Generative AI, Artists' Intellectual Property Rights, and Collective Action

Dr. Hortense Gerardo, University of California, San Diego

Dr. Hortense Gerardo is a playwright, screenwriter, and anthropologist and serves as the Director of the Anthropology, Performance, and Technology (APT) Program at the University of California, San Diego. Her works have been performed nationally and internationally. She is a Co-founder of the Asian American Playwright Collective (AAPC), and head of the Screenwriting competition on the Board of the Woods Hole Film Festival. For more information go to: www.hortensegerardo.com

Dana Polojärvi, Maine Maritime Academy
Dr. Jon Wade, University of California, San Diego

Jon Wade, Ph.D., is a professor of practice at the Jacobs School of Engineering at the University of California, San Diego where he is the director of Convergent Systems Engineering and the executive director of the Institute for Supply Chain Excellence and Innovation. Dr. Wade's focus is on developing research and education to provide ethically sustainable solutions to critical, complex societal problems. Previously, Dr. Wade was the chief technology officer of the Systems Engineering Research Center and chair of Systems and Software Engineering at the Stevens Institute of Technology, executive vice president of Engineering at International Game Technology, senior director of Enterprise Server Development at Sun Microsystems, and director of Advanced System Development at Thinking Machines Corporation. Dr. Wade received his S.B., S.M., E.E. and Ph.D. degrees in electrical engineering and computer science from the Massachusetts Institute of Technology. Dr. Wade is an INCOSE Fellow.

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abstract

Since the rise of generative AI large language models (LLMs) such as ChatGPT, artists have initiated lawsuits over copyright infringement. Developers argue for impunity because they do not directly use images and texts that are copyright protected. However, companies such as OpenAI use human-generated media patterns to train their models, raising significant intellectual property (IP) concerns. Who owns the human-generated patterns that define an artist's style, and who owns their use and the distribution of those results? The Generative AI, Artists' Intellectual Property Rights, and Collective Action (AI2CA) project is working to address these issues to ensure an ethically sustainable ecosystem that is rewarding to artists, AI developers, and producers of their work. This paper provides a description of the current issues with artists' intellectual rights concerning artificial intelligence/machine learning (AI/ML), followed by an overview of the AI2CA project, a description of the definitions of cognitive algorithms, and a sociotechnical analysis of the current and future possibilities for generative AI ecosystems in comic arts. The focus of the paper is on the socially engaged art (SEA) project, which was created as a way to inform artists about cognitive algorithms and the authors' systems approach to differentiating traditional value streams (TVS) that are currently protected by copyright law, versus the algorithmic value streams (AVS) which are not. The SEA project encourages artists to document their unique cognitive algorithms to support the argument that these are a form of intellectual property (IP). The methodology, expected outcomes, and analysis are presented, along with a set of conclusions and a description of ongoing and future work.

problem description

Generative AI development currently involves three major groups of people involved in an adversarial relationship over fundamental intellectual property rights: 1) artists, 2) AI developers, and 3) producers and distributors of these commercialized artistic works. The members of the first group, artists and writers, publish their work as a central element of their professional lives. Without publication and sales, artists and writers cannot make a living. However, whenever an artist or writer publishes something, the published work contains samples of the creative cognitive algorithms the artist or writer used to make the work. For more on cognitive algorithms, see [1].

Cognitive algorithms are an adaptive set of mental tools that artists develop as they learn and grow in their careers, and they have been defined as "procedural representations of a problem that coordinate memory, attention, and perception into sequences of useful computations and actions" [1]. When people go to school, they learn the ways of expression that societies value, and they expect to have a productive future life within their communities based on their investment in learning. Their work together, learning, and coadapting while also individually contributing to the process of development leads to cultural evolution that involves "the

introduction of behavioural novelty or modification, the transmission of behaviour via social learning, the improvement in genetic and/or cultural fitness or fitness proxies as a result of the learned behaviour, and the repeated transmission and improvement of the behaviour over time" [2]. Each individual develops within the social community of practice: their cognitive algorithms express the style of the artist or writer and include all the patterns essential to the artists' and writers' style and ability to make future work and income.

