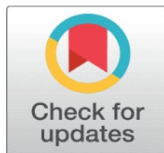
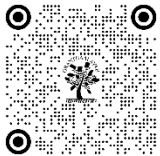


AI IN FINE ARTS: REDEFINING CREATIVITY, AUTHORSHIP, AND CULTURAL IMPACT IN THE DIGITAL ERA

Dr. Aditi Jha ¹✉, Ananya Jha ²✉

¹Associate Professor, Rachana Sansad College of Applied Arts and Craft, Mumbai, India

²AI/ML Engineer, Yield Engineering Systems, Bangalore, India



Corresponding Author

Ananya Jha,
ananya.a.jha123@gmail.com

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ABSTRACT

This paper explores the integration of Artificial Intelligence (AI) into the fine arts, highlighting its transformative role in redefining creativity, authorship, and art consumption in the digital age. Through case studies such as Emily's Forest, the Da Vinci Genius Exhibition, and AI-driven platforms like Artivive, the paper examines how AI acts not merely as a tool but as a creative collaborator, pushing the boundaries of artistic expression. It discusses the shift in the artist's role from creator to curator, as seen in AI-generated artworks like Edmond de Belamy and music compositions by Taryn Southern, raising important questions about authorship and originality. The paper further delves into the ethical challenges surrounding AI-generated art, including issues of intellectual property and the commodification of creativity. Additionally, it explores AI's impact on art appreciation and curation, emphasizing personalized, immersive experiences and the use of AI in preserving and restoring cultural heritage. In conclusion, while AI prompts philosophical debates and ethical considerations, it offers unprecedented opportunities for innovation in art creation, exhibition, and cultural preservation, making it a powerful force in the future of the fine arts.

Keywords: Interdisciplinary, Fine Arts, Generative AI, Digital Transformation in Art

1. INTRODUCTION

1.1. INTEGRATION OF AI AND FINE ARTS IN THE DIGITAL ERA

Relationship between technology and art has come a long way, introducing new forms of creativity and cultural narratives. Moving forward in the digital era, Artificial Intelligence (AI) is not just an auxiliary tool but an active collaborator in artistic creation. AI technologies, particularly neural networks and Generative Adversarial Networks (GANs), being the key contributors, enable the generation of new, complex forms of art that were previously inconceivable. This paper will explore the evolving relationship between AI and the fine arts, examining both the potential and limitations of these technologies in redefining creativity, authorship, and the cultural significance of art in the 21st century. Case studies like the *Da Vinci Genius Exhibition* and the use of AI in art curation and creation (e.g., DALL-E 3 and Artivive) will be explored.

2. AI AND THE REDEFINITION OF CREATIVITY IN FINE ARTS

Generative AI can be used for Artwork. It can further be explored by the below case studies and examples.

Case Study: Emily's Forest – AI as a Source of Unexpected Creativity

Emily's Forest is a perfect example of how AI can open new creative possibilities. Emily, a traditional painter, wanted to experiment with abstract patterns in her work. She turned to Google's DeepDream, an AI tool that transforms images into surreal, vibrant creations. By uploading a simple photo of a forest and asking the AI to reimagine it, Emily received a striking image full of abstract colors and shapes, something she couldn't have created on her own.

Instead of replacing Emily's creativity, AI acted as a source of inspiration, offering a new way to explore her ideas. She then used her traditional painting skills to bring these AI-generated patterns to life on canvas, blending technology with her unique artistic touch. The final piece was a fusion of AI's imagination and her personal vision, demonstrating how AI can enhance, not replace, the artistic process.

This case reinforces a point made in the SPS NYU Blog (SPS NYU, 2023): AI can help artists discover new connections between different styles and push beyond their usual creative boundaries. In Emily's case, AI wasn't just a tool, but it became a partner in her creative journey.



Figure1 Original image of the forest uploaded



Figure 2 AI generated image of the forest with additional colours and shapes

3. FROM INSPIRATION TO EXECUTION: AI AS A COLLABORATIVE CREATIVE ASSISTANT

While some argue that AI cannot replicate the depth of human artistic intention, others view it as a partner in enhancing human creativity. The collaborative relationship between AI and human artists challenges traditional notions of creativity. Rather than simply mimicking existing styles, AI models offer the potential to introduce novel concepts and forms, pushing the boundaries of artistic expression. This perspective is supported by Creely and Blannin (2024), who argue that generative AI serves as an active collaborator, capable of producing unexpected outputs that expand the creative possibilities of human artists. In their study, they emphasize the transformative role of AI in creative production, suggesting that it offers profound implications for rethinking human-machine relationships, especially within educational contexts.

