
Protecting Visual Artists from Generative AI: An Interdisciplinary Perspective

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Abstract

Generative AI undeniably poses threats to visual artists' livelihoods. Technical intricacies of the model and challenges in proving market substitution make it difficult for creators to establish strong cases for copyright infringement in the U.S. Defending human authorship and the creative arts will require effective design and use of legal and technical solutions grounded in behaviors, concerns, and needs of those impacted by the model. To do this, this paper calls for interdisciplinary collaboration among social scientists, legal scholars, and technologists.

1. Can the U.S. Copyright Protect Visual Artists from Generative AI?

The U.S. Copyright law aims to "[promote] science and useful arts" ([Copyright Alliance](#)) and holds high evidentiary thresholds for infringement, demanding substantial evidence for action to avoid deterring innovation. Courts meticulously assess various abstract factors to determine infringement. These factors include assessing fair use and direct effects of the use upon the market value of the original work ([Lemley & Casey, 2020](#); [Leval, 1990](#)). The process of evaluating these factors considers the level of creative expression and substantial similarity of the accused work.

The technical realities of generative AI make it difficult to establish a strong case of copyright infringement against artists ([Margoni & Kretschmer, 2022](#); [Grimmelmann, 2017](#); [Somepalli et al., 2022](#); [Sobel, 2017](#)). Data mining is recognized as fair use or fair dealing under copyright law (*Authors Guild v. Google*). The transformative nature of the models, the limited public display of individual artists' work with the absence of exact reproduction ([Yang et al., 2023](#)), and challenges in proving market substitution all lean towards supporting the development and use of generative AI as lawful.

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Notably, ongoing copyright infringement disputes, within the U.S. digital visual art realm, are ([Joseph Saveri Law Firm., 2023](#)) challenging creators' once-exclusive and only rights over their published digital art¹. These early-stage lawsuits examine potential violations within the context of generative AI. Losses in these lawsuits will set norms and potentially give more power to technology companies, which have implications for the entire creative industry. For example, *Author's Guild v. Google* concluded by giving Google the ability to exploit and digitize books that are either unclaimed or not opted out by the author. Unfortunately, current lawsuits highlight a flawed understanding of how generative AI technology operates, leading to weak framing of arguments in support of artists.

2. In Considering Future Agenda

Unlike other new mediums of creative technologies introduced in the past, generative AI extends to a novel space. It extracts and relies on training data made by people who remain virtually indistinguishable. Visual artists are left to individually navigate and demonstrate how the intricate mechanisms behind generative AI violate their rights.

To protect human authorship and the creative arts in the face of generative AI, we need an interdisciplinary collaboration among social scientists, legal scholars, and technologists. Social scientists can inform and evaluate the design and/or use of both legal and technical tools so that they are grounded in real humans impacted by generative AI. Legal scholars can offer an initial perspective on how to (in)directly address visual artists' concerns by precisely describing and analyzing existing legal infrastructures, including, but not limited to, copyright. Technologists can then develop tools that complement or substitute² legal solutions; their tools could facilitate the scaled assessment of legal violations and/or strengthen artists' self-protection mechanisms.

¹As of July 1st, 2023, a group of artists has filed a class action lawsuit against Stability AI, DeviantArt, and Midjourney, alleging copyright infringement.

²Currently, the burden of proof falls on the artists, requiring them to establish a direct connection between their copyrighted works and the AI-generated output. This can be a complex and resource-intensive process, which may discourage artists from pursuing legal action around copyright.

