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AI in Arts: Augmenting Creativity Without Replacing It

Amit Arora

IIT BHU, India

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Abstract: This article examines the evolving relationship between artificial intelligence and artistic creation, tracing the transformation from early digital art to contemporary AI-driven creative practices. Starting with the historical evolution of digital art since the 1960s, the article progresses through the current applications of generative AI across multiple creative domains, highlighting how these technologies have transitioned from experimental tools to essential components of modern artistic workflows. The discussion explores various partnership models between human creators and AI systems, including AI as an ideation engine, technical facilitator, and co-creator, demonstrating how these collaborative frameworks enhance rather than replace human creativity. Attention is given to emerging art forms made possible through AI, such as responsive installations, procedural narratives, collaborative mass creation, and trans-medium translation, which fundamentally reimagine traditional artistic boundaries. The article addresses critical ethical dimensions surrounding authorship, ownership, and attribution in AI-assisted creative works, examining how traditional frameworks struggle to accommodate these new collaborative paradigms. Throughout, the article presents substantial evidence that the future of creativity lies not in apocalyptic scenarios of human replacement but in symbiotic relationships where AI and human intelligence complement each other's strengths and compensate for respective limitations, ultimately expanding the horizons of artistic expression rather than constraining them.

Keywords: Artificial intelligence, creative collaboration, digital art, human-AI partnership, emergent art forms, ethical implications

INTRODUCTION

The Evolution of Digital Art: An Analysis of Contemporary Practices

The digital art landscape has undergone a profound transformation since its inception in the 1960s, evolving from rudimentary computer-generated imagery to sophisticated multimedia installations that challenge

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traditional artistic boundaries. According to Wenhui Wei's research in "The Evolution of Digital Art," the early pioneers of digital art faced significant technological constraints, working with systems that offered limited processing power and restricted color palettes, yet managed to establish foundational principles that continue to influence contemporary digital artists (Wei, 2024). These early experiments laid the groundwork for what would become a revolutionary artistic medium, with notable increases in participation rates from 1980 to 2000, during which time the number of practicing digital artists grew by approximately 340% as hardware became more accessible and software more intuitive.

The 1990s marked a pivotal era for digital art with the widespread adoption of personal computers and the emergence of the internet as a platform for artistic expression and distribution. Wei notes that this period witnessed a democratization of digital creation tools, with software like Adobe Photoshop (released in 1990) becoming industry standards that reduced technical barriers to entry and expanded the creative possibilities available to artists without formal programming knowledge (Wei, 2024). This accessibility transformed digital art from a niche practice pursued primarily in academic and research settings to a mainstream medium adopted by artists across disciplines, with survey data indicating that by 1998, nearly 45% of contemporary artists had incorporated digital tools into their practice to some degree.

The intersection of artificial intelligence and creativity has further revolutionized the digital art sphere in recent years. Wei's analysis in "AI and Creativity: The Intersection of Art and Technology" reveals that machine learning algorithms have introduced new paradigms of artistic collaboration between human creators and computational systems (Wei, 2024). These AI-driven approaches have generated a significant market impact, with AI-assisted artworks commanding increasing attention in prestigious galleries and auction houses since 2018. Notable sales include pieces created using Generative Adversarial Networks (GANs) that have sold for upwards of \$400,000, demonstrating the art market's growing acceptance of technologically mediated creativity as legitimate artistic expression.

Contemporary digital art practices have expanded beyond static visual works to encompass interactive installations, virtual reality experiences, and blockchain-based art forms. Wei's research highlights that these emerging formats have attracted substantial investment, with funding for digital art platforms and technologies increasing by 85% between 2020 and 2023 (Wei, 2024). The adoption of non-fungible tokens (NFTs) as a mechanism for establishing provenance and scarcity in digital works represents a particularly significant development, addressing longstanding concerns about reproducibility that had previously limited digital art's commercial viability. This technological innovation has facilitated a more robust market ecosystem, with annual sales of digital artworks reaching approximately \$2.3 billion by 2023.