AI developers have discovered a way to extract creative patterns from the published works of artists and writers, and they have stated this goal [3]. As OpenAI puts it, the goal is to "learn the patterns inherent in human-generated media." The AI developers then seek to use the extracted patterns to replicate the outputs artists and writers depend on for their livelihoods. Generative AI is the means to that end. As OpenAI puts it, "The aim of this process [is the] creation of a useful generative AI system." [3]

AI developers very openly state in their legal arguments that their goal is to copy the creative patterns inherent in all human media [4]. They justify their non-consensual approach to this appropriation by further claiming that copying the patterns of human creativity is legal under "fair use."

However, for copying to be legal under fair use, developers must prove that the patterns of human creativity they have appropriated are "non-expressive." Fortunately, that claim is problematic because creative patterns are used for any expression one makes. Copying these patterns should, therefore, be understood as follows: 1. it is a violation of copyright, and 2. it is an attempt to steal one's creative identity.

Because of this fundamental divide in understanding the right to ownership of cognitive algorithms and their output, the advent of generative AI large language models (LLMs), like ChatGPT, has ignited legal and ethical controversies surrounding copyright infringement. (For a useful visualization/summary of current AI lawsuits in the US, see: [5]. Artists contend that these technologies misappropriate their intellectual property (IP). At the same time, developers, such as OpenAI, argue [3] that the outputs of LLMs are non-expressive and, therefore, do not violate current law. Nevertheless, training artificial intelligence (AI) on human-created content raises profound concerns about: 1) the use of one's intellectual property for training, 2) the ownership of mined artistic algorithms and evolved patterns that formulate an artist's unique style and creative identity, 3) the use of these algorithms and evolved patterns to create new works, and finally 4) the distribution of these works. These cognitive patterns, cultivated through years of creative practice and innovation, are harvested by AI systems, often without informed consent, adequate acknowledgment, or compensation.

generative AI, artists' intellectual property rights, and collective action (AI2CA) project

To address the aforementioned problems with the current use of generative AI, the AI2CA project aims to do three things: first, create an alternative process to AI development. Starting with sociotechnical systems analysis informed by ethical standards of informed stakeholder engagement, we hope to help artists, writers, developers, producers, and lawmakers see the possibility for a more harmonious outcome. Second, inform the education of current and future artists, AI developers, and lawmakers on how to promote and sustain the ethical sustainability of AI systems. Third, organize a collective movement that brings all stakeholders to the table to implement this process.

We are proposing a holistic process for creating AI tools—one that does not just focus on the technology but also looks carefully at its social and ethical impact. By this we mean:

Sociotechnical systems analysis: Instead of treating AI purely as a technical product, this approach acknowledges that AI interacts with and affects a more extensive social system. That means examining how AI tools impact people, industries, communities, and culture.

Ethical standards: This process follows moral and ethical guidelines that respect human rights, fairness, and well-being. Those standards serve as guardrails so that AI is developed in a way that does not exploit or harm.

Informed stakeholder engagement: All groups that might be affected by AI—such as artists, writers, and other creative professionals, as well as developers and lawmakers—should be properly informed and actively involved in shaping the technology. They aren't just passive users; they help define and guide how AI is built and used.

Harmonious outcome: By incorporating these perspectives and principles from the start, the goal is to build AI systems that benefit everyone rather than create or reinforce conflict—especially between creative communities and technology.