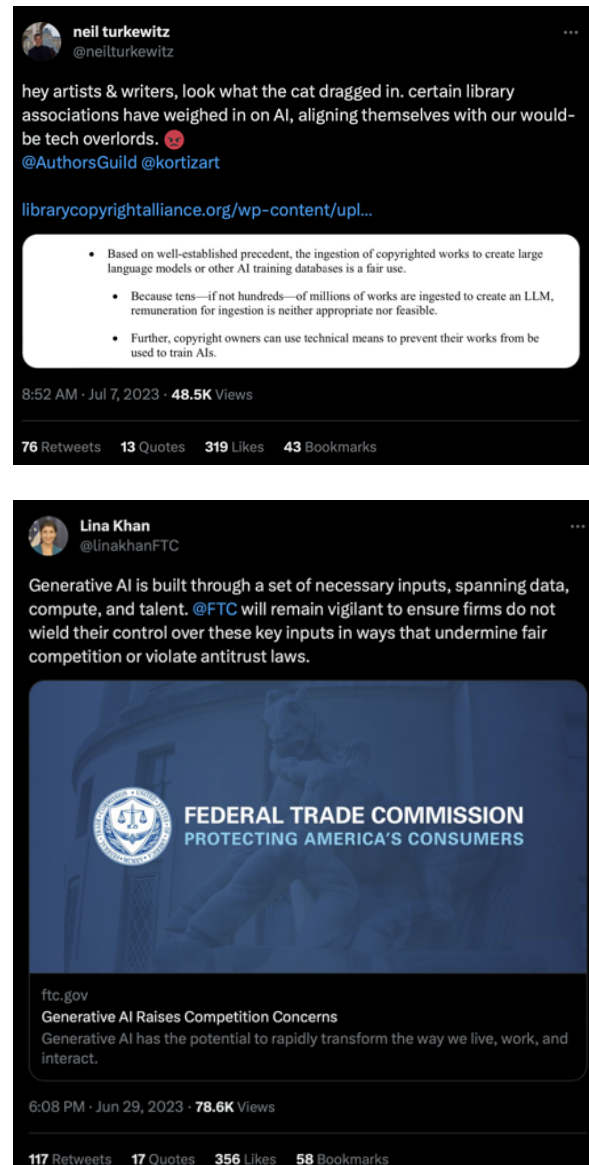
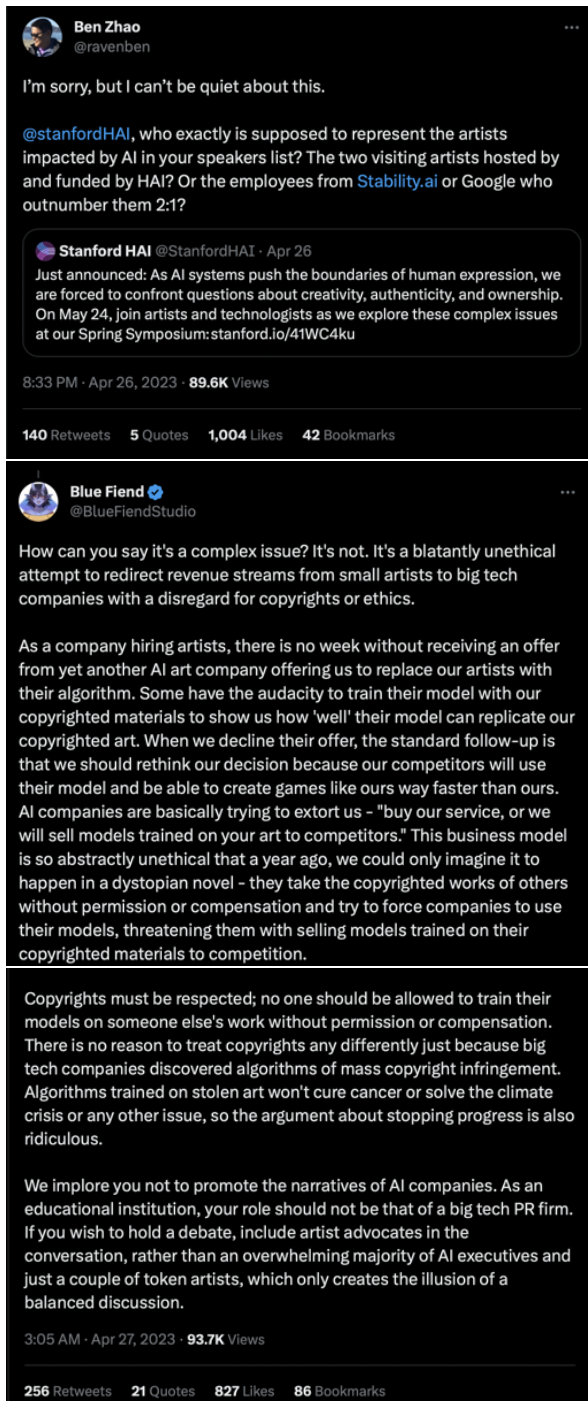


Figure 1. On the left: Tweets voicing concerns about the lack of representation of artists in discussions on the impact and regulation of AI. On the right: Lina Khan, the chair of the U.S. Federal Trade Commission (FTC), suggesting FTC as a possible resource for defending artists in the face of Generative AI

2.1. Social scientists

Considering critical stakeholders on this topic, social scientists can contribute by understanding and amplifying artists' concerns more effectively with robust qualitative and quantitative data. In-depth interviews could highlight the lack of concentrated resources (Figure 1) for artists to steer through the legal and technical intricacies and strategically influence regulatory bodies like the Copyright Office or the FTC

(FTC-Technology-Blog, 2023). Large-scale surveys or observational studies on artists' opinions (shared on social media) could eliminate proposals that do not adequately address artists' needs (Figure 1).