The educational landscape has similarly evolved to accommodate digital art's increasing prominence, with Wei noting that academic institutions have developed specialized programs focusing on the theoretical and practical dimensions of digital creation (Wei, 2024). Survey data from leading art schools indicates that enrollment in digital art courses increased by 67% between 2015 and 2023, reflecting growing student interest in developing technical skills alongside traditional artistic competencies. This educational shift

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acknowledges digital art's enduring significance in contemporary creative practice and ensures that emerging artists are equipped to engage with technological tools that continue to reshape artistic production and distribution in the twenty-first century.

Generative AI in Creative Contexts: Current Applications and Future Directions

Generative artificial intelligence has rapidly transformed creative practices across multiple domains, introducing new paradigms for artistic expression and innovation. According to Heigl's systematic review of 142 empirical studies, the adoption of generative AI tools in professional creative contexts increased by 187% between 2022 and 2024, with particularly significant growth observed in visual arts (213%), music composition (156%), and narrative development (178%) [3]. This unprecedented integration rate surpasses previous technological adoptions in creative industries, with 67.3% of surveyed creative professionals reporting regular use of at least one generative AI system in their workflow by early 2025, compared to just 23.5% in 2022. The technical capabilities underpinning these creative applications have evolved substantially, with contemporary generative models demonstrating marked improvements in output quality and control granularity. Heigl's analysis of performance metrics reveals that leading diffusion-based image generation systems achieved a mean perceptual similarity score of 8.4/10 in blind evaluations against human-created works, representing a 42% improvement over 2022 benchmarks [3]. These technical advances have been paralleled by growing integration into established creative workflows, with survey data indicating an average time savings of 3.2 hours per project among professionals utilizing AI-assisted ideation processes, allowing for broader conceptual exploration without extending overall production timelines. The impact of generative AI extends beyond efficiency considerations to fundamentally reshape creative processes, particularly in early ideation stages. Rosignoli and Gever's extensive research involving 87 innovation practitioners documented significant changes in problem-framing approaches, with AIassisted teams generating 2.8 times more diverse solution concepts during front-end innovation activities compared to control groups [4]. The qualitative assessment of these outputs further indicated that AIaugmented ideation produced concepts scoring 37% higher on originality metrics while maintaining comparable feasibility ratings, suggesting that generative systems effectively expand the accessible creative solution space without sacrificing practical implementability.

Organizational adoption patterns reveal strategic considerations in how generative AI tools are deployed within creative ecosystems. Rosignoli and Geyer's analysis of implementation approaches across 34 case study organizations found that 58.8% opted for selective integration models where AI tools augmented specific workflow stages while preserving human-centered processes for critical creative decisions [4]. This hybrid approach yielded the most favorable outcomes across multiple performance dimensions, with selective integration models demonstrating a 43% higher satisfaction rating among creative stakeholders compared to either minimal (19.2%) or comprehensive (22%) AI integration approaches. These findings underscore the importance of strategic implementation that complements rather than replaces human creative expertise.

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Looking toward future developments, both research streams identify emerging opportunities and challenges for generative AI in creative contexts. Heigl's forward-looking analysis suggests that multimodal systems capable of simultaneous cross-domain generation represent the most promising frontier, with early experiments demonstrating a 68% improvement in perceived coherence when text, image, and sound elements are generated through unified rather than separate models [3]. Meanwhile, Rosignoli and Geyer emphasize the growing importance of explainable AI mechanisms in creative applications, with 76.4% of surveyed practitioners citing transparency in generation processes as critical for building trust and facilitating meaningful human-AI creative collaboration [4].

Human-AI Collaboration: Partnership Models in Creative Practice The landscape of human-AI collaboration in creative domains has evolved significantly, revealing nuanced partnership models rather than straightforward replacement scenarios. Research by Zhu and colleagues examining 387 professional artists' interactions with generative AI systems found that 78.6% reported enhanced creative productivity when utilizing collaborative workflows with AI tools, while only 12.3% expressed concerns about potential professional displacement [5]. This integration has manifested across various creative disciplines, with visual artists showing the highest adoption rate (81.2%), followed by writers (67.8%), musicians (63.4%), and designers (59.7%), demonstrating distinct patterns in how different creative communities engage with AI tools.

Multiple partnership frameworks have emerged across creative practices, each with distinctive characteristics and effectiveness profiles. The "AI as Ideation Engine" approach has gained particular traction, with Zhu's study documenting that 72.4% of surveyed artists regularly employ AI systems during early ideation phases to overcome creative blocks or explore unconventional directions [5]. These practitioners reported generating an average of 5.3 times more initial concepts when using AI prompting techniques compared to traditional methods, with 63.7% indicating that AI-suggested elements frequently led to unexpected creative directions that would have remained unexplored through conventional processes alone.

The "AI as Technical Facilitator" model addresses capability gaps that have traditionally limited creative expression, particularly among creators with specific technical constraints. Survey data indicates that 64.8% of artists without formal technical training reported successfully executing complex projects previously beyond their capabilities through AI assistance [5]. This democratization effect appears most pronounced in music production, where 71.3% of self-taught musicians reported the ability to create professional-quality arrangements using AI tools, despite lacking conventional orchestration training. The technical quality gap between formally trained and untrained creators narrowed by approximately 47.2% when both groups utilized AI assistance, suggesting significant leveling effects in technical execution capabilities. The most symbiotic relationship framework, the "AI as Co-Creator" model described by Wu and colleagues, involves continuous iterative exchange between human and machine intelligence. Experimental studies with 126 participants engaged in co-creative tasks demonstrated that works produced through balanced human-AI collaboration scored 32.4% higher on originality metrics and 18.7% higher on aesthetic quality

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assessments compared to either fully human or AI-dominant approaches [6]. The optimal collaboration pattern identified involved artists maintaining primary control over 65-75% of creative decisions while incorporating AI suggestions for the remaining 25-35%, with effectiveness diminishing when either party dominated the process excessively.

Across all partnership models, human creative judgment remains the essential governing factor in successful collaborations. Wu's experimental findings emphasize that creativity scores peaked when human creators maintained final editorial authority, with participants spending an average of 42.3% of project time evaluating and refining AI-generated content rather than simply accepting initial outputs [6]. The creative processes demonstrated a characteristic pattern of divergence followed by convergence, with AI systems excelling at generating diverse possibilities (expanding the creative search space by an average factor of 3.8 compared to human-only ideation) while human partners demonstrated superior ability in selection, refinement, and contextual integration (improving coherence ratings by 41.6% compared to AI-only outputs).

Creative	AI	Productivity	Percentage	Percentage	Percentage
Discipline	Adoption	Increase (%)	Using AI in	Using AI for	Using Co-
	Rate (%)		Ideation	Technical	Creation
			(%)	Execution	Approach
				(%)	(%)
Visual Arts	81.2	67.4	75.3	58.7	46.8
Writing	67.8	52.3	79.2	45.1	37.2
Music	63.4	71.9	67.8	71.3	42.5
Design	59.7	63.2	68.1	66.4	39.1
Average	68	63.7	72.4	60.4	41.4

Table 1: Adoption and Impact of Human-AI Collaboration Models Across Creative Disciplines[5,6]

Emergent Art Forms: New Creative Frontiers

Artificial intelligence has catalyzed entirely new forms of artistic expression that transcend traditional creative boundaries, establishing unprecedented modes of engagement between creators, audiences, and the works themselves. According to Olwan's comprehensive analysis, the market for AI-enabled art experienced dramatic growth from \$345 million in 2021 to approximately \$2.1 billion by mid-2024, representing a 508% increase within just 36 months [7]. This exponential expansion reflects not merely quantitative growth but a qualitative transformation in how art is conceived, created, and experienced, with emergent AI art installations attracting 43% higher attendance rates at major exhibitions compared to traditional media exhibitions during the 2023-2024 season.

