

Human-Machine Collaboration in AI-Generated Art Creation: Applications and Expressions

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Abstract. As generative AI technologies become widely available and more powerful, human-machine collaboration has grown into the core working model for AI art creation, reshaping how art is produced. This study examines human-AI collaboration in art creation on social media platforms via literature review and case analysis. In particular, it explores how social media reshapes artistic creation and dissemination, analyzes AI-assisted creative processes, and explores their impact on contemporary art. Additionally, the study further evaluates the benefits and challenges of human-AI collaboration, including copyright, ethical concerns, and future development, while outlining potential trends in AI-generated art. The study finds that social media has reshaped art creation and dissemination. Human-AI collaboration combines human creativity with AI-assisted production, reducing creative barriers, boosting efficiency, and expanding artistic possibilities. However, limitations in training data, unclear authorship, and copyright and ethical issues remain critical concerns. Despite these challenges, human-AI collaboration complements rather than replaces traditional art, hence requiring improved regulations and balanced creative frameworks for sustainable development.

Keywords: Human-AI Collaboration, AI-Generated Art, Media Transformation, Creative Process, Art Ethics

1. Introduction

Driven by the rapid development of digital technology, AI creation is challenging the long-established boundaries of traditional art. Meanwhile, generative AI tools such as Midjourney, Stable Diffusion, and domestic AI image generators have evolved from niche experiments into widely used creative tools. In addition, social platforms like Douyin and Xiaohongshu have further lowered the threshold for art creation, reshaped the logic of content production and dissemination, and encouraged more users to participate in creative activities. AI-generated illustrations, short drama visuals, and original graphic content have become common forms of online cultural production. However, the rapid expansion of AI art has led to divided opinions among scholars and industry professionals, resulting in two opposing perspectives. One view argues that AI will eventually replace traditional handmade art, while the other considers AI merely a tool for visual production. Despite these debates, current creative practices show that neither purely human-created art nor fully AI-generated works represent the mainstream approach. Human-AI collaborative creation has

become the dominant mode of AI art production. Purely human creation may encounter creative limitations, whereas fully AI-generated works often lack personal expression and exhibit repetitive visual patterns. Therefore, AI should neither be regarded as an independent creator of complete artistic works nor reduced to a simple production tool. Human-AI collaboration bridges the limitations of both approaches, enabling creators and AI systems to complement each other's strengths. Focusing on collaborative art practices on social media platforms, this paper examines the practical characteristics of human-AI creative workflows, analyzes their creative advantages, discusses copyright conflicts and ethical challenges, and explores future development trends.

2. The transformations of media driven by social media

2.1. The reconstruction of information flows through platform mechanisms

With the integration of generative AI technology, digital platforms have transformed art content distribution from traditional linear models into algorithm-driven delivery systems. As a result, social media platforms such as Douyin, Xiaohongshu, and Weibo have become major channels for the circulation and dissemination of AI-generated art [1]. Related studies note that built-in algorithm recommendation and interactive features change how visible artworks become, separating this new distribution logic from traditional art systems built around exhibitions and professional institutional screening [1].

Under the traditional art ecosystem, the visibility and dissemination of artworks were largely shaped by curators, financial support, and professional evaluation systems, leaving individual creators with limited opportunities to access broader audiences. In contrast, AI art and social platforms cut creation and distribution barriers, letting more types of creators share their work publicly. Moreover, generative AI tools enhance production efficiency and content diversity, while personalized platform recommendations further reshape content delivery. As a result, art no longer follows a fixed linear path of dissemination; instead, it circulates through platform-driven distribution networks.

2.2. The evolution of media roles and content producers

The spread of AI art has changed the structure of art creation: the field is no longer dominated by a small group of professional artists, and creator identities have become blurred [1]. As technology becomes easier to access, visual generation tools remove technical barriers to art production. Any user with basic digital skills can participate in the creative process, expanding the range of people who create art.

Beyond this, platform sharing has changed how creators interact with one another [1]. Specifically, comment sections, re-post functions, and real-time feedback on social media build multi-participant networks around AI art. As a result of these interactions, different creators continuously evaluate and recreate content. Thus, this participatory structure breaks the traditional one-way communication model and influences the long-term development of human-AI collaborative creation.