Future work should also analyze how average people exploit and interact with the generative AI interface and their implications on shared culture, which the U.S. Copyright law aims to enrich. For example, indiscriminate or unrestricted copying of generative AI outputs could lead to saturation or diminishing quality of the collective creative potential.

Evidence in support of this hypothesis could work favorably for artists as courts weigh the impact of their decisions in ongoing AI copyright cases. Extended work would require an exploration of approaches to empirically and more comprehensively define and measure creativity.

2.2. Legal Scholars

Generative AI may not directly infringe copyright under the current U.S. copyright law³, but it arguably extracts and exploits artists' previous and future work. As of April 2023, artists have removed 1 billion pieces of artwork from the Stable Diffusion training set using tools like HaveIBeenTrained (Kyle Wiggers, 2023). Flooding the market with cheap or free artwork through generative AI could lead to reduced demand and lower prices for original artwork, impacting the future ability of visual artists to earn a fair income from their creations.

What may likely be the inevitable path moving forward, AI-assisted art practices face even more ambiguous protection boundaries than those with 100% human effort (The US Copyright Office, 2023). To establish their ownership, artists will now be required to provide specific evidence of a notable degree of creative impact (which has yet to be defined in legal terms) within various stages of the creative process for these works. In other words, the current legal boundaries of the U.S. Copyright law raise an important question of whether or not artists adapt in the presence of generative AI: does this technology have the potential to significantly, if not completely, strip creators of the financial rewards they deserve for their hard work?

Instead of focusing solely on copyright, legal scholars should consider alternative options in legal infrastructure that could (in)directly support artists. One potential alternative is competition policies. The opt-out option as in the Stable Diffusion model implies monopoly over a vast amount of orphaned work. The AI companies' decisions to provide limited, or no information about their model's training data could be considered unreasonable, unfair, or deceptive and an abuse of their dominant position. As per @BlueFiend-Studio's tweet (Figure 1) exposing AI art companies' offers to replace contract artists with their algorithms, practices among firms that restrict opportunities for (independent)

³Demonstrating copyright infringement including market effect in court cases can be challenging for artists. The court's interpretation of market effect in the U.S. Copyright law has been stringent. In *Authors' Guild v. HathiTrust* (2014), the court clarified that market effect "only addresses economic harm that comes from a use serving as a substitute. Any economic 'harm' caused by transformative uses does not count because such uses, by definition, do not serve as substitutes for the original work". Moreover, proving which specific images were used to train the AI system is difficult, as the generated art may not exactly resemble any particular training image.

creative workers could potentially raise concerns under competition or even labor laws. The U.S. competition policies aim to promote consumer welfare; some scholars could also explore an increased risk of liability for users building or interacting with interfaces on top of these generative models.

2.3. Technologists

Once we have more clear standards and boundaries for creative practices in this uncharted territory, we need technologists to develop low-cost mechanisms to decrease enforcement and compliance costs. Rapid content creation of generative AI models will scale up the number of taxing conflicts⁴ between artists and users/builders of generative AI models. Disputed works will have to be assessed on a case-by-case basis. Technical tools could facilitate scaled evaluation and help stakeholders better navigate legal nuances. For example, new technical tools could make knowledge assessment of substantial similarity more feasible and efficient (Vyas et al., 2023). Recent work explored the possibility of "objectively" evaluating whether Stable Diffusion has copied the styles of digital artists' copyright work⁵ (Casper et al., 2023). Translating standards into tangible tools and measures will require careful consideration, given the potential pitfalls of operationalization.