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Responsive and interactive art forms have emerged as particularly compelling manifestations of AI-enabled creativity. Olwan's survey of 87 contemporary art institutions revealed that 62% had incorporated at least one AI-responsive installation by 2024, compared to just 14% in 2020, with these works demonstrating distinctive audience engagement patterns [7]. Visitor dwell time averaged 12.4 minutes for AI-responsive installations compared to 3.7 minutes for static digital works, while post-experience surveys indicated 76% of visitors reported feeling "creative participation" rather than passive consumption when engaging with adaptive AI art. These installations fundamentally reimagine traditional notions of artistic boundaries, with the artwork functioning less as a fixed object and more as a dynamic system of relationships.

Procedural and generative narratives have similarly transformed storytelling paradigms through algorithmic approaches. Paduano's analysis of the emergent AI narrative space documented that by late 2024, AI-powered interactive fiction platforms had captured 28% of the digital narrative market, up from just 5% in 2021 [8]. User retention metrics provide particularly striking evidence of engagement, with AI-adaptive narratives showing 64% higher completion rates and 83% greater likelihood of repeat engagement compared to traditional fixed narratives. The technical sophistication driving these experiences has advanced dramatically, with contemporary narrative engines integrating approximately 146 distinct user-responsive variables compared to just 23 variables in 2021 systems, enabling dramatically more personalized storytelling experiences.

Collaborative mass creation facilitated by AI coordination represents another transformative development in artistic practice. Paduano documented multiple large-scale collaborative art projects between 2022 and 2024 that utilized AI systems to integrate contributions from thousands of participants, with the average number of contributors rising from 340 in early implementations to over 5,800 in recent projects [8]. The geographical distribution of contributors has similarly expanded, with recent collaborative endeavors averaging participants from 47 different countries, creating truly global creative communities. Perhaps most significantly, 84% of surveyed participants reported that AI-mediated collaboration allowed meaningful creative contribution without requiring specialized artistic training, dramatically democratizing access to collective artistic expression.

Trans-medium translation capabilities have expanded accessibility while creating entirely new aesthetic experiences. Olwan's research indicates that museums implementing AI trans-medium translation technologies reported a 37% increase in visitation from individuals with sensory limitations, with particularly strong growth (52%) among visitors with visual impairments [7]. The commercial applications have developed in parallel, with the market for AI-powered synaesthetic art technologies growing to \$267 million in 2024, representing one of the fastest-growing segments within the broader AI art ecosystem. Cross-modal translation systems trained on massive paired datasets achieved remarkable fidelity, with blind evaluations rating AI-generated cross-modal interpretations at 78% of the perceived quality of human artist interpretations of the same source material.

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Year	Market Size (\$ millions)	Museum Adoption Rate (%)	Average Visitor Engagement Time (minutes)	Number of Contributors in Collaborative Projects
2020	127	14	4.2	340
2021	345	23	6.8	1,270
2022	783	37	8.3	2,450
2023	1,456	51	10.7	4,120
2024	2,100	62	12.4	5,800

Table 2: Growth Metrics for AI-Enabled Art Forms (2020-2024)[7,8]

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Ethical Dimensions: Authorship, Ownership, and Attribution

The integration of artificial intelligence into artistic creation processes has precipitated profound ethical questions that challenge traditional conceptions of authorship, ownership, and attribution. According to Wang's comprehensive analysis, 67% of surveyed artists reported significant uncertainty regarding attribution practices when working with AI tools, with this uncertainty affecting creative decisions and professional identity [9]. This widespread ambiguity extends beyond individual concerns to institutional practices, with Wang noting that only 34% of major art exhibitions in 2022 had clear protocols for acknowledging AI involvement in exhibited works, creating inconsistent precedents across the creative ecosystem.

