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The Integration of Generative AI in Art Schools:
Environmental, Social, and Ethical Considerations

Abstract

The advent of generative artificial intelligence (AI) has significantly impacted various sectors, including art and design education. While offering novel tools for creativity, its integration into art schools necessitates a comprehensive examination of associated environmental, social, and ethical implications. This paper delves into these multifaceted challenges, highlighting the dual sentiments of fascination and apprehension among students, and advocates for the adoption of open-source, locally hosted AI solutions.

1. Introduction

Generative AI can create images and videos from existing data, changing how artists work. In art schools, these tools offer new ways to experiment, speed up creative processes, and push artistic boundaries. They allow students to produce visuals quickly and test ideas that might be difficult to create by hand.

But many art students feel conflicted. They are excited by AI's potential but also feel uneasy about using it. There are concerns about its environmental impact, as AI models require a lot of energy to function. The issue of bias in AI-generated content raises questions about diversity and representation. Copyright problems add another layer of uncertainty—who truly owns an artwork created with AI?

Beyond these concerns, students also worry that AI makes artistic creation too "easy". Traditional skills like drawing, painting, and sculpting take years to develop. If AI can produce impressive results in seconds, does that make those skills less valuable? Some fear losing the sense of effort and craftsmanship that has always been part of art-making.

This puts students in a difficult position. Should they see AI as just another tool, like a camera or a digital brush, or does it fundamentally change what it means to create art? Art schools now have to help students navigate these questions, balancing innovation with artistic tradition.

2. Environmental Implications

Given the ecological anxieties prevalent among young students, this technology's development appears for most of the students as a further 'fuite en avant,' a headlong rush, that perpetuates the unsustainable practices of thermo-capitalist extractivism.

2.1. Energy Consumption

Training and deploying AI models require substantial computational power, leading to increased energy consumption and environmental impact. The development of large-scale AI models, particularly deep learning architectures, involves training processes that can take weeks or even months on high-performance computing clusters. These clusters rely on **GPU farms and data centers**, which require enormous amounts of electricity and cooling systems to prevent overheating. As a result, AI infrastructure has become a significant contributor to global energy demand, with data centers alone accounting for approximately **1% of global electricity consumption**, a figure expected to rise as AI adoption expands.

The carbon footprint of training a complex AI model is staggering. Studies have shown that training a single state-of-the-art model can emit **several tons of CO_2**, equivalent to the emissions of a **transatlantic flight** or the **annual energy consumption of multiple households**. These emissions stem not only from the energy used during training but also from the manufacturing and disposal of the specialized hardware required for AI computation, such as **high-end GPUs, TPUs, and cooling systems**.

However, it is important to distinguish between the **training phase** and the **usage phase** of AI models. While training consumes vast amounts of energy, the inference—or usage—of a trained AI model is significantly less resource-intensive

This discrepancy suggests that while AI training has a **considerable upfront environmental cost**, the operational energy consumption for end users can be **lower or equal than many other digital activities**, such as HD video streaming or cloud-based gaming. This also highlights the potential benefits of **local AI processing**, where models can be run on personal computers rather than relying on energy-intensive cloud services. Encouraging **on-device AI inference**, optimizing models for efficiency, and investing in **renewable-powered data centers** could be key strategies for mitigating the environmental impact of AI technologies.

Indeed, if generative AI is used extensively by all of humanity, its emissions will be substantial. This mirrors the problem of increased 4K video streaming consumption.

One potential solution would be to implement daily usage quotas per individual.
We could also envision a world with limited resources, where only shared supercomputers—located in public spaces such as libraries—would be used to run the most advanced AI models. These machines would be dedicated to training AI on specific tasks relevant to the local context, reducing the need for energy-intensive and resource-depleting personal computing hardware.

However, such limitations are proposed by only a few ecological political parties, which have very little chance of being implemented.

2.2. Rare Earth Element Utilization

The hardware underpinning AI technologies relies on rare earth elements such as lithium, cobalt, and neodymium, which are essential for manufacturing powerful processors, GPUs, and energy storage systems. These materials are extracted through intensive mining processes that contribute to severe environmental degradation, including habitat destruction, soil and water contamination, and significant carbon emissions.