2.3. The shifts in content forms and the diversification of communication

Driven by the development of mobile internet and fragmented media consumption patterns, social media users have increasingly favored highly visual and short-form content, which has shaped the

development of AI art. In the process of creative practice, creators often transform trending social topics and popular culture into visual artworks. As a result, light, entertaining, and highly shareable content tends to perform better on platform feeds, while complex works with deeper narratives remain relatively less common [1].

Meanwhile, with the continuous evolution of digital technologies, AI art is expanding beyond static images toward dynamic videos and cross-media creations. For example, creators can animate still images, automatically generate short videos, and produce intelligent scene transitions through human-AI collaboration. Through these developments, the expressive possibilities of visual art are broadened, and participatory creation becomes more accessible to users, enriching the diversity of content available on social platforms. Furthermore, research suggests that this trend not only expands the expressive scope of AI art but encourages more ordinary users to participate in content creation.

3. The creative process and artistic expression of AI-generated art

3.1. Human-AI collaboration within creative workflows

Human-AI collaboration refers to a creative process in which human ideas are integrated with AI generation capabilities to develop, modify, and refine artworks through continuous interaction. Within this collaborative workflow, creators usually begin by establishing a core creative concept and translating it into structured text prompts for AI systems. At this stage, prompt design becomes a crucial control mechanism, as the wording and structure of prompts directly influence the style, theme, and visual features of the generated results. Based on these inputs, AI systems generate multiple versions of content, including static images, dynamic videos, and cross-media visuals. Due to their algorithmic and combinative nature, AI outputs can provide creators with diverse draft options for further selection and development.

Following the generation process, creators review, select, and modify AI-produced materials by adjusting composition, artistic style, and visual details. Through this process of human refinement, artworks can gain greater visual complexity and emotional depth, allowing the final outcomes to better align with the creators' original intentions [2]. Moreover, this collaborative process often involves multiple rounds of interaction, in which humans and AI continuously refine content through repeated feedback and adjustment [3]. The core logic of this model lies in the complementary division of labor between humans and AI: humans are responsible for creative planning, aesthetic evaluation, and emotional expression, while AI contributes rapid content generation and the expansion of visual possibilities [4]. As a result, this collaborative approach improves creative efficiency while ensuring that humans maintain control over artistic expression and aesthetic direction.

3.2. The characteristics of AI-generated artworks

In comparison with traditional hand-drawn artworks, AI-generated pieces exhibit notable differences in visual expression. Specifically, their overall styles often integrate visual elements from diverse sources, reflecting clear digital characteristics shaped by algorithmic generation.

At the visual level, AI art can combine artistic styles from different historical periods and cultural contexts within a single work, moving flexibly between realistic and abstract forms to create highly distinctive visual effects. Furthermore, based on algorithmic computation and large-scale data recombination, AI systems can rapidly generate complex visual structures, showing advantages over

manual creation in terms of production speed and visual diversity. However, despite these advantages, AI-generated artworks also reveal several structural limitations. In terms of visual details, algorithms may produce noticeable errors, such as distorted human figures, inaccurate perspectives, repetitive background elements, unrealistic lighting, and insufficient texture representation [5]. Meanwhile, at the content level, AI art can easily fall into repetitive patterns because it primarily reorganizes aesthetic elements derived from training data. As a result, many AI-generated works may share similar themes and expressive approaches, lacking distinctive and consistent creative concepts.

3.3. The impact of human-AI collaboration on creative outcomes

Human-AI collaboration has significantly transformed artistic creation by reshaping both production efficiency and methods of expression.

From a positive perspective, this collaborative model reduces technical barriers to art production and expands the space for creative exploration [1]. Generative AI enables creators to quickly produce multiple visual drafts, breaking conventional creative limitations and providing abundant references for further development [4]. Besides, visual effects that were previously time-consuming or difficult to achieve via manual techniques can now be generated efficiently by adjusting prompts, reducing experimentation costs and improving overall production efficiency.

From a structural perspective, human-AI collaboration shifts the logic of creation from technical skill-centered production toward concept-driven design. Rather than creating every element manually, creators increasingly select, evaluate, and refine AI-generated outputs. Through this process, their roles move from purely executing technical tasks to directing content selection, aesthetic judgment, and expressive design. Consequently, this division of labor strengthens human control over creative concepts and final visual outcomes while allowing AI to function as a tool for production support and creative expansion.

4. The creative effectiveness and boundaries of human-AI collaboration

4.1. Improved creation speed and resource efficiency

Human-AI collaboration greatly improves the efficiency of art creation compared with traditional methods. AI can quickly generate initial drafts and provide multiple versions of composition and style for the same creative concept, including realistic, illustrative, and cyberpunk styles. By comparing different drafts, creators can select the version that best matches their creative intentions, reducing the time required for repeated sketching and manual refinement [6].

