Can There be Art Without an Artist?

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Abstract

Generative AI based art has proliferated in the past year, with increasingly impressive use cases from generating fake human faces to the creation of systems that can generate thousands of artistic images from text prompts - some of these images have even been “good” enough to win accolades from qualified judges. In this paper, we explore how Generative Models have impacted artistry, not only from a qualitative point of view, but also from an angle of exploitation of artists – both via plagiarism, where models are trained on their artwork without permission, and via profit shifting, where profits in the art market have shifted from art creators to model owners. However, we posit that if deployed responsibly, AI generative models have the possibility of being a positive, new modality in art that does not displace or harm existing artists.

1 Introduction

Figure 1: Théâtre D’opéra Spatial by Jason Allen

Jason Allen, a Colorado based video game designer, caused a stir in the art community when he won first prize in the digital art category at the Colorado State Fair by revealing that his winning piece, Théâtre D’opéra Spatial, was created using Midjourney\(^1\) an Generative AI Art model that outputs images given text prompts as inputs. The resulting debate in the art community highlighted the tensions between technological progress in the digital art space, where much like anything else in today’s world, machine learning is quickly changing the landscape. This rapid change is felt in the form of economic impacts by digital artists as power and profits shift from artists to model owners.

\(^1\)https://www.midjourney.com/home/

36th Conference on Neural Information Processing Systems (NeurIPS 2022).
computational infrastructure owners. Even though Allen admittedly was responsible for inputting the
text prompts that ultimately generated the winning piece, not only is that a severely limited scope of
artistic effort compared to the other artists that competed with him in the category, but also it is not
hard to imagine a future where even the text prompts could be generated by language models, thereby
completely dehumanizing the creative artistic process and severely distorting the human perception
of the meaning behind an image. We are thus prompted to ask: can there be art without an artist?

In this paper, we look at several emerging tensions in the arena of digital art. In Section 2 we discuss
the state of the art on Generative AI Art models, including the latest models and artists using these
tools to augment their work. In Section 3 we highlight how AI models are trained on stolen artwork
from the internet without permission, and the lack of consensus about legal recourses available to
artists under current copyright regimes. In Section 4 we discuss the emergent profit shifting crisis -
profits are shifted from freelance artists to large corporations who own the models, and additionally,
artists are also being actively mimicked and displaced from their jobs. Finally, in Section 5 we discuss
how generative AI models can become their own style or modality of art without threatening existing
artists, much like photography and digital art did. We end the paper with a call to arms and regulatory
suggestions to prevent such a landscape.

2 The current landscape of Generative AI Art

Generative Art, defined as art created with an autonomous system, has been around for a long time
[5], and predates the mainstream adoption of AI. While there is a lot of rules-based art that does not
use machine learning, for the purposes of this paper, we limit our focus to Generative AI Models,
such as Generative Adversarial Networks (GANs), and their successors, Text-to-Image AI Models.

In the earliest iterations of GAN art, artists would hand-pick the images in their datasets and carefully
hone their algorithm manually to generate images that would become a component of or aid in their
creation of art. DeepDream, a project headed by Google engineer Alexander Mordvintsev, was among
one of the first discoveries of the artistic potential of AI. While the tool was created to understand
neural networks [23], Google engineers discussed the images’ beauty in a Google AI blog entry about
the tool. The blog entry notes that artists and programmers alike were interested in how these images
were generated, so they made the code used to generate the images publicly available. [21]

StyleGAN [13], released by NVIDIA, was one of the paradigm shifting advances in the area of
GANs. StyleGANs were able to transfer the art style of one image onto another, and were also used
to generate photo-realistic human faces. Soon after, OpenAI, the maker of large language model
(LLM) GPT, GPT-2 and GPT-3 [7], released CLIP [19], which connected previous work on image
embeddings with advances in LLMs to present a method to jointly train image and text embeddings
and massively improved the robustness of image classifiers trained on non-Imagenet data. OpenAI
then released DALL.E [20], which they described as: “a 12-billion parameter version of GPT-3
trained to generate images from text descriptions, using a dataset of text–image pairs.” Several other
teams and companies subsequently announced models, including DALL.E’s successor, DALL.E-2,
Google’s Imagen [22], Midjourney[1] and most recently Stable Diffusion[3]

3 The lack of attribution and consent in model training

State-of-the-art vision AI models have historically been trained on large datasets scraped from the
internet. The most popular datasets in the past decade have been ImageNet [10], CelebA [16], and
Microsoft COCO [15], which have been used to power fundamental models such as AlexNet [14],
ResNet [11], and StyleGAN [13]. Each of these widely popular datasets have attribution and consent
issues. The images in these datasets were scraped from the internet with no heed to copyrights or
image licenses. For instance, in a discussion about copyright issues in MS-COCO on GitHub [2],
user Micah Elizabeth Scott pointed out the following chilling realization:

