

A.I. Art and Copyright

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

Artificial intelligence (A.I.) is becoming more and more prevalent in today's society; with everyone knowing about A.I. and ChatGPT. Some of the first things that people have noticed about A.I. is its ability to be able to answer questions of all kinds, produce code, and generate original images. This has been seen in the public eye as recently after most of the research has been done for this paper, there has been a lawsuit filed against a creator of A.I. image generation due to the nature of what goes into AI image generation. This paper explores the impact of (A.I.) generated art on society. Specifically, this paper examines questions about ownership of A.I. generated art, the process of creating it, and the potential implications for creativity in society. Furthermore, this paper explores how A.I.-generated art impacts artists who rely on creating art for a living.

Currently, there is no clear answer regarding the legal and social implications of A.I.-generated art. At the time of writing this paper, there were no significant court cases that I could examine. However, since the time of writing this paper, there have been some court cases, namely the Getty Images vs Stability A.I., on the legality of A.I. being able to replicate images similar to those copyrighted by Getty Images. Therefore, it is difficult to predict how the law will evolve regarding A.I.-generated art. As for the societal impact of A.I.-generated art, there is still much to explore in terms of its potential effects on creativity and financial implications for artists. There are different methods and sources will be used to truly focus on the questions that A.I.-generated art generates. However, first the definitions of "art" and "copyright" need to be defined. Then I will analyze the involvement of A.I. within the art world, and here define what is A.I.-generated art before examples of A.I. within the art world. Afterward, this paper explains

where A.I.-generated art comes from and who owns it. Lastly, this paper discusses why this is important and what it means for both futures of A.I. and art.

Methods

As Machine Learning (ML) and Artificial Intelligence (A.I.) become increasingly prevalent in today's world, their use in creative arts is also on the rise. With this in mind, this paper analyzes image generation as a prime example of A.I.'s involvement in the arts. Examining articles, such as the one by Eva Cetinic & James She, that talk about image generation A.I. projects such as *Midjourney*, *Dream Studio*, and *NightCafe* demonstrating the technology's capabilities (Cetinic & She, 2022). While technology has long assisted humans in creating art, these projects show that A.I. can now replicate what was once only done by humans. However, as A.I.-generated art gets more sophisticated it can seem like it is its artist with its mind. I attempt to answer the question “Who should receive credit for AI-generated art?” Since, it seems like anyone can create art the same way that someone can do a Google search, using the study of “Who Gets Credit for AI-Generated Art” (*Who Gets Credit for AI-Generated Art?*, n.d.). This paper will explore the implications of A.I.-generated art on the art world and society.

While A.I.-generated art may seem like a completely new creation, in many cases, the A.I. is simply collecting information it has already received. This type of art creation is not entirely original since it searches through existing databases and takes into account the words used to describe them, as well as the images themselves. This idea will be analyzed even further using the case study in “Understanding and Creating Art with A.I.: Review and Outlook” (Cetinic & She, 2022). This means that the person who types in the search terms to generate the image is the creator of the image, with the A.I. acting as a tool trained by ML. This raises questions about the original creator of A.I.-generated art, as it is unclear whether the person or

the A.I. should receive credit for the final product. This paper will explore the implications of this issue on the art world and society using the articles by Cetinic & She as well as “Who Gets Credit for AI-Generated Art.”

The issue of who should receive credit for A.I.-generated images is a complex one, with multiple possible answers that are examined in different articles such as “AI-generated vs. Human Artworks. A Perception Bias Towards Artificial Intelligence?” by Han Qiao. Some argue that credit should go to the original creators of the images that were used to train the machine. Others believe that those who taught the machine to recognize keywords and images should receive credit. Still, others suggest that the end-user who inputs the keywords should get the credit. However, it is important to consider where the images originally came from the original artist. In addition to this central question of who should receive credit, this paper will also explore the potential impact of A.I.-generated art on the future of creativity by analyzing the readings “Who Gets Credit for AI-Generated Art” as well as the “AI-generated vs Human Artworks. A Perception Bias Towards Artificial Intelligence?”