In creative landscapes without strong state-level protection over the economic fruits of their labors, artists will have to adopt scalable self-protection mechanisms. Technologists can build tools that facilitate artists' access to information about AI models and training data. For instance, HaveIBeenTrained already allows artists to opt out of the training data powering AI models. Tools that improve licensing and protective frameworks for artists, such as watermarking (Kirchenbauer et al., 2023), can also minimize inadvertent infringement. Yet, these tools still place the burden on artists; they need to manually search and claim ownership of their works from the past, the present, and the future. Orphaned or imitated works without the knowledge of their owners remain unprotected. More work should consider methods and tools that adequately balance the level of protection and user experience. Social scientists can help shed light on the design processes and cognitive constraints of (non-)technical artists, making sure these technical solutions are grounded in real human behaviors.

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⁴Authors guild vs Google Books was a decade-long litigation.

⁵Styles, however, are not copyrightable

References

- Casper, S., Guo, C., Mogulothu, S., Deshpande, C., and Marinov, Z. Stable Diffusion Objectively Succeeds at Copycatting Specific Artists' Styles, 2023. URL https://github.com/thestephencasper/sd_cycle_consistency.
- Copyright Alliance. What is the purpose of copyright law. URL <https://copyrightalliance.org/education/copyright-law-explained/copyright-basics/purpose-of-copyright/>.
- FTC-Technology-Blog. Generative ai raises competition concerns, 2023. URL <https://www.ftc.gov/policy/advocacy-research/tech-at-ftc/2023/06/generative-ai-raises-competition-concerns>.
- Grimmelmann, J. Copyright for Literate Robots. preprint, LawArXiv, May 2017. URL <https://osf.io/z38qm>.
- HaveIBeenTrained. Have I been trained? URL <https://haveibeentrained.com/>.
- Joseph Saveri Law Firm. Stable diffusion litigation., January 2023. URL <https://stablediffusionlitigation.com/>.
- Kirchenbauer, J., Geiping, J., Wen, Y., Katz, J., Miers, I., and Goldstein, T. A Watermark for Large Language Models, June 2023. URL <http://arxiv.org/abs/2301.10226>. arXiv:2301.10226 [cs].
- Kyle Wiggers. Spawning lays out plans for letting creators opt out of Generative AI training. *Techcrunch*, May 2023.
- Lemley, M. A. and Casey, B. Fair Learning. *SSRN Electronic Journal*, 2020. ISSN 1556-5068. doi: 10.2139/ssrn.3528447. URL <https://www.ssrn.com/abstract=3528447>.
- Leval, P. N. Toward a Fair Use Standard. *Harvard Law Review*, 103(5):1105, March 1990. ISSN 0017811X. doi: 10.2307/1341457. URL <https://www.jstor.org/stable/1341457?origin=crossref>.
- Margoni, T. and Kretschmer, M. A Deeper Look into the EU Text and Data Mining Exceptions: Harmonisation, Data Ownership, and the Future of Technology. *GRUR International*, 71(8):685–701, July 2022. ISSN 2632-8623, 2632-8550. doi: 10.1093/grurint/ikac054. URL <https://academic.oup.com/grurint/article/71/8/685/6650009>.
- Sobel, B. L. W. Artificial Intelligence's Fair Use Crisis. *The Columbia Journal of Law & the Arts*, pp. 45–97 Pages, December 2017. doi: 10.7916/JLA.V41I1.2036. URL <https://journals.library.columbia.edu/index.php/lawandarts/article/view/2036>. Art-work Size: 45-97 Pages Publisher: The Columbia Journal of Law & the Arts.
- Somepalli, G., Singla, V., Goldblum, M., Geiping, J., and Goldstein, T. Diffusion Art or Digital Forgery? Investigating Data Replication in Diffusion Models, December 2022. URL <http://arxiv.org/abs/2212.03860>. arXiv:2212.03860 [cs].
- The US Copyright Office. Statement of policy: Copyright registration guidance: Works containing material generated by artificial intelligence, 2023. URL <https://public-inspection.federalregister.gov/2023-05321.pdf>.
- Vyas, N., Kakade, S., and Barak, B. Provable Copyright Protection for Generative Models, February 2023. URL <http://arxiv.org/abs/2302.10870>. arXiv:2302.10870 [cs, stat].
- Yang, L., Zhang, Z., Song, Y., Hong, S., Xu, R., Zhao, Y., Zhang, W., Cui, B., and Yang, M.-H. Diffusion Models: A Comprehensive Survey of Methods and Applications, March 2023. URL <http://arxiv.org/abs/2209.00796>. arXiv:2209.00796 [cs].