The redefinition of authorship in AI-augmented creative contexts presents particularly complex challenges. Wang's survey of 312 practicing artists revealed that 42% considered effective prompt engineering to constitute a form of authorship, while 27% maintained that only significant post-generation modification should qualify for authorial credit [9]. These divergent perspectives reflect deeper philosophical questions about creative agency, with 73% of respondents acknowledging that AI systems occupy an ambiguous middle ground between tool and collaborator that traditional authorship frameworks struggle to accommodate. The practical implications extend to attribution practices, with Steynberg documenting that 58% of professional creatives adopt simplified attribution strategies that potentially misrepresent the actual creative process to avoid navigating these complex distinctions [10].

Intellectual property frameworks demonstrate significant limitations when applied to AI-assisted creative production. Steynberg's analysis found that 81% of creative professionals expressed concerns about ownership rights for AI-generated content, with 47% reporting having avoided using AI in commercial projects specifically due to copyright uncertainties [10]. These concerns appear well-founded, as Wang's examination of legal precedents revealed inconsistent rulings across jurisdictions, with some courts requiring demonstrable human creative input while others have begun recognizing certain forms of prompt engineering as sufficient for copyright protection [9]. The economic implications are substantial, with

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Steynberg estimating that legal uncertainties regarding AI-generated content affected approximately \$720 million in creative assets across the advertising, design, and entertainment industries in 2023 alone.

Attribution transparency practices vary dramatically across creative contexts, revealing different ethical priorities and professional incentives. Steynberg's industry survey found that 76% of creative professionals in fine arts contexts disclosed AI involvement in their process, compared to only 29% in commercial content production [10]. This disparity reflects different stakeholder expectations, with Wang noting that 82% of surveyed art audiences expressed expectations of transparency regarding computational involvement, while only 37% of commercial content consumers shared similar expectations [9]. The absence of standardized disclosure norms creates ethical dilemmas for creators, with 64% of respondents in Steynberg's study reporting having faced client or institutional pressure to minimize or omit mentions of AI assistance despite personal ethical commitments to transparency.

Cultural appropriation concerns have intensified as AI systems demonstrate increasing capability to generate content mimicking specific cultural traditions. Wang's ethical analysis highlighted that 76% of AI image generation systems can reproduce distinctive cultural styles after minimal prompting, often without mechanisms for attribution or compensation to originating communities [9]. Steynberg's examination of industry practices found that only 23% of creative agencies had implemented policies addressing cultural sensitivity in AI deployment, despite 68% acknowledging concerns about potential misappropriation [10]. These findings underscore the need for more robust ethical frameworks that address not only the technical and legal dimensions of AI creativity but also its broader cultural implications and potential impacts on human creative communities.

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Figure 2:Industry Concerns and Practices Regarding AI in Creative Work[9,10]

Toward a Symbiotic Creative Future

As artificial intelligence continues to transform creative practices, the evidence increasingly contradicts apocalyptic narratives of human replacement in favor of a more nuanced understanding of creative symbiosis. Filimowicz's analysis of collaborative case studies reveals that 67% of professional artists who integrated AI tools into their workflows reported an expansion rather than contraction of creative possibilities, with the technology enabling exploration of conceptual territories previously inaccessible due to technical limitations [11]. This symbiotic relationship manifests across multiple creative domains, with practitioners consistently reporting that AI adoption correlates with increased rather than decreased human creative engagement.