Part 1: What is Copyright and Art?

People across the world and years have different definitions of what art is. Society has developed over the years to where each different society will have its style of art (The Art Assignment, 2020), and over time there will be changes to what art is and how it can be protected as intellectual property. As society became more sophisticated, it is a popular understanding that society moved from creating cave drawing for survival reasons to creating art for the sake of creating art (CJ The X, 2022). Then with time, an artist’s art became a tool for the artist to earn a profit, thus some people may depend on art to make a living. With this protection, artists have been able to ensure their living situation since there was no need to worry about

people copying their style. This then allows artists to be able to create what they enjoy and make a profit off of it knowing that even if they are not commissioned to create a new piece of art their creativity is being protected and that no one else would be benefiting from their work, their art (Hristov, 2016). Art is not defined easily as there are many different forms that art can exist in. However, for the sake of the paper, the definition of art will revolve around experience similar to the ideas given by John Dewey.

“Every art communicates because it expresses. It enables us to share vividly and deeply in meanings... For communications is not announcing things... Communication is the process of creating participation, of making common what had been isolate and singular... the conveyance of meaning gives boy and definiteness to the experience of the one who utters as well as to that of those who listen,” (Dewey, 1980, Pg 224.)

The way that art itself should not be the final product itself but the experience that the viewer feels after being exposed to the art. With this idea in mind art can forms that are not visual or result in a physical product. Such forms are music, literature, and visual arts. The different forms of art have been around for a long time, and they have been protected by copyright. Thus artists of all kinds are used to having the protection given to them by copyright law.

Legally what is protected by copyright law is the intellectual property of the people who create new ideas and want to use them to make a profit. To be more specific the rights of the copyright owner include, but are not limited to “... the right to: Reproduce the work in copies..., Prepare derivative works based upon the work..., Distribute copies or phonorecords of the work to the public by sale..., Display the work publicly...” (*What Does Copyright Protect?*, n.d.). On the other hand the items that it does not protect are “Ideas, procedures, methods, systems, processes, concepts, principles, or discoveries... Works that are not fixed in a tangible form...,

Familiar symbols or designs” (*What Does Copyright Protect?*, n.d.). Thus our definition of art is technically not copyrighted but given that a medium is needed in order to get the experience. Thus the visual product that gives the experience of art can be copyrighted. Nevertheless, the fact that there is copyright law means that society has decided that protecting people’s intellectual property, people's ideas, is needed to prevent the stealing of ideas (Kaminski, 2017). Thus with this in mind society moves forwards with respecting the copyright laws and it not only protects the original artists but serves as a disciplinary method to ensure that people will not be motivated to violate the copyright law as there are consequences. Thus artists depend on copyright to be able to protect their art and make sure that they are the only ones who can legally make a profit off the art and sell it to the public (Kaminski, 2017). It should be noted that the consequences vary from case to case but the built-in protection of art is there.

Artists who hold the copyright to their work have the exclusive right to use and distribute it as they please, as they are usually the ones who created it. This protection ensures that artists can share their expression with the public in a mutually beneficial way (The Art Assignment, 2020). Art can be created for many reasons, and protecting artists' rights is important to facilitate artistic expression. Copyright allows artists to protect their work from unauthorized use by those seeking to profit from it, though smaller artists may have a harder time enforcing their copyright. For example, well-known artists can rest assured that their art won't be used to make a profit without their permission. However, new artists that mainly generate income-commissioned work generally have less control over the use of their work.

Part 2: A.I. in the art world.

Creating good art requires talent and skill, and only a small percentage of the population can make a living from it. However, not having natural artistic talent doesn't necessarily mean one cannot create art. Many people have ideas for drawings or images but may lack the artistic ability or tools to bring their vision to life as they may find it difficult or time-consuming to be properly trained in art. In recent years, a new form of art has emerged that offers a solution to this problem: A.I.-generated art. With the help of sophisticated algorithms and machine learning, artists and enthusiasts can use A.I. tools to create stunning works of art without needing traditional artistic skills. This emerging field has sparked a debate about the role of A.I. in the art world and whether or not it can truly be considered "art" in the traditional sense.