In simpler terms, the holistic process aims to ensure that AI development involves careful thought about the social context, treats the people affected by AI as true collaborators, and is guided by strong ethical principles to enable creators and machines to work in concert rather than at odds.

sociotechnical systems analysis

The system of interest directly involves the five major stakeholders, namely: 1) creative artists: graphical artists and writers who produce creative work, 2) AI developers: organizations and individuals who create and distribute AI technology, 3) producers: those who produce and commercialize artistic works, 4) lawmakers: intending to create a level playing field of sustainable and just involvement, and 5) consumers: those who partake of the commercialized art. The objective is to ensure that the resulting ecosystem is ethically fair, in which everyone receives their just compensation, and is sustainable such that the systems can thrive over time.

Causal loop diagrams (CLDs) are effective tools for visualizing and analyzing how socio-technical systems function [6]. In the realm of AI/ML in creative industries, CLDs help pinpoint crucial feedback loops and identify the best points for intervention. They are especially adept at exposing unintended outcomes and time-delayed effects that might be overlooked in more straightforward, linear analyses. By revealing these underlying forces, CLDs illuminate the complex dynamics that shape socio-technical systems.

The intersection of technological advancements and creative industries follows recurring patterns that can be viewed through Gartner's Hype Cycle. This framework, introduced in 1995, visually depicts how new technologies are adopted and clarifies the link between inflated expectations and actual value creation [7]. As shown in Figure 1, the CLD highlights three main feedback mechanisms (see R1, R2, and B1) that have historically guided technology adoption in creative industries. These mechanisms help explain the Hype Cycle phenomenon and the resulting market penetration patterns observed across various technological transitions in the creative sector.

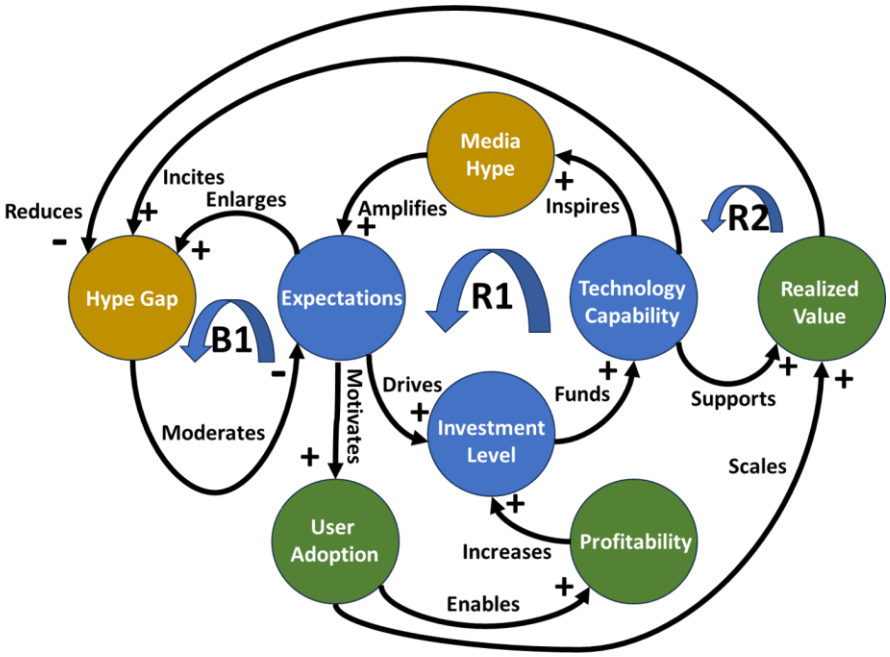

Figure 1. Causal Loop Diagram for Technological Adoption

The first reinforcing loop (R1) shows how media attention elevates expectations, prompting increased investment in the technology. The balancing loop (B1) highlights how actual technological capabilities fall short of these inflated expectations, creating a "disappointment gap" that explains the "Trough of Disillusionment" in the Hype Cycle. This gap has historically served as a necessary market correction. The third loop (R2) illustrates how actual value drives ongoing adoption through network effects and market penetration, accounting for the "Plateau of Productivity" and subsequent market penetration curves. Rogers' diffusion of innovations theory underpins this loop, supported by evidence from multiple creative technology transitions [8].