There are many different Creative Commons licenses represented by the project, and in fact
most of the images seem to be released under terms that are not being upheld by the COCO
dataset’s distribution terms.

https://thispersondoesnotexist.com/
https://github.com/CompVis/stable-diffusion

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For example, just looking at the unlabeled image dataset from 2017, there are 123403 images with license annotations in the JSON, but only 6614 (about 5%) of these images are released under the unrestricted or USgov licenses. The other images all require attribution, and some of them additional require share-alike, no derivatives, or non-commercial restrictions. As for the attribution requirement, I don’t see how that is served- the image database links to the original address each image was retrieved with from Flickr’s CDN, but this does not link back to the image’s author or include any of the author’s metadata.

The DALL.E-2, Imagen, Midjourney, and Stable Diffusion models use a newer, bigger dataset called LAION-5B. Previous work [4] points out that LAION not only suffers from problematic stereotypes but also blatant ignoring of copyrights that the original creators had posted along with their work. Artists have rightfully started to take note and raise complaints [4] that their work is effectively stolen when model trainers train their commercial products on the artists’ original work without permission. The theft is not just plagiarism in terms of artistic style, but often verbatim unlicensed reproduction. Deep learning models have been shown to reproduce training data unmodified [8], and this is also the case for generative art models [5].

Unfortunately for artists looking to protect their work, there remains significant uncertainty in terms of the availability of legal recourse under the current copyright landscape. For instance, Creative Commons [1] notes that while in the US, the use of published work to train AI is considered fair use, in the EU, the Directive of the Digital Single Market provides an exception for non-commercial entities to train models, but it allows creators to include language that prohibits model training with their work for commercial purposes. This lack of consensus is detrimental to artists seeking to protect their work, especially when their work is published on the internet that spans across jurisdictions.

4 Shifting Profit Models

While there has been significant technical progress in terms of more sophisticated models producing higher-quality output, the proliferation of generative models has also led to a seismic shift in how incentives work in the arts, moving power and profits away from individual creators and risk fundamentally shifting the perception of artwork.

4.1 Commercial Model owners reap the profits, not artists

Certainly, an argument can be made that AI text to image models are just another tool in the artists’ arsenal, however, reality is much more nuanced. Most of the models discussed earlier in this paper are owned and maintained by private companies, and these entities charge for model usage. It costs $15 to buy 115 credits on DALL.E (one run of the model consumes one credit), while it costs $30 a month to use Midjourney without restrictions. Dreamstudio [6], the supported GUI for Stable Diffusion, charges £10 for 1000 art generations. This essentially means that not only are the artists, whose original works were scraped without permission to train these models, not getting profits from this business model, but under the garb of democratization of art, the middlemen, who in this case are companies like OpenAI or Midjourney, are siphoning off money that would have otherwise gone to original art creators. In plainer terms, these companies are profiting off the artistic endeavors of others, and possibly supplanting those human artisans.

4.2 Displacement of Artists from freelance jobs

As Generative AI models produce more believable and visually appealing outputs, some companies are moving away from hiring graphic designers for simple tasks. This is especially visible in Alibaba’s usage of Generative AI models in their ad campaign. While Alibaba says that its method of producing these ads still relies on human creativity [7], it is undeniable that fewer, less efficient human graphic designers will be hired overall. This lack of variety inherent in a smaller group of graphic designers will skew the outputs of their ad designs as well as put several artists out of work.
4.3 Identity theft via AI Explicitly Mimicking Living Human Artists

Further development of Generative AI has realized the creation of models specifically meant to closely mimic human artistry. People using Stable Diffusion, for instance, have been able to closely mimic specific artists’ styles. One artist called attention to this, and showed a user that was able to use stable diffusion to mimic a large array of artists through with the tool. The artists mimicked are shown in figure 3a. The creator of that page has since made it private, but the URL is still able to be seen in relevant spaces on social media.

(a) List of artists a user of stable diffusion was able to mimic.

(b) Models sometimes attempt to clone the artist’s logo.

Figure 3: Models Mimicking Living Human Artists

https://www.notion.so/e2537cbf42c34b7e9a9a4126f81dfd0d
5 Artificial Intelligence as an Artistic Tool

When photography was introduced, there were fears that it would completely disrupt and possibly destroy the fine arts market. That did not turn out to be the case, however. Traditional illustration and photography currently coexist in artistic circles and have a unique set of benefits and challenges that result in unique art in both mediums. [18] This was also the case for digital art when first introduced; there was a heated debate in the art community about if digital art would cheapen or replace the process of creating traditional art. The introduction of artificial intelligence is fundamentally no different than photography or digital art in this sense.