In practical applications, creators increasingly shift from producing artworks entirely by hand to selecting, adjusting, and refining AI-generated outputs. Instead of rebuilding each work from the beginning, they can modify specific visual elements, correct details, and adjust artistic styles based on AI-generated materials [4]. As a result, the focus of creative work moves away from basic technical execution toward content selection, aesthetic evaluation, and expressive control.

Furthermore, collaboration with AI reduces dependence on advanced drawing equipment and extensive technical training. As a result, projects once dependent on specialized tools and large teams can now be completed more efficiently with generative AI. Through this transformation, production time, labor requirements, and overall creative costs can be significantly reduced.

4.2. Expanded creative ideas and art innovation

Human-AI collaboration expands the expressive possibilities of art by making technically complex and resource-intensive visual concepts easier to explore and produce. During the generation process, AI systems may occasionally create unexpected outputs, such as inconsistent spatial relationships, mismatched elements, or unnatural proportions. Despite their deviation from conventional visual principles, these unexpected results can challenge creators' established visual habits and encourage them to explore new approaches to composition, stylistic combinations, and artistic expression.

Furthermore, in cross-media creation, generative AI enables text-to-image and image-to-video transformations, allowing written concepts to be directly converted into storyboard frames or dynamic visual content. Through this capability, the gap between creative ideas and visual realization is significantly reduced. For systematic creative practices, such as character design and series-based artwork development, creators integrate style configuration, AI generation control, and manual refinement into the production process [7]. Through continuous adjustment and optimization, they maintain stylistic consistency and narrative coherence while preserving diverse visual possibilities [8].

4.3. Technological constraints and ethical considerations

Despite its efficiency and innovative potential, human-AI collaborative creation remains constrained by technological limitations, challenges in content expression, copyright issues, and ethical concerns. From a technical perspective, AI systems interpret creative intentions primarily through written prompts and generate content by matching patterns within training data. As a result, unclear or insufficient prompts may lead to structural problems, such as distorted human figures, inaccurate perspectives, or inconsistent visual elements, indicating that AI generation remains highly dependent on existing datasets.

Regarding content expression, AI can effectively produce visual works with specific atmospheres and styles; however, these effects are mainly achieved through the recombination of patterns learned from training data. Therefore, AI still faces difficulties in developing coherent narrative structures and expressing complex personal experiences, emotions, or unique creative intentions.

From an ethical and legal perspective, the sources and ownership of training data often remain unclear, creating challenges for copyright protection. Furthermore, the widespread use of similar prompts and common AI models may result in repetitive artistic outcomes, making it increasingly difficult to distinguish between original creation and imitation. Meanwhile, the unclear division of contributions between humans and AI raises questions regarding ownership of final artworks and responsibility for potentially harmful content [9, 10]. In addition, the accessibility of AI creation tools increases the risk of generating fake images and digital forgeries, thus posing challenges to online authenticity and artistic ethics.

5. Conclusion

The development of social media and generative AI technologies has significantly transformed the creation, communication, and consumption of AI art. This study shows that human-AI collaboration has become an important creative model in digital art production, reshaping traditional artistic workflows via the integration of human creativity and AI generation capabilities. The collaborative process, including creative concept development, prompt design, AI generation, and human selection and refinement, shifts the focus of creation from purely technical execution toward creative

planning, aesthetic judgment, and content control. As a result, this model improves production efficiency while expanding the possibilities of visual expression.

Meanwhile, AI-generated artworks produced through human-AI collaboration exhibit distinctive characteristics, including diverse visual styles, rapid content generation, and cross-media expressive potential. However, these advantages are accompanied by limitations such as algorithmic visual errors, repetitive aesthetic patterns, and insufficient ability to convey complex human emotions and personal experiences. Furthermore, unclear training data sources, copyright ownership issues, and ethical concerns continue to challenge the sustainable development of collaborative creation. Overall, human-AI collaboration should be understood as an extension and enhancement of traditional artistic practices rather than a replacement for human creativity. Its future development requires clearer copyright regulations, improved ethical frameworks, and balanced creative systems that combine technological efficiency with human artistic values. Through continuous interaction between human creativity and AI capabilities, AI art can achieve more sustainable and meaningful development in the digital media environment.

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