Although the Causal Loop Diagram (CLD) in Figure 1 helps analyze how successfully a new technology is adopted, it does not explain how its benefits are shared among the key stakeholders: (1) creative artists, (2) AI developers, (3) producers, (4) lawmakers, and (5) consumers. The current surge in AI/ML mirrors notable patterns from earlier publishing innovations. For example, the printing press in the 15th century initially displaced manuscript artists, but it ultimately opened up opportunities in new creative fields [9]. Similarly, the shift to electronic books initially threatened traditional publishing, eventually leading to new markets and revenue streams [10]. Computer-generated graphics, introduced in the 1960s, offer the closest parallel to AI/ML today: early resistance from traditional artists evolved into hybrid practices that merge human creativity with computational capabilities.

The relationships of these historical transitions demonstrate recurring patterns: initial displacement of existing practitioners, followed by market expansion, and eventually the emergence of new creative roles and opportunities. This historical pattern suggests the possibility of similar adaptive responses to AI/ML technologies. However, the unprecedented learning capabilities of AI/ML systems introduce new variables that may not precisely follow these historical patterns. In the previous cases of traditional value streams (TVS), the new technologies served to aid in the creative process or supported the process of the distribution of the art's medium. In the former case, the technology assisted the creative artist in being more effective and efficient in expressing their art. In the latter case, it expanded the market for the artist's work, and lawmakers explicitly expanded the rights of artists to protect their interests. However, in the case of AI/ML in algorithmic value streams (AVS), the technology effectively learns the artist's distinctive cognitive algorithms and provides the means by which they can be mass-produced in variety. While artists can use these tools to increase their efficiency, they can also be used by those without such artistic skills to produce works in their style at a scale infinitely more significant than what can be accomplished by the creative artist.

The current situation is shown in Figure 2, in which the introduction of AI/ML in the algorithmic value stream is unsustainable for several reasons. First, two reinforcing loops drive the use of AI/ML technology. Reinforcing loop R1 results from generic AI/ML technologies increasing in capability, which drives adoption, funds additional development, and then increases capability. There is a second reinforcing loop (R2), which relates directly to the art producers increasing their profits through AI, which also funds more AI development. These two strong reinforcing loops lead to the rapid adoption of AI/ML technologies. However, these processes are not sustainable as they result in creative artists losing more and more of the creative process to AI/ML, resulting in lower quality artwork and reduced consumer demand, as shown in balancing loop B1. As the technology becomes more widely adopted, it reduces the amount creative artists contribute, as shown in balancing loop B2. Thus, this results in the creative artists receiving ever-diminishing amounts of compensation for their work, eventually ending the viability of an artistic career, thereby decreasing artistic quality and innovation. The reduced quality of the artistic works is a negative outcome for the consumers. In the short term, producers

are the winners as they can flood the market with inexpensive but lower-quality commercialized products. However, this trend can reduce overall demand as consumers lose interest in low-quality artistic products. Evidence of this cycle has been experienced by the streaming service Netflix [11]. Finally, AI producers are the winners in this cycle as they have a ready market with the producers for their technology. In fact, as the quality of the art declines, the demand for improved features in AI/ML increases, thereby sustaining the demand. The net results are unemployed creative artists, unhappy consumers, and producers with lower profits.