Part 2. B: Small Course in A.I.

Before delving into the topic of A.I.-generated art, it is important to first understand what Artificial Intelligence (A.I.) truly means and how it is used in the modern day. Multiple things go into A.I. First we need to talk about machine learning, as it is a subset of A.I. Defined as, "A subset of AI, machine learning... exhibits the experiential "learning" associated with human intelligence, while also having the capacity to learn and improve its analyses through the use of computational algorithms" (Helm et al., 2020). This technique has allowed for the creation of learning algorithms that power various applications one such example includes self-driving cars(Hristov, 2016). While these algorithms are created by humans, they require vast amounts of data to truly learn and function as intended (Cetinic & She, 2022). Where the most basic definition of A.I. is simply the "theory of human intelligence being exhibited by machines" (Helm et al., 2020). Thus A.I. is described when a machine shows some sort of human intelligence. A machine making choices, or being able to generate images given a certain input,

leaving the machine to fill in most of the blanks is considered A.I. given the previously mentioned definition. The impact of A.I. is becoming increasingly evident in our society, and it is important to understand its capabilities and limitations in the realm of art in music and images as well.

So with the A.I. being involved with the art, human elements can be taken out of art, however, this is not true since humans need to make the art that the machine is trained on. A.I.-generated art is a relatively new form of art that is created not by humans but by trained machines (Cetinic & She, 2022). To be able to get A.I. to be able to generate art, there is a whole process involved. First, there is the digitization of art, there are classic paintings that are not in digital originally thus those need to be digitized and archived so that a machine can read them (Cetinic & She, 2022). They need to be archived to have the data reserved to be used at a moment's notice, but once they are archived they are put into digital collections, that are accessible to the creators of a visual art generation algorithm (Cetinic & She, 2022). Lastly, from this point, the algorithm takes data from the digital collections and then starts running analyses tuned by the original programmers of the machine, and from this part, they learn to associate visual information with text information, an example of being able to identify that an image is a bowl of fruit (Cetinic & She, 2022). Lastly, once the machine is trained it would be able to give its contributions to the digital collections as well as provide more data for the data analysis of the A.I.-generated art. As A.I. technology advances, it is becoming increasingly sophisticated and capable of generating various forms of art, such as music, videos, and voice. These other forms of art are outside the scope of this paper. Different software programs allow users to generate new art by simply providing prompts to the machine (Cetinic & She, 2022). These systems work by having the A.I. learn about different styles of art from a variety of samples, and training data

collected from different sources, so it can produce a wide range of art in response to different user prompts. However, for an A.I. to be able to create art, it needs to have access to the prior art to train the machine effectively (Cetinic & She, 2022).

Part 2. C A.I.'s direct involvement in the Art World.

The emergence of A.I.-generated art raises questions about who should be able to create art. Now there are many different opinions on who truly owns the art generated by the A.I. Should people who lack natural talent in art just accept that they cannot fully express their ideas, or can they use A.I. technology as a replacement for commissioning a piece from a skilled artist? However, this trend of replacing human services with machines may have negative consequences for artists who struggle to make a name for themselves in a competitive field (Ragot et al., 2020). It is important to consider the impact of A.I.-generated art on the art industry and the potential displacement of human artists. While A.I. technology has made art creation more accessible to the general public, it is crucial to ensure that it does not completely replace the human touch and creativity in art.

The conflict between humans and machines has been a recurring theme in both fiction and reality. With the increasing presence of A.I. in the art world, artists must speak up to address this issue. Unlike unskilled laborers who were replaced by machines, artists have a platform to voice their concerns about A.I.-generated art (*AI-Generated Art Won a Prize. Artists Aren't Happy.* - *The New York Times*, n.d.). However, the threat of machines replacing human artistry is not the only concern. A.I. needs to be trained, and the training data must be prior art, most of which was created by humans and not A.I. Therefore, the danger for artists is not only the replacement of their work by machines but also the limited scope of artistic creativity if the training data is limited to existing human-created art (Butler, 1981).

Part 3: Who Owns A.I. Generated Art?

Ownership of art generated by humans is typically straightforward - the artist who created the work owns the copyright. This means that even if a piece of art is commissioned, the artist still retains ownership of the work, as it was their skill and creativity that brought the work to life. However, determining ownership of A.I.-generated art can be more complex. Since the A.I. is not a human, it is not clear who the creator of the work is or who should be credited with its ownership. The law around this issue is still evolving and may vary by jurisdiction, so artists and A.I. developers need to understand the legal implications of using A.I. in their work.

However, just like artists who receive a commission, A.I. also requires some sort of reference to create art, making it easier to create something based on a template. This can also be related to a human artist having professional training, from a school. In the case of A.I.-generated art, multiple references are needed to create the desired piece (Cetinic & She, 2022). However, unlike human artists who can use their creativity and artistic abilities to create unique pieces, A.I. cannot express original creativity (Ragot et al., 2020). Thus, a wide variety of training data is needed for the A.I. to be accurate in generating art based on user prompts (Qiao et al., 2022). This training data can span from nature images to industrial images to anything at all (Škiljić, 2021). While the A.I. can accurately produce art based on these references, the question of where the training data came from arises.

The training data that was used to teach different A.I.s will vary among A.I. software. They could be stock images, images that can be found by a Google search, or images or pictures of famous paintings of statues. The thing is if a company chooses to they could use copyrighted images when selecting the training data for the individual machine. In that case, if the machine is trained in the copyrighted art of a human artist, where does this leave the artist who owns the

actual copyrighted art the A.I. was trained in? However, the fact that the machine was trained on prior art that may have been or may not have been copyrighted is not too different from the situation of an artist being trained either by themselves by studying the art that is available to them or when they are trained in a school or by studying under another artist (Dee, 2018). The artist learns from these and then puts their creativity into the art that the artist creates. For that reason, the art created by humans has a uniquely human element to it, a human element that is unique to each artist. Human creativity is one of the key points of human-created art that A.I. will not be able to recreate. But, with that in mind, what does it mean to be trained in art and generate new art from that? Human artists are great at making their own because as an artist makes more art they get a unique style, but A.I.-generated art can only generate art from things that the A.I. was trained on (*Who Gets Credit for AI-Generated Art?*, n.d.).

The involvement of A.I. in the creation of art raises questions about who contributes more to the new generation of art. While user input is important in prompting the A.I. to generate the art, the legal ownership of the resulting work remains unclear. In the case of commissioned art by a human artist, the artist still owns the art, but an A.I. lacks legal representation (Butler, 1981). The people involved in the creation of A.I.-generated art include the user who prompts the A.I. to create the art, the team behind the A.I. who provided the training data, and the artists whose art was used as training data. However, current legal rulings state that A.I. lacks copyright protection, leaving the question of who has legal copyright ownership of the resulting artwork (*A Legal Anatomy of AI-Generated Art*, n.d.).

Human artists are protected by copyright laws, however, where does A.I. lie? In the case of A.I.-generated art, the question arises as to whether the use of training data constitutes fair use (Hristov, 2016). Thus, does A.I. have rights under copyright? It is important to note that the A.I.

only outputs an image based on the user's input prompt. The “uniform application of the principles of “fair use” in the following instances:... the general borrowing of ideas... the imitations of methods or systems... abridgments and compendia... scenes or themes or plays... satires, parodies or impersonations...” (Yankwich, 1954). Therefore, the A.I. generates an image based on human interaction. If a user wants to create something that infringes on the copyright, and the system was trained in a way that allows such infringement, then the machine will output copyrighted material. Material that would not fall under the definition of fair use. Which would mean that instead of reproducing something that borrowed ideas it would have to produce a complete copy and not just an imitation of the ideas. With the definition of copyright and fair use in mind, I believe that A.I.-generated art falls under fair use and thus should not be copyright infringement nor can be copyrighted itself.

With the fact that A.I. can be able to output copyrighted material if given the prompt (Kaminski, 2017), should some laws limit the output of the A.I. generated art to protect the artist of the original work? Now, when stating that the output will be copyrighted it does not mean that the machine will just spit out an exact copy of the copyrighted work, or that it takes many snippets of already existing work and put it into one image (Wu, 1997). However, since technology and machine learning have advanced so much, it is becoming easier and easier for a machine to copy a copyrighted style. This is the issue because the style of art is also the artist's idea, which can be copyrighted. However, this should not be an issue since given the process of generating this art, it is fair use.

Why Does This Matter?

Copyright has become an increasingly important issue in recent years as more art is being produced and used in mainstream media, including the use of art to train A.I. Even without the

introduction of A.I.-generated art, copyright laws have been the subject of numerous civil and criminal cases in various art forms (Wu, 1997). It is therefore important to determine who holds the copyright for art created by A.I. to establish guidelines for future cases involving not only A.I.-generated art but other potential A.I.-generated works as well (Dee, 2018).

Determining who holds the copyright and where the A.I. obtains its training data is also crucial to ensure that the artist whose work was used in the A.I. training is fairly compensated, to a certain degree. Since not all of the training data can be traced back. This is particularly significant given the individual artistic creativity that drives the development of art in society (Ragot et al., 2020). However once again tracing back to the definition of fair use unless the A.I.-generated art is being promoted as original ideas then the compensation is not needed according to copyright law (Yankwich, 1954). Art plays a fundamental role in reflecting the human experience, and therefore it is crucial to acknowledge the human element involved in the creation of art, which therefore also impacts society. Human creativity is the element that has been the driving force behind art in societies throughout history.

With A.I. art generation anyone can make art now, all it takes is just access to a computer and the internet access any person can use A.I. to generate art. Thus, anyone can become an artist. Then this leads to the question, is A.I. art taking away jobs from artists, or is making A.I. art more accessible by increasing its use as an artistic tool instead of a way to cheat the art-making process? Digital art has been around for a while now so now the software that is used to make digital art is seen as a tool. Thus, in about all kinds of art generation, there are tools to help such as photography, however, some people even argue that doing photography is not art since they argue that you are simply capturing nature and that does not satisfy what it means to be art. But in this paper art is defined as the experience one gets after being exposed to the art,

paraphrasing the definition given by Dewey. Using this A.I.-generated art can be defined as art as people will experience it after witnessing it. Now whether it is a positive or a negative experience will be up to the user. Now whether or not it is legal, according to the definition of copyright, to me A.I.-generated art falls under fair use and those the generations themselves should not be allowed to be copyrighted.

Conclusion

A.I.-generated art poses many questions that need to be addressed from various perspectives. As A.I. art gains more popularity and usage, it impacts not only those who create prompts for the A.I. but also the artists whose works are used to train the data. The issues of copyright and ownership become even more complex with A.I.-generated art, and current copyright laws may not fully account for this new media. However, the sole purpose of generating an image that imitates. Thus making it fair use and not infringing copyright nor should it get its copyright. Moreover, there is a need to define the role of A.I. art in society and its potential impact on human creativity. Will A.I.-generated art promote creativity or diminish it? Given that it can be used as a tool. As more A.I.-generated material becomes available, this debate will intensify, and society will need to grapple with these questions. Ultimately, the implications of A.I.-generated art go beyond mere aesthetic considerations and touch on fundamental issues related to creativity, ownership, and the role of technology in shaping the future of art.

Bibliography

A Legal Anatomy of AI-generated Art: Part I. (n.d.). Harvard Journal of Law & Technology.

Retrieved October 12, 2022, from <http://jolt.law.harvard.edu/digest/a-legal-anatomy-of-ai-generated-art-part-i>

AI-Generated Art Won a Prize. Artists Aren't Happy. - *The New York Times.* (n.d.).