Case Study: Da Vinci Genius Exhibition – Merging AR, VR, and AI

The *Da Vinci Genius Exhibition* exemplifies the merging of technology and fine arts. Through the use of augmented reality (AR), virtual reality (VR), and AI-powered interactions, the exhibition provides visitors with a dynamic and interactive experience of Leonardo da Vinci's works. AI-driven chatbots and sensory interfaces enhance the visitor experience by offering personalized engagement with Da Vinci's art. For instance, visitors can interact with a virtual Mona Lisa, exploring its history and symbolism in real-time, a form of AI-assisted interpretation that revolutionizes how we engage with traditional artworks.

Figure 3



Figure 3 Augmented Reality headset used to experience the Wings prototype created by Leonardo da Vinci.
Retrieved from <https://www.grande-experiences.com/experiences/leonardo-da-vinci-500-years-of-genius>

This AR headset allows visitors to virtually interact with Da Vinci's "Wings" prototype, enabling them to explore the intricacies of the design in an interactive, three-dimensional space, making the genius of Da Vinci accessible in ways never before possible.



Figure 4 Large Language Model Chatbot used to communicate with Mona Lisa

Visitors can engage in real-time conversations with a chatbot modeled after the persona of the Mona Lisa. This AI-driven interaction provides a unique and personalized interpretation of the famous painting, offering insights into its symbolism and history.

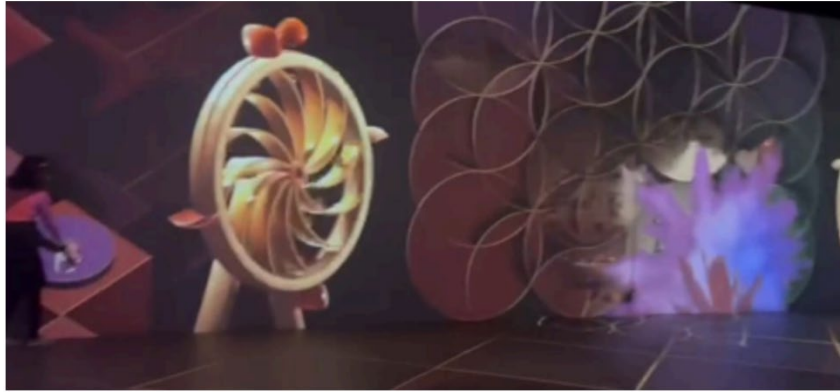


Figure 5 Gamified sensory mapping to demonstrate the mechanics behind catapult prototype built by Leonardo Da Vinci

This interactive exhibit uses gamification to illustrate the mechanics of Da Vinci's catapult design. Visitors can engage with the model by triggering sensory feedback, thus gaining a deeper understanding of Da Vinci's engineering ingenuity through an immersive learning experience.

Case Study: Poster Curation Using the Artivive Platform

AI is playing a pivotal role in transforming art curation, and platforms like Artivive are leading the charge. Artivive combines AI, augmented reality (AR), and 3D rendering to turn traditional artwork into dynamic, interactive pieces. By utilizing computer vision algorithms such as feature detection, image recognition, and motion detection, Artivive superimposes digital elements like animations, sounds, or interactive features onto static artwork in real-time. This merging of AI and AR allows artists and curators to create dynamic posters that transcend traditional visual limits, offering viewers a completely immersive and engaging experience.

In art curation, Artivive empowers artists to enhance their works with digital narratives that can explore social, cultural, and environmental themes, making art more interactive and thought-provoking. For example, artists can overlay animated scenes onto their posters to bring out the deeper meanings or historical contexts embedded within the work, creating an immersive, educational experience. The platform's geographic mapping feature also enables artwork to be experienced in specific environments, enhancing the viewer's understanding of contextual themes such as sustainability or cultural heritage.