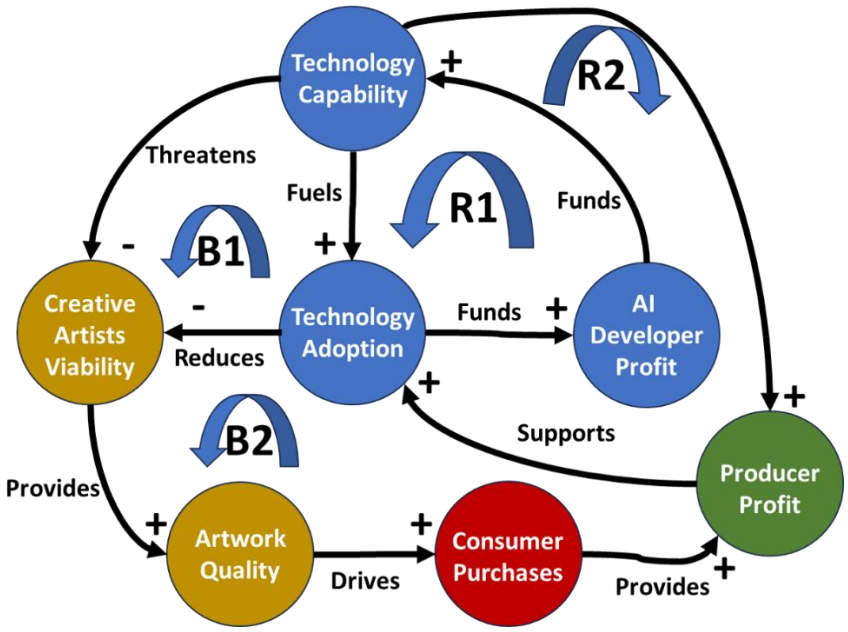

Figure 2. Causal Loop Diagram for the current Algorithmic Value Stream

However, through legal intervention, it is possible to mitigate these negative results and provide the system with ethical sustainability. As shown in Figure 3, legal intervention can legislate a more fair distribution of the income produced by artistic works enabled by AI/ML. First, creative artist advocacy can inspire consumers who are also voters to support their cause in creating fair IP protection laws, as shown in balancing loop B3. This is reinforced by the consumer response to the drop in quality due to the overuse of AI/ML in the creative process, as shown in balancing loop B4. However, a reinforcing loop counters these effects, in which increased producer profits can be used to influence the lawmakers, as shown in reinforcing loop R3 in Figure 3. This CLD shows how the current unsustainable situation can be remedied through the development of laws that reward the artists for the creation of art by AI/ML that was trained on their works in an ethically sustainable algorithmic value stream. However, creative artists and consumer advocates need to overwhelm producer advocacy, which maximizes its own short-term profitability. Additionally, the resultant laws need to be fair to all parties for the long-term ethical sustainability of this system.

