

Mechanisms of Creative Integration between AIGC and Live-Action Cinematic Art

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ABSTRACT

With the rise of artificial intelligence, Artificial Intelligence Generated Content (AIGC) is transforming traditional film production. This paper investigates how AIGC integrates with live-action visual art, focusing on its roles in script writing, visual design, shot planning, audio, and dubbing. By reviewing global development trends, the study highlights AI's technical strengths and current limitations. Centered on seven core tool systems, it examines AI's collaborative functions across key creative stages. The findings suggest that AIGC is not a substitute but a valuable complement to conventional film making. Under the premise of preserving creative autonomy, AIGC is poised to evolve from a technical assistant to a creative partner, fostering a new human-machine collaborative paradigm in cinema.

KEYWORDS

AIGC; Film creation; Live-action cinematography; Artificial intelligence; Creative paradigm; Human-computer collaboration; Visual arts

1 AI's Paradigm revolution

Paul Levinson observed that technological development shows an increasingly humanized trend: machines not only imitate human functions but even control and surpass them in some aspects, thereby posing profound challenges to human subjectivity.

1.1 Technical nature and developmental foundation of AIGