the requirement of non-commercial use. The latest legislation published on July 10th in China also follows the same path. The regulated scope is confined to generative AI services that are accessible to the general public, excluding those used for research and development.

In sharp contrast to the majority of TDM exceptions, Japan stands out as a technology maximalist. Following its dedicated path of backing the advancement of AI and technology, the country amended its Copyright Act in 2018. The "newly-born" Article 30-4 allows TDM to be applied to both commercial and non-commercial purposes regardless of the reservations made by IPRs holders. This "broadest TDM exception in the world" is aimed at making Japan a new "Paradise for AI and machine learning" [32]. Presumably, what accounts for this radical stance is Japan's sluggish economy. In terms of per-capita income, Japan winds up at the bottom among the Group of 7 (G7) [33]. To achieve an economic rebound, the Japanese government bets big on AI technology and thus declare to remove all obstacles, copyright law included.

Based on the above analysis, it can be concluded that the current TDM techniques are still limited to non-commercial use. Therefore, AI cover models, which are intimately linked to commercial value, struggle to be permitted under the current regulations.

4. The Way Forward

To decide on the legal regulations and policies, it is worth considering the value of AI-cover songs. The surprisingly positive market reaction reveals some underlying needs of singers' fans. As the artists and fandoms become increasingly strongly connected, the enthusiasts are eager to derive more from their idols, including the choice of songs. The advent of AI cover models converts fans from

passive listeners to decision-makers, empowering them to realize their fantasies about the singer [34]. Leveraging this change, the artists can be aware of what their fan bases want from them and deliver the music type that to fans' hearts content. To some extent, AI-clone voice will not only replace musicians but serves as a communication bridge between singers and fans and help deepen their bonds.

Another meaningful merit of AI cover songs can be found in the comeback of deceased artists and those out of public view, whose music careers are able to be extended with the help of AI. On bilibili, a video community in China, an account called "AiBella" dedicates to creating Bella cover songs, enabling audiences to appreciate the talents and resilience of the deceased. Thanks to AI's lifelike imitation, the singer's fans now have a new way to cherish their loved ones.

However, emotional values should not be preserved at the expense of stifling innovation. The fundamental principle of copyright laws is to promote creations and one approach to this end is charging license fees for copyrightable works. Arbitrary uses of recorded music entail no economic reward for artists, going directly against the bedrock of copyright laws [31]. Worse still, some minority groups, like the black artists in the US are doomed to be appropriated and degraded, leaving their creative works to be neglected throughout history and beyond [4]. Therefore, this article believes that for any commercial use of AI-cover models, authorization is still a must.

5.   Conclusions

Based on the above analysis, this article argues that the training process of AI cover models constitutes a violation of several types of copyrights. The pre-processing stage before machine learning infringes on the right of reproduction and adaptation. Moral rights including a right of attribution and integrity are also violated. Concerning the fair-use defense, the author examines two typical kinds of practices: the "four factors" test adopted in the US and mandatory TDM mining exceptions in different states. By analyzing the value of AI cover songs in conjunction with the purpose of copyright laws, the author believes that the application of AI cover models should be confined to non-commercial use.

These conclusions are helpful for countries to untangle the IPR complexities of the booming AI cover songs and take regulative measures. In the age of rapid technological breakthroughs, safeguarding the legitimate interests of rights holders is as essential as encouraging innovations. However, this article views the issue from a perspective of the majorities' practice and fail to address the particular circumstance in varying countries. Extraterritorial experiences are useful in formulating domestic laws and policies, yet feasible and effective regulated measures still need to take into account a country's own situation.

References

[1]   Takyar, K. Data Center Infrastructure Built on the Intel Xeon Processor E5 v3 Family. Retrieved from http://www.intel.com/content/www/us/en/cloud-computing/xeon-e5-products-real-world-guide.html.

[2]   Eiseman, J., Ortiz, N. (2023) Generative AI & Machine Learning in Law Libraries: The Benefits, Risks, and Ethical Issues Surrounding These Potentially Transformative New Tools. AALL Spectrum. 27, 14-17.

[3]   Sunray, E. (2021) Sounds of Science: Copyright Infringement in AI Music Generator Outputs. Catholic University Journal of Law and Technology. 29, 185-218.

[4]   Ibrahim, S. (2023). AI-generated Drake song is an insult to the artistry of hip-hop. Retrieved from https://www.washingtonpost.com/music/2023/04/26/ai-drake-weeknd/

[5]   Yurkevich, V. (2023). Universal Music Group calls AI music a 'fraud,' wants it banned from streaming platforms. Experts say it's not that easy. Retrieved from https://edition.cnn.com/2023/04/18/tech/universal-music-group-artificial-intelligence/index.html

[6]   Savage, M. (2023). Sting warns against AI songs as he wins prestigious music prize. Retrieved from https://www.bbc.com/news/entertainment-arts-65627089

[7]   Veltman, C. (2023). When you realize your favorite new song was written and performed by ... AI. Retrieved from https://www.npr.org/2023/04/21/1171032649/ai-music-heart-on-my-sleeve-drake-the-weeknd

[8]   Rallabhandi, K. (2023) The Copyright Authorship Conundrum for Works Generated by Artificial Intelligence: A Proposal for Standardized International Guidelines in the WIPO Copyright Treaty. George Washington International Law Review. 54, 311-348.