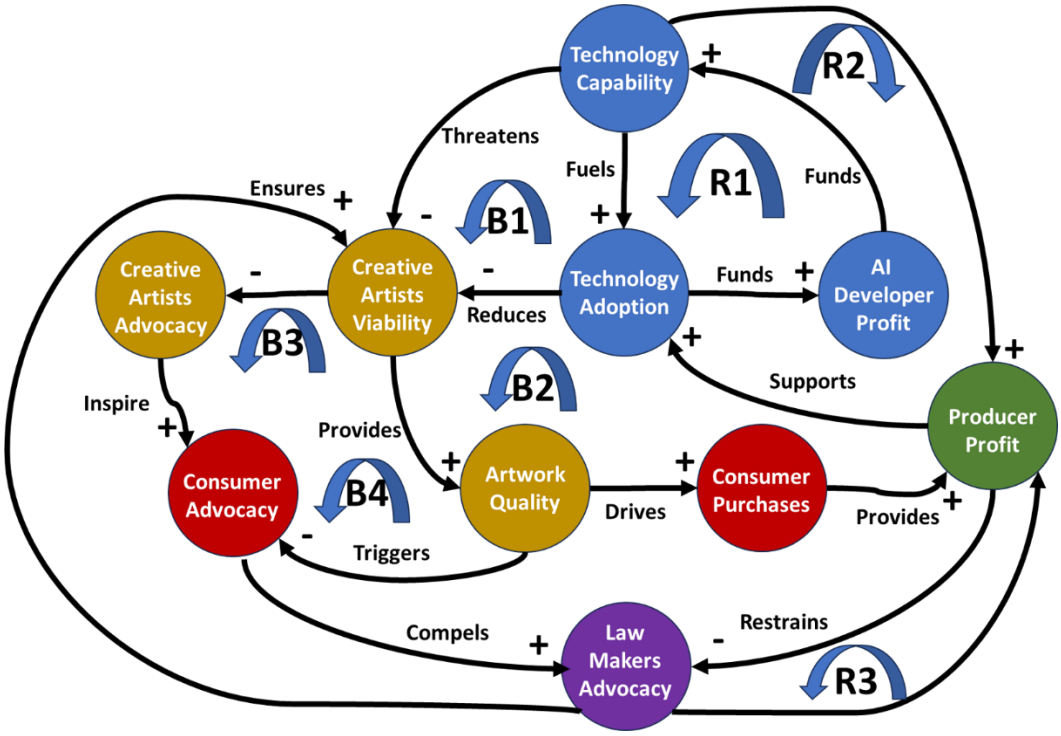

Figure 3: Causal Loop Diagram for the ethically sustainable Algorithmic Value Stream

methodology

This project integrates socially engaged art (SEA) practices described by Helguera [12] to empower artists to identify, document, and assert ownership of the distinctive cognitive algorithms that constitute their creative style. Central to this initiative is the online platform *genaiandcomics.com*, which serves as: 1. an informational hub about the project and its latest developments, 2. a repository for artists to display documentation of their creative processes, 3. a way for artists to contact the authors with ideas, concerns, and questions about how to be involved in the project. The platform serves to reinforce claims of intellectual property ownership. First introduced at the 2024 Comics Arts Conference, this website was presented as an invitation to artists attending the 2024 Comic-Con Convention to participate in the project through four distinct engagement pathways.

The first engagement pathway involved a presentation panel at the Comics Arts Conference, where the authors introduced the concept of cognitive algorithms as a form of intellectual property that belongs to the artist and is not currently protected by copyright law [13]. The panel further explained how a systems approach differentiates the traditional value stream (TVS) from the algorithmic value stream (AVS) and how current law only protects the former and not the latter, partly because AVS had not previously been defined. Artists were then invited to complete an online questionnaire designed to help them formulate a way to document the processes they use to develop their patterns of creativity. The survey is composed of seventeen questions aimed at guiding participants to reflect on their personal histories as artists and articulate their unique

creative methods. This documentation seeks to empower artists to assert ownership of these cognitive, algorithmic patterns as a legally unrecognized form of intellectual property.

The second pathway centered on face-to-face interactions at the 2024 Comic-Con Convention, where the authors engaged directly with most of the 216 presenters in Artists' Alley. During these conversations, the authors explained the concept of cognitive algorithms as a form of intellectual property. They emphasized artists' rights to protect these patterns from non-consensual use by generative AI developers. Two authors distributed postcards featuring a QR code linking to the *genaiandcomics.com* website to facilitate further engagement. These postcards served both as an invitation to continue the dialogue and as a gateway for artists to join the project by deploying a QR code printed on the postcard that enabled interested parties entry into the third form of engagement, the genaiandcomics.com website.

The third form of engagement was via the *genaiandcomics.com* website. The website is comprised of four pages labeled: home, to participate, updates, and contact. The home page provides an overview of the problem posed by the training methods of LLMs, links to current copyright law, a description of the systems engineering approach to addressing the problem, an invitation to engage in the AI2CA project, and a brief introduction to the authors. The second page of the website is intended to showcase the work of participating artists, who will provide a link to their own online sites, in which they can incorporate a sample of their cognitive algorithm. The third page is intended to keep artists abreast of recent developments and presentations about the AI2CA project. The fourth page provides hyperlinks to enable interested parties to contact the authors.