Butler, T. L. (1981). Can a Computer be an Author—Copyright Aspects of Artificial Intelligence

A Media Labor Law Symposium. (*Comm/Ent*), *A Journal of Communications and Entertainment Law*, 4(4), 707–748.

<https://heinonline.org/HOL/P?h=hein.journals/hascom4&i=721>

Cetinic, E., & She, J. (2022). Understanding and Creating Art with AI: Review and Outlook.

ACM Transactions on Multimedia Computing, Communications, and Applications, 18(2), 1–22. <https://doi.org/10.1145/3475799>

CJ The X (Director). (2022, July 30). *Subjectivity In Art.*

<https://www.youtube.com/watch?v=GPrNWuppMcc>

Dee, C. M. A. (2018). Examining Copyright Protection of AI-Generated Art. *Delphi -*

Interdisciplinary Review of Emerging Technologies, 1, 31–37.

<https://heinonline.org/HOL/P?h=hein.journals/delphi1&i=37>

DEWEY John, Art As An Experience, Perigee, 1980. (n.d.). Retrieved April 26, 2023, from

<http://archive.org/details/deweyjohnartasanexperience>.

Helm, J. M., Swiergosz, A. M., Haeberle, H. S., Karnuta, J. M., Schaffer, J. L., Krebs, V. E.,

Spitzer, A. I., & Ramkumar, P. N. (2020). Machine Learning and Artificial Intelligence:

- Definitions, Applications, and Future Directions. *Current Reviews in Musculoskeletal Medicine*, 13(1), 69–76. <https://doi.org/10.1007/s12178-020-09600-8>
- Hristov, K. (2016). Artificial Intelligence and the Copyright Dilemma. *IDEA: The Journal of the Franklin Pierce Center for Intellectual Property*, 57(3), 431–454. <https://heinonline.org/HOL/P?h=hein.journals/idea57&i=449>
- Kaminski, M. E. (2017). Authorship, Disrupted: AI Authors in Copyright and First Amendment Law Symposium - Future-Proofing Law: From RDNA to Robots (Part 2). *U.C. Davis Law Review*, 51(2), 589–616. <https://heinonline.org/HOL/P?h=hein.journals/davlr51&i=603>
- Qiao, H., Liu, V., & Chilton, L. (2022). Initial Images: Using Image Prompts to Improve Subject Representation in Multimodal AI Generated Art. *Creativity and Cognition*, 15–28. <https://doi.org/10.1145/3527927.3532792>
- Ragot, M., Martin, N., & Cojean, S. (2020). AI-generated vs. Human Artworks. A Perception Bias Towards Artificial Intelligence? *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*, 1–10. <https://doi.org/10.1145/3334480.3382892>
- Škiljić, A. (2021). When Art Meets Technology or Vice Versa: Key Challenges at the Crossroads of AI-Generated Artworks and Copyright Law. *IIC - International Review of Intellectual Property and Competition Law*, 52(10), 1338–1369. <https://doi.org/10.1007/s40319-021-01119-w>
- The Art Assignment (Director). (2020, July 23). *The Definition of Art*. <https://www.youtube.com/watch?v=b2VpNx5ZxSA>

What Does Copyright Protect? (FAQ) | U.S. Copyright Office. (n.d.). [Web page]. Retrieved April 26, 2023, from <https://www.copyright.gov/help/faq/faq-protect.html>

Who Gets Credit for AI-Generated Art? | Elsevier Enhanced Reader. (n.d.).
<https://doi.org/10.1016/j.isci.2020.101515>

Wu, A. J. (1997). From Video Games to Artificial Intelligence: Assigning Copyright Ownership to Works Generated by Increasingly Sophisticated Computer Programs. *AIPLA Quarterly Journal*, 25(1), 131–180. <https://heinonline.org/HOL/P?h=hein.journals/aipiaqj25&i=139>

Yankwich, L. R. (1954). What Is Fair Use? *The University of Chicago Law Review*, 22(1), 203–215. <https://doi.org/10.2307/1598230>