[9]   Lindberg, V. (2023) Building and Using Generative Models under US Copyright Law. Rutgers Business Law Review. 18, 1-65.

[10]   The Economist. (2023). Art made by artificial intelligence is developing a style of its own. Retrieved from https://www.economist.com/culture/2023/05/24/art-made-by-artificial-intelligence-is-developing-a-style-of-its-own

[11]   Sunray, E. (2021) Train in Vain: A Theoretical Assessment of Intermediate Copying and Fair Use in Machine AI Music Generator Training. American University Intellectual Property Brief. 13, 1-32.

[12]   Ruby, D. (2023). 30+ Detailed ChatGPT Statistics — Users & Facts (July 2023), Retrieved from https://www.demandsage.com/chatgpt-statistics/

[13]   Schreiner, M. (2023). GPT-4 architecture, datasets, costs and more leaked. Retrieved from https://the-decoder.com/gpt-4-architecture-datasets-costs-and-more-leaked/

[14]   Future Web Tools. (2023). AI cover Sovits 4.0 model (Colab teaching). Retrieved from https://futureweb.pro/tools/ai-web3-blog/ai-covers-so-vits-svc-tutorial

[15]   Gao, W., Xiaobin, H. (2021) Study on the Design of Fair Use Rules for Text and Data Mining in the Age of Artificial Intelligence. Library and Information Service. 65, 3-13.

[16]   Fan, D. (2019) On the Construction of Copyright Exception Rules for the Application of Text and Mining Technology. Hebei Law Science. 37, 148-160.

[17]   Chunlin, L., Liwei, Z. (2008) Research on Conflict between Temporary Copying and Fair Use. Modern Business Trade Industry.273-274.

[18]   Daniel Schönberger, D. (2018) Deep Copyright: Up - and Downstream Questions Related to Artificial Intelligence (AI) and Machine Learning (ML).1, 1-19.

[19]   Yang, G. (2022) Research on the Dilemma and Improvement of the Copyright Fair Use Doctrine Related to Machine Learning in China. UIC Review of Intellectual Property Law. 22, 1-22.

[20]   Chiou, T. (2019) Copyright Lessons on Machine Learning: What Impact on Algorithmic Art. Journal of Intellectual Property, Information Technology and Electronic Commerce Law. 10, 398-412.

[21]   Xiangjun, P. (2023) Research on the Copyright Risk Resolution Mechanism of Machine Learning Training Set. Shanghai Legal Studies. 6, 158-169.

[22]   KaiXin, Z., Yiqun, Z. (2023). "Your AI infringes my copyright": Talking about the copyright protection behind AIGC. Retrieved from https://www.tisi.org/25255

[23]   Moral Rights in U.S. Copyright Law. (2023). Retrieved from https://www.copyrightlaws.com/moral-rights-in-u-s-copyright-law/

[24]   Matulionyte, R. (2023) Can AI Infringe Moral Rights of Authors and Should We Do Anything About it: An Australian Perspective. Law, Innovation and Technology. 15, 124-147.

[25]   svc-develop-team/so-vits-svc. Retrieved from https://github.com/svc-develop-team/so-vits-svc

[26]   IP Experts Focus On 3-Step Test In Copyright, Discuss Way Forward. Retrieved from https://www.ip-watch.org/2011/12/21/ip-experts-focus-on-3-step-test-in-copyright-debate-way-forward/

[27]   Hermann, RM. (2013). The Three-Step Test. Retrieved from https://www.eff.org/files/filenode/three-step_test_fnl.pdf

[28]   Kenneth D. Fair Use. Retrieved from https://copyright.columbia.edu/basics/fair-use.html

[29]   Authors Guild, Inc. v. HathiTrust, 755 F.3d 87 (2d Cir. 2014).

[30]   Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569 (1994).

[31]   Dickens, R. (2023). UK re-considers proposed exception for text and data mining. Retrieved from https://www.allenovery.com/en-gb/global/blogs/digital-hub/uk-re-considers-proposed-exception-for-text-and-data-mining

[32]   Dermawan, A. (2023) Text and data mining exceptions in the development of generative AI models: What the EU member states could learn from the Japanese "nonenjoyment" purposes? The Journal of World Intellectual Property. 1-25.

[33]   Prime, D. (2023). Japan Goes All In: Copyright Doesn't Apply To AI Training. Retrieved from https://technomancers.ai/japan-goes-all-in-copyright-doesnt-apply-to-ai-training/

[34]   Ormonde, I. (2023). Harry, sing Lana Del Rey! How AI is making pop fans' fantasies come true. Retrieved from https://www.theguardian.com/music/2023/may/04/harry-sing-lana-del-rey-how-ai-is-making-pop-fans-fantasies-come-true