The fourth engagement pathway encourages artists to document the evolution of their creative processes as cognitive algorithms, whether through a traditional nine-panel comics storyboard or other formats. Artists were then invited to share these works on their websites or social media platforms and provide links to the authors. The links to these participating artists' works will be featured on the *genaiandcomics.com* platform. This initiative aims to collect and share self-told stories of the creative process, highlighting the unique socio-cultural perspectives that inform artistic development over time. By showcasing the work of amateur, early-career, mid-career, and advanced professionals, the project draws a sharp contrast between the deeply personal nature of human creativity and the automated outputs of generative AI platforms.

expected outcomes

This project seeks to empower artists by providing them with the knowledge and tools to protect their intellectual property, particularly the creative works they share online. Through education about how generative AI systems analyze and utilize their cognitive algorithms, artists can better understand the risks of sharing their work in digital spaces. Equipped with this awareness, they can implement proactive strategies to safeguard their unique contributions, asserting ownership over the creative patterns and processes that define their artistic identity.

A critical outcome of this project is raising awareness about the ethical concerns surrounding the non-consensual harvesting of artists' works by AI models. By educating the public and engaging AI developers directly, the project aims to foster a greater understanding of the ethical implications of these practices. This includes encouraging AI developers to design systems that incorporate protective measures to prevent the infringement of artistic intellectual property rights. One example of such a protective measure is *Glaze*, an online application developed by a team at the University of Chicago and designed "to protect human artists by disrupting style mimicry." [14]. Attendees to the authors' presentation at Comic-Con San Diego 2024 were introduced to this application as one way of protecting their visual art they upload to the internet from the harvesting practices of LLM AI/ML. The ultimate goal of the project is to bridge the gap between artists and AI creators, promoting dialogue that leads to more equitable practices and respect for human creativity.

By making the concept of cognitive algorithms accessible and relatable, the project contributes to broader AI literacy among artists, educators, and developers. It offers a framework for understanding the intersections of technology and human creativity, helping stakeholders to critically assess how generative AI systems operate and their impact on creative communities. This expanded literacy is expected to spark discussions that lead to more ethical AI development practices and a stronger advocacy movement for artists' rights.

The project advocates for updates to copyright and intellectual property laws to explicitly recognize cognitive algorithms as a unique form of intellectual property. By positioning cognitive algorithms as a critical aspect of artistic labor, the project aims to influence policymakers to create legal frameworks that protect these patterns and processes and their use. Such recognition would provide artists with the legal means to secure their rights, ensuring they are fairly compensated and protected in an era where AI and human creativity increasingly overlap. In addition to formal legal changes, this effort seeks to inspire the development of industry standards that prioritize ethical collaboration between AI systems and human creators.

Artists who had been in conversation with the authors at the Comic-Con San Diego 2024 were contacted via email for follow-up and to remind them of the existence of the project. The response has been slow, in part because the concept of the cognitive algorithm as a unique identifier of an artist's style is difficult to document in a way that will not, in itself, potentially be exploited by AI/ML. The authors plan to host an online seminar as a follow-up to the interested parties to review the concepts and provide feedback on how the artists can document their cognitive algorithms in a way that protects their intellectual property. The authors hope to continue the conversation with artists as word of the project spreads. Two legal advisors have voiced interest in the project; discussions are being held on how the project might proceed in the future.

conclusion

This project aims to establish a foundation for meaningful and constructive dialogue among artists, AI developers, educators, policymakers, and the broader public. By advocating for recognizing creative algorithms as a legitimate form of intellectual property, we seek to bridge the gap between the creative and technological communities. This dialogue is critical to fostering mutual understanding and respect, ensuring that the rights and contributions of artists are safeguarded in an era of rapid technological advancement.

Through this collaborative effort, we aim to inspire the development of ethical frameworks and best practices in AI, centering the needs and concerns of artists in future innovations. By prioritizing fairness, transparency, and accountability, this project contributes to a vision of AI development that respects human creativity and actively enhances and supports it, paving the way for a more inclusive and artist-centered technological landscape.

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