Beyond the mining stage, the deployment of AI models depends on large-scale **data centers** and **GPU farms**, which require continuous cooling and massive electricity consumption. These facilities, often powered by fossil fuels, exacerbate their ecological footprint by increasing greenhouse gas emissions. The demand for high-performance computing has surged with the rise of deep learning models, leading to an expanding network of energy-intensive infrastructures.

Additionally, the growing reliance on centralized cloud-based AI services controlled by tech giants raises concerns about resource concentration and sustainability. A shift towards more **energy-efficient hardware**, **decentralized AI processing**, and **local AI inference** on personal devices could help mitigate the environmental costs associated with large-scale AI infrastructure.

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3. Social Implications

3.1. Skill Displacement

The automation capabilities of AI threaten traditional artistic skills, potentially leading to a devaluation of human craftsmanship. Artists and designers may find their roles diminished as AI handles tasks once reliant on human expertise, prompting fears of job displacement within creative industries.

3.2. Content Homogenization

AI models trained on standardized datasets risk producing uniform outputs, thereby stifling cultural diversity and innovation in art. This homogenization challenges the essence of creativity, which thrives on uniqueness and varied perspectives. A significant issue arises from the fact that most AI models are trained on massive datasets scraped from the internet, which is overwhelmingly dominated by Western, particularly American, content. As a result, the artistic and cultural references embedded in AI-generated outputs tend to reflect and reinforce the dominant aesthetic and ideological frameworks of the Global North, often sidelining non-Western artistic traditions, visual languages, and storytelling methods.

Furthermore, AI-generated content frequently perpetuates issues of **racism, sexism, and cultural appropriation**. Many AI models have been found to reproduce harmful racial stereotypes, underrepresent people of color, and reinforce beauty standards that are rooted in Eurocentric ideals. Similarly, gender biases are embedded in datasets, leading AI to generate images and representations that often align with outdated, patriarchal notions of femininity and masculinity. These biases, inherited from historical and contemporary media sources, can amplify social inequalities rather than challenge them.

Cultural appropriation is another concern, as AI can generate works that mimic the artistic styles of specific cultures without proper acknowledgment or respect for their historical and social significance. This raises ethical questions about authorship, ownership, and the exploitation of cultural heritage for commercial or aesthetic purposes. By producing work that superficially borrows from various cultures without the deeper contextual understanding that human artists bring, AI risks reducing rich artistic traditions to mere visual trends, stripping them of their meaning and significance.

The historical bias embedded in these models is particularly evident in the way they prioritize and reproduce imagery and styles from the **20th-century Western art canon**, often neglecting indigenous, experimental, and alternative art movements. This not only limits the creative potential of AI but also marginalizes voices and histories that are already underrepresented in the global art discourse. Addressing these biases requires a more **critical and inclusive approach to dataset curation**, ensuring that AI models reflect a broader spectrum of human creativity rather than reinforcing existing power structures and aesthetic norms.

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4. Ethical Implications

4.1. Deepfakes and Misinformation

"AI's ability to generate hyper-realistic content facilitates the creation of deepfakes, leading to a potential risk of spreading misinformation. Such applications pose significant threats to authenticity and trust in digital media.

However, it is crucial to note that deepfakes can also be a source of creative parodic and artistic media, featuring celebrities in parallel universes. Many students explore metaphors between the real and the virtual, and deepfakes have become essential creative tools in this context.

4.2. Bias and Stereotyping

AI systems trained on biased data can reinforce existing stereotypes, especially those influenced by Western perspectives. This happens because many AI models learn from large datasets that mostly come from Western media, books, and online sources. If these sources contain biases, the AI absorbs and repeats them.

For example, AI image generators often portray doctors as men and nurses as women because historically, media and online content have shown these professions in this way. Similarly, when asked to create images of CEOs, AI might mostly generate men in suits, while teachers or caregivers are more often represented as women. These biases don't reflect reality but instead reinforce outdated ideas about gender roles in the workplace.