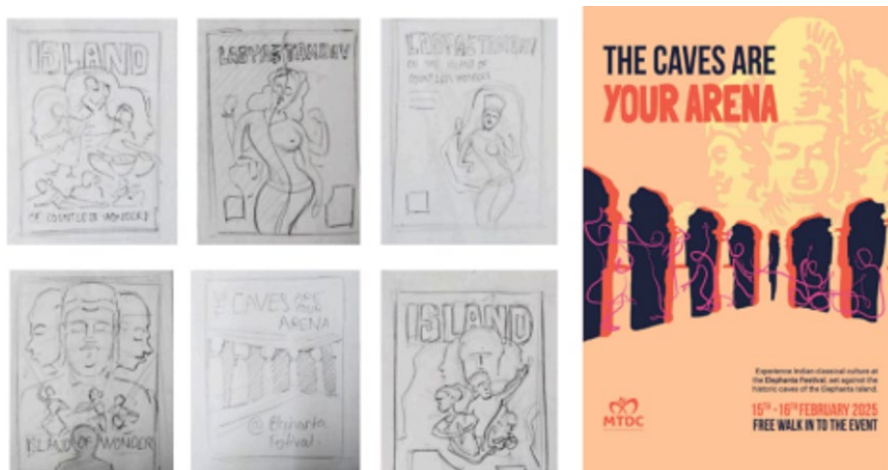


Figure 6 Artivive Platform used to make a poster

The image shows how Artive can transform a static artwork into an interactive and immersive experience. By overlaying digital animations or sound onto traditional art, the platform creates an engaging narrative that connects with viewers on a deeper level.

4. AI AND THE QUESTION OF AUTHORSHIP IN FINE ARTS

4.1. THE CHANGING ROLE OF THE ARTIST: FROM CREATOR TO CURATOR

The rise of AI-driven art has raised profound questions about authorship. In traditional art, authorship is typically linked to the artist's identity, intent, and personal vision. However, as AI becomes an active participant in the creative process, determining authorship becomes increasingly complex. Is the artist who inputs the prompt the true creator, or is the AI itself responsible for the artwork's genesis? Moreover, does the involvement of AI dilute the human contribution, or does it amplify the creative process?

1) Case Example: Edmond de Belamy by Obvious (2018)

In 2018, a Paris-based art collective known as Obvious created a portrait titled *Portrait of Edmond de Belamy*, generated using a machine learning algorithm called GAN (Generative Adversarial Network). The portrait was auctioned at Christie's for over \$432,000, sparking a heated debate about authorship in AI-generated art. While the collective was credited with the work, the machine learning algorithm was the one that actually "painted" the piece based on data fed into it. This case brought to the forefront the debate on whether AI should be considered a "co-creator" in such projects and if the human artist should be relegated to the role of curator rather than creator (Layton, 2018).

2) Case Example: AI-generated Music Compositions by Taryn Southern (2017)

Musician Taryn Southern worked with AI software to co-create her album *I Am AI* using a program called Amper Music. Southern provided the creative direction, but the music was largely generated by the AI. The album raised questions about the role of the human artist in creating music when AI plays such a central role in composition. This blurring of lines between curatorial input and creation is indicative of the growing role of the artist as curator (Southern, 2017).

In both these cases, the human artist's role was more of a "curator" or "director" than that of a traditional creator. These examples highlight how AI is transforming the role of the artist, raising questions about the nature of authorship in a digital age.

4.2. AI'S ROLE IN ART CREATION: BEYOND TOOLS TO COLLABORATORS

AI-generated art challenges traditional notions of originality and authenticity. When an AI tool like DALL-E or Adobe Firefly generates an artwork based on a given prompt, it can do so without the personal experiences or emotional engagement typically associated with human artistry. This leads to the question: Can AI be considered an artist, or is it merely executing a set of instructions defined by human programmers? Philosophers and artists alike are grappling with this question, especially considering the importance of emotional intent in defining artistic authenticity.

1) Case Example: The Next Rembrandt (2016)

In 2016, a group of engineers and data scientists created *The Next Rembrandt*, an AI-generated portrait that mimicked the style of the Dutch master. Using machine learning algorithms, they trained the system on Rembrandt's works to generate a new painting. The portrait is almost indistinguishable from a real Rembrandt, showcasing AI's potential to replicate and even innovate upon artistic styles. However, the debate centered around whether the AI could truly be considered a collaborator in the creation of the work. The artists involved did not view themselves as the "true" creators but rather as facilitators who guided the machine. This project sparked questions about how to define collaboration and creativity when the machine is the primary source of innovation (Dutch Digital, 2016).

2) Case Example: DeepArt and the Recreation of Classic Art Styles

AI programs like DeepArt and Deep Dream allow users to transform photographs into paintings in the style of famous artists. For example, a user could upload a photograph and apply the distinctive brushstrokes of Van Gogh, Picasso, or other iconic artists. This blurs the lines between original creation and the replication of an existing style. In these cases, while AI generates the artwork, the human input is also crucial in selecting the

image and the artist's style. The resulting artwork, while visually compelling, challenges our understanding of authorship and originality in art. Can a piece created through such a process be considered "art" in the same way a traditional painting is, or is it merely a derivative of existing work? (PortraitArt, n.d.)

These examples show that AI is not merely a tool—it is capable of generating creative outcomes that force us to reconsider traditional notions of artistic collaboration.

4.3. THE ETHICAL IMPLICATIONS OF AI IN ART CREATION

There are ethical considerations about the ownership and cultural value of AI-generated art. If AI is capable of creating art that rivals human-generated pieces, how do we value the human input in the final product? Furthermore, AI tools are beginning to replace manual artistic labor, raising concerns about job displacement in creative industries and the potential commodification of creativity. As AI continues to advance, these ethical questions will become even more pressing.

1) Case Example: Stephen Thaler vs. The United States Copyright Office (2022)

One of the most prominent legal battles regarding authorship and AI art is *Stephen Thaler vs. The United States Copyright Office*. Thaler, a scientist and entrepreneur, submitted an artwork generated by his AI system, Creativity Machine, for copyright registration. The U.S. Copyright Office rejected the application on the grounds that only human creators could hold copyrights. Thaler's argument was that the AI itself should be credited as the author since it autonomously generated the artwork, without direct human input beyond providing the parameters. This case raised important legal questions about whether AI can be recognized as an author and what implications this has for copyright law. The U.S. Copyright Office's decision reflects a traditional view of authorship, but this case exemplifies the growing tension between technology and legal frameworks built for the pre-digital world (Thaler, 2024).

2) CaseExample: AI-Generated Art and Copyright Infringement (2019)

In 2019, the AI-generated work *Edmond de Belamy* (discussed earlier) raised questions about copyright infringement. The algorithm used to create the artwork was trained on a large dataset of portraits from the 18th and 19th centuries, including works by Rembrandt. Critics raised concerns about whether this use of existing artwork for training the AI without the original artists' permission constituted infringement. This case highlighted the lack of clear guidelines regarding the ownership and use of datasets that contain copyrighted works in AI training. As AI systems increasingly generate work that mimics the style of famous artists, these issues are likely to become more widespread (Layton, 2018).

3) Case Example: The Artist Who Sued an AI Company (2020)

A visual artist, Olivier Ratsi, filed a lawsuit against an AI company that used his artwork as part of the training dataset for its deep learning system. He argued that the AI company had no right to use his images without permission, and that their reproduction of his art violated his intellectual property rights. This case highlights the ethical concerns surrounding AI's use of human-created art to generate new works. As AI companies increasingly rely on vast datasets to train their systems, questions about the consent and compensation of the original creators are becoming more pressing (Sedition Art, 2020).

These cases underscore the ethical challenges surrounding AI in art creation, particularly around issues of authorship, ownership, and the protection of human artists' intellectual property.

5. AI'S CULTURAL IMPACT: CHANGING ART APPRECIATION AND CONSUMPTION

5.1. REDEFINING ART APPRECIATION: PERSONALIZED AND IMMERSIVE EXPERIENCES

Artificial intelligence is reshaping how we interact with and appreciate art, making the experience more personalized and immersive than ever before. Platforms like AR and VR are bringing new layers to traditional exhibitions. For example, the *Da Vinci Genius Exhibition* uses these technologies to allow visitors to step inside Leonardo's works, offering an interactive experience that feels like walking through history. This goes beyond just viewing art—it's about engaging with it on a deeper level, whether by exploring the intricacies of a painting or seeing it come to life in a digital space.

What makes this even more exciting is AI's ability to personalize art experiences. By tracking how viewers respond to different pieces—whether they linger longer on certain works or express emotions like joy or curiosity—AI can tailor future recommendations to suit individual tastes. This is similar to what researchers have been studying in *empirical aesthetics*, where they dive into not just whether people like a piece of art, but how it makes them feel (Chatterjee & Cardillo, 2021). Rather than just showing you “liked” images based on simple clicks, AI can offer a much richer, more nuanced experience. Imagine an AI that suggests an artwork because it's likely to challenge your perspective or spark a deeper emotional reaction—this is where AI's true potential lies in transforming how we appreciate art (Kim, 2022).

5.2. AI IN MUSEUMS: ART ANALYSIS, CURATING, AND FRAUD DETECTION

AI isn't just about creating new art—it's also playing a significant role behind the scenes in museums and galleries. Curators and art historians are now turning to AI tools to analyze large collections and uncover patterns that might have been overlooked by the human eye. For instance, AI algorithms can help trace the origins of artworks, establish provenance, and even detect forgeries by analyzing brushstrokes, colors, and materials (Thunström, 2022). This is a game changer in the world of art conservation and authentication, helping preserve art for future generations and ensuring that the works we encounter in museums are genuine.

The technology isn't just about tracking forgeries, though. AI is also helping curators understand the evolution of art styles and trends. By analyzing thousands of works, AI can reveal shifts in artistic movements, changes in technique, and cultural influences that might not be immediately apparent. This expands the possibilities for research, making it easier to explore the rich history of art from new angles. And because AI can also predict how certain artworks may degrade over time, it's helping conservators put preventive measures in place to protect vulnerable pieces (Christensen et al., 2022).

Case Study: AI-Curated Exhibitions

AI-curated exhibitions are becoming a more common phenomenon, blending the traditional with the digital in new and exciting ways. Take *Artivive*, for example: this platform allows curators to create exhibitions where digital projections interact with traditional art. The result is a dynamic experience where art evolves in real-time based on the audience's interactions. Imagine walking through a gallery where the paintings react to your presence, shifting colors or revealing hidden layers of meaning. This fusion of the physical and the virtual creates a hybrid experience that feels fresh, engaging, and accessible to a wider range of audiences.

One of the most interesting aspects of AI-curated exhibitions is how they personalize the experience for each viewer. As viewers engage with the artwork, AI algorithms track their preferences and emotional responses, adjusting the exhibition in real-time to match their interests. This is a far cry from the old model of simply displaying art for passive viewing—now, the audience is actively involved in shaping the experience. AI not only curates the art on display but also curates the experience of seeing it (Fekete et al., 2022). It's like having your own personalized art tour, led by an algorithm that's constantly learning about your tastes and emotional responses.

But of course, there are bigger questions about what this means for the future of curating and the role of human experts. While AI can bring a fresh perspective to the table, there's still a concern about whether technology can truly capture the nuance and depth of human creativity. Is an exhibition curated by an algorithm less authentic than one guided by a human curator? It's a fascinating question, one that challenges us to rethink the very nature of art curation in the digital age.

6. THE FUTURE OF AI IN FINE ARTS: A COLLABORATIVE OR COMPETITIVE ROLE?

1) AI as a Collaborative Tool: The Future of Artistic Expression

Looking to the future, AI's role in fine arts could evolve into that of a true creative collaborator. AI tools may offer artists not just new ways to create, but new ways to conceptualize creativity itself. The possibilities for innovation are vast, from AI-assisted animation and film production to interactive installations and performances.

2) AI in Art Preservation and Restoration

AI also holds significant promise for the preservation and restoration of art. By using advanced machine learning algorithms, AI can analyze and restore damaged works of art, reviving lost or deteriorating cultural heritage. AI could,

for example, reconstruct missing portions of classical paintings or recreate the original colors of a fresco, ensuring that future generations can appreciate art in its full historical context.

7. CONCLUSION: EMBRACING THE DIGITAL TRANSFORMATION OF ART

AI is not simply a tool in the fine arts; it is reshaping the entire landscape of artistic production, curation, and consumption. From AI-assisted creation tools to immersive experiences and AI-curated exhibitions, the art world is undergoing a profound transformation. While AI raises important ethical, philosophical, and economic questions, it also offers unprecedented opportunities for collaboration, innovation, and cultural preservation. As AI continues to evolve, it will undoubtedly play an even greater role in defining the future of fine arts, expanding the boundaries of what it means to be creative, and challenging our long-held assumptions about the nature of art itself.

By embracing AI, artists, curators, and audiences can explore new creative realms, while also engaging in the broader conversation about the future of art, authorship, and cultural value in the digital age.

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Authors confirm being the sole contributor of this work and have approved it for publication.

CONFLICT OF INTERESTS

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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