The growth of digital art as a medium is an especially apt comparison to the introduction of AI. When art-sharing platforms such as DeviantART became popular and digital art tools became more accessible, more people began to create digital art to share publicly with the world [3]. We do not attempt to wade into the debate of what constitutes art itself, as that is completely subjective and a matter of endless debate [12]. However, in the book A Philosophy of Computer Art [17], there is a description of art that discusses how art has grown and changed with time:

There’s more to art than sitting around and looking pretty. Art works are opportunities for action, and their value depends on the tasks they afford. First comes creative activity, then sometimes performance, and finally appreciation, which includes looking, listening, reading, interacting, interpreting, liking, critiquing, and much else besides.

Rather than the subjective interpretation of the art being its defining factor, art is instead defined as something that affords creative activity first and foremost. While many artists were genuinely honing their artistry through digital art, some began to trace other artists’ work and attempt to profit off of it. Or simply re-posted artists’ work claiming it was their own. Direct copying of artists does provide a learning opportunity when handled ethically, but not individual creative expression. In the case of photography and digital art, its the unique capabilities of these mediums that yielded the best works and the most artistic activity in this case. AI art and its generation affords opportunities to create images that no other medium truly could, meaning it is well poised to become its own medium or style. In appendix A.1, we discuss how several artists use generative models as a part of their process for creative expression as examples of ethical uses of Generative AI to enhance their craft.

6 Conclusion

Art as a medium has always molded to fit the society that creates it, from cave drawings created by early humans to fine art painted with quality acrylics, to contemporary technology powered society. That being said, we strongly suggest that the inclusion of AI into art should be performed responsibly in order to avoid the legal, financial, and ethical impacts on human artists. We also believe that AI art is fully capable of becoming a large, unique medium of its own, like photography and digital art did.

Efforts in the area of ethical usage of artists’ work have already started to take place in the form of responsible use licensing [9], but the enforcement of usage guardrails should ideally be taken up with a mix of community effort and centralized regulation. We propose the following call to arms to the community: (1) Dataset creators should gain consent before adding art into datasets, à la Deviantart [24]. (2) Model creators should provide tools to unlearn [6] training data if the owner of said data revokes consent at a future date. (3) All proposed legislation should support individual artists, not just corporations. (4) Clear, actionable guidelines on transformative use in the light of AI’s adoption into art.

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References

[1] Should cc-licensed content be used to train ai? it depends. URL https://creativecommons.org/2021/03/04/should-cc-licensed-content-be-used-to-train-ai-it-depends/
[2] Coco images do not adhere to license.txt. URL https://github.com/cocodataset/cocoapi/issues/81

[3] Artwork Archive. A deep look at digital art and social media. URL https://www.artworkarchive.com/blog/a-deep-look-at-digital-art-and-social-media

[4] Abbe Birhane, Vinay Uday Prabhu, and Emmanuel Kahembwe. Multimodal datasets: misogyny, pornography, and malignant stereotypes. arXiv preprint arXiv:2110.01963, 2021.

[5] Margaret A Boden and Ernest A Edmonds. What is generative art? Digital Creativity, 20(1-2):21–46, 2009.

[6] Lucas Bourtoule, Varun Chandrasekaran, Christopher A Choquette-Choo, Hengrui Jia, Adelin Travers, Baiwu Zhang, David Lie, and Nicolas Papernot. Machine unlearning. In 2021 IEEE Symposium on Security and Privacy (SP), pages 141–159. IEEE, 2021.

[7] Tom Brown, Benjamin Mann, Nick Ryder, Melanie Subbiah, Jared D Kaplan, Prafulla Dhariwal, Arvind Neelakantan, Pranav Shyam, Girish Sastry, Amanda Askell, et al. Language models are few-shot learners. Advances in neural information processing systems, 33:1877–1901, 2020.

[8] Nicholas Carlini, Florian Tramer, Eric Wallace, Matthew Jagielski, Ariel Herbert-Voss, Katherine Lee, Adam Roberts, Tom Brown, Dawn Song, Ulfar Erlingsson, et al. Extracting training data from large language models. In 30th USENIX Security Symposium (USENIX Security 21), pages 2633–2650, 2021.

[9] Danish Contractor, Daniel McDuff, Julia Katherine Haines, Jenny Lee, Christopher Hines, Brent Hecht, Nicholas Vincent, and Hanlin Li. Behavioral use licensing for responsible ai. In 2022 ACM Conference on Fairness, Accountability, and Transparency, pages 778–788, 2022.