The same problem happens in art and cultural representations. AI might produce images of "beauty" based on Western ideals, showing lighter skin tones and Eurocentric features more often than other types of beauty. When asked to generate images of "traditional clothing," it might prioritize well-documented Western fashion over equally rich but less represented garments from non-Western cultures.

These biases can misrepresent reality and limit diversity in AI-generated content. To improve this, AI needs to be trained on more diverse datasets and include perspectives from different cultures and backgrounds.

5. Student Perspectives: Between Fascination and Fear

Art students exhibit a dichotomy of emotions towards AI integration. While fascinated by new creative possibilities, there is palpable fear regarding the erosion of traditional skills and potential job insecurity. This ambivalence underscores the need for curricula that balance technological proficiency with foundational artistic techniques.

The Importance of Critical Tech and AI Education in the Arts

In today's artistic landscape, technologies and artificial intelligence play a dominant role. Every tool used, whether software or algorithms, influences human creation by embedding biases and limitations. It's therefore essential for art students to learn to critically analyze these tools, understanding how they shape their work and the ethical implications of their use. This critical reflection raises awareness of the power dynamics inherent in these technologies and preserves the creative autonomy of artists.

To move beyond mere use, it's crucial to encourage students to build their own tools. This approach fosters a deep understanding of technological mechanisms and enables them to break free from the limitations of standardized tools. By demystifying technology, we allow artists to regain control of their creation and explore innovative paths. The goal is to train artists capable of using technology consciously and responsibly, preserving their artistic integrity and actively contributing to the evolution of the tools they use.

6. Advocating for Open-Source, Locally Hosted AI Solutions

To reduce environmental and ethical concerns, art institutions should use open-source AI tools on local computer or server. This limits reliance on energy-hungry cloud services and gives more control over data privacy and model biases. It also helps students understand and customize the tools they use.

Open-source tools like Stable Diffusion or Flux can be modified and adapted freely, unlike proprietary AI tools. This is useful for digital art students who want to experiment, optimize processes, or create their own artistic workflows.

Running these tools locally requires a powerful computer with a good GPU, which is not affordable for every student. Cloud services are easier to access but come with costs and less transparency about their environmental impact.

Training on your own data :

A local setup allows training smaller models like LoRA, which are easier to run and customize. Learning how to train and adjust AI models is a valuable skill for digital artists, as it gives them more control over their creative process.

By using open-source AI tools locally, art institutions support ethical and sustainable practices while helping students develop important technical skills. This way, artists can shape AI tools instead of relying on commercial platforms that may not fit their needs.

7. Conclusion

The integration of generative AI in artistic education offers new perspectives but also raises environmental, social, and ethical questions. By combining these different approaches, art schools can offer a balanced curriculum that allows students to understand the challenges related to these tools, while also providing them with the technical means to use them in a critical and creative way.

A. Beyond technical mastery: A Holistic vision

Critical technology and AI education in the arts is not limited to acquiring technical skills. It demands a comprehensive understanding of how these tools shape not only artistic expression, but also our society as a whole. Students must develop a keen awareness of the ecological footprint of digital technologies, the insidious biases embedded in algorithms, and the ethical implications of their use. This awareness is essential to train artists who are not mere users, but responsible and committed actors.

B. The influence of media and democratic issues

It is imperative to integrate into this critical education a thorough reflection on the influence of media on political discourse and democratic processes. Artists, as creators and communicators, have a crucial role to play in deconstructing dominant narratives and promoting free and informed information. They must be aware of how technologies can be used to manipulate public opinion and challenge established power structures.

C. Towards an Engaged and Responsible Art

By cultivating this critical awareness, we enable artists to become responsible agents of change. They can use their creative skills to challenge dominant narratives, promote sustainable practices and advocate for equitable access to technology. This approach ensures that the future of art is not only innovative, but also deeply engaged with the critical challenges our world faces. It is about training artists capable of actively contributing to building a more just, sustainable and democratic society.

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Important notice: *This article was written with the assistance of local AI tools, such as MistralAI, Gemma 3, and Llama.*