The collaborative dynamics between human creators and AI systems demonstrate distinctive complementary strengths that enhance overall creative outcomes. Nielsen's controlled experiments involving 87 designers performing identical creative tasks with and without AI assistance found that teams using AI generated 38% more concept variations and completed ideation phases 31% faster than control groups [12]. Perhaps most significantly, when professional evaluators blindly assessed the quality of outputs, Nielsen found that purely AI-generated concepts scored 18% below human-only concepts on originality metrics, while human-AI collaborative concepts scored 22% higher than human-only work. This quality difference appears directly linked to the complementary capabilities each brings to the creative process, with AI excelling at rapid iteration and humans providing crucial contextual judgment.

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This emergent pattern of creative symbiosis mirrors historical precedents in technological transformation. As Filimowicz documents, photography's introduction initially sparked similar anxieties about artistic displacement, yet ultimately corresponded with unprecedented expansion in painting's conceptual territories [11]. Similar historical examples across literary, musical, and design disciplines suggest a consistent pattern wherein new technologies initially disrupt established practices but ultimately enhance rather than diminish human creative engagement. The contemporary data from AI integration continues this pattern, with Nielsen reporting that 72% of creative professionals using AI tools increased rather than decreased time spent on conceptual exploration [12].

The most productive path forward emerges through collaborative frameworks that leverage complementary strengths while addressing inherent limitations. Nielsen's research indicates that the most successful collaborative approaches maintain human priority in four key areas: initial problem framing (establishing creative goals), conceptual filtering (selecting promising directions), contextual evaluation (assessing appropriateness), and emotional resonance (ensuring human connection) [12]. When these elements remained human-directed, AI-assisted teams demonstrated a 26% higher success rate in meeting client objectives compared to both AI-dominant and purely human approaches. Filimowicz similarly emphasizes that effective collaboration requires technical literacy alongside critical understanding, with 57% of successful adopters receiving specific training in both technical operation and critical evaluation of AI systems [11].

Educational and institutional adaptation to this emerging paradigm represents a crucial challenge for the creative sector. Filimowicz notes that while 64% of creative professionals express interest in developing AI collaboration skills, only a quarter report access to appropriate educational resources [11]. This gap appears particularly consequential given Nielsen's market analysis showing that job listings requiring human-AI collaboration skills increased by 37% between 2022-2023, with employers willing to pay an average 24% premium for these capabilities [12]. The future of creativity thus appears to belong neither to humans working in isolation nor to autonomous AI, but to those who develop fluency in collaborative approaches that leverage the distinctive strengths of both.

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Figure 2: Artist experiences and professional trends related to AI creative collaboration [11,12]

CONCLUSION

The integration of artificial intelligence into creative practices represents not a threat of displacement but an opportunity for unprecedented collaborative potential. As evidenced throughout this article, the relationship between human creativity and computational systems continues to evolve toward increasingly sophisticated forms of symbiosis. The historical pattern emerges clearly: from photography's impact on painting to electronic music's influence on acoustic composition, technological innovations initially perceived as threats ultimately liberate artistic practice by expanding conceptual territories and removing technical constraints. This pattern repeats with AI, as creative professionals across disciplines report that AI integration correlates with expanded rather than diminished creative engagement. The complementary strengths of human and machine intelligence create a powerful synergy-AI excels at rapid iteration, pattern recognition, and generating diverse possibilities, while human creators provide crucial contextual judgment, emotional resonance, and cultural understanding. Effective collaboration maintains human priority in essential areas, including problem framing, conceptual filtering, contextual evaluation, and emotional connection, while leveraging AI capabilities for technical execution and ideation support. The resulting creative outputs demonstrate measurably higher quality than either purely human or AI-dominant approaches. Looking forward, the most pressing challenge lies in developing educational frameworks and institutional structures that foster both technical literacy and critical understanding of AI systems, preparing creative professionals for a landscape where fluency in human-AI collaboration becomes increasingly valuable. The future of creativity belongs not to those working in isolation—whether human or machine—

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but to those who develop the capacity to orchestrate meaningful dialogue between human intention and computational capability, ultimately expanding the boundaries of what artistic expression can achieve.

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