[10] Jia Deng, Wei Dong, Richard Socher, Li-Jia Li, Kai Li, and Li Fei-Fei. Imagenet: A large-scale hierarchical image database. In 2009 IEEE conference on computer vision and pattern recognition, pages 248–255. Ieee, 2009.

[11] Kaiming He, Xiangyu Zhang, Shaoqing Ren, and Jian Sun. Deep residual learning for image recognition. In Proceedings of the IEEE conference on computer vision and pattern recognition, pages 770–778, 2016.

[12] Sophie Howarth. Fountain by marcel duchamp.

[13] Tero Karras, Samuli Laine, and Timo Aila. A style-based generator architecture for generative adversarial networks. In Proceedings of the IEEE/CVF conference on computer vision and pattern recognition, pages 4401–4410, 2019.

[14] Alex Krizhevsky, Ilya Sutskever, and Geoffrey E Hinton. Imagenet classification with deep convolutional neural networks. Communications of the ACM, 60(6):84–90, 2017.

[15] Tsung-Yi Lin, Michael Maire, Serge Belongie, James Hays, Pietro Perona, Deva Ramanan, Piotr Dollár, and C Lawrence Zitnick. Microsoft coco: Common objects in context. In European conference on computer vision, pages 740–755. Springer, 2014.

[16] Ziwei Liu, Ping Luo, Xiaogang Wang, and Xiaoou Tang. Deep learning face attributes in the wild. In Proceedings of International Conference on Computer Vision (ICCV), December 2015.

[17] Dominic McIver Lopes. A Philosophy of Computer Art. Routledge, London, 2010.

[18] HJ MOORE. Photography-at the frontier between art and science, 1992.

[19] Alec Radford, Jong Wook Kim, Chris Hallacy, Aditya Ramesh, Gabriel Goh, Sandhini Agarwal, Girish Sastry, Amanda Askell, Pamela Mishkin, Jack Clark, et al. Learning transferable visual models from natural language supervision. In International Conference on Machine Learning, pages 8748–8763. PMLR, 2021.

[20] Aditya Ramesh, Mikhail Pavlov, Gabriel Goh, Scott Gray, Chelsea Voss, Alec Radford, Mark Chen, and Ilya Sutskever. Zero-shot text-to-image generation. In International Conference on Machine Learning, pages 8821–8831. PMLR, 2021.

[21] Google Research. Deepdream - a code example for visualizing neural networks. URL https://web.archive.org/web/20150708233542/http://googleresearch.blogspot.co.uk/2015/07/deepdream-code-example-for-visualizing.html
A Appendix

A.1 Positive use cases for AI Enabled Art

The above position piece is largely critical of AI Art, but our position is more nuanced. As long as technology enables artists to do more interesting work without completely displacing them, it is generally a force for good. To that effect, we discuss a few real world examples of artists who have incorporated AI into their own work in a responsible and creative fashion.

• **Helena Sarin.** Helena creates art by hand, trains GANs on her work to generate new designs, and then brings it back to traditional media like pottery. She therefore uses GAN as a paintbrush to enhance her work. Her work can be found at [twitter.com/neuralbricolage](https://twitter.com/neuralbricolage).

• **Michael Hansmeyer.** He is a postmodern architect who uses GANs to bring fresh perspective to rules-based architecture designs. He has used it to make columns, theaters, etc. The process allows for more artificial serendipity – the happy accidents...
and novel ideas that normally take time to stumble upon. His work can be found at
https://www.michael-hansmeyer.com/

Figure 5: Architectural work by Michael Hansmeyer

• **Refik Anadol.** He is a Turkish-American new media artist and designer. His projects consist of data-driven machine learning algorithms that create abstract, dream-alike environments. He essentially uses the unrealistic, hallucination-like outputs of GANs to create dreamlike environments and art installations. His work can be found at https://refikanadol.com/

Figure 6: Dreamscapes by Refik Anadol

A.2 **HeLa Cells: An analogous debate from Biology**

Henrietta Lacks is known as “immortal” for a reason – though she died of cervical cancer at age 30, scientists have used her remarkable cells countless times since. HeLa cells, that never stop dividing and hence are functionally immortal, have played a role in some of the most important medical advancements of our time. They were used to develop the polio vaccine, chemotherapy and cloning technology, among others. However, the original cells that started the immortal HeLa cell line were taken from her without her consent or the awareness of her family. Now her family is demanding compensation from Johns Hopkins University who first took the cells. [9]

The HeLa cell controversy is yet another cautionary tale about the dangers of cutting out human creators in the pursuit of technology and a lesson in ethics, privacy and consent in technological progress.

[9] https://www.smithsonianmag.com/smart-news/claims-henrietta-lacks-controversy-far-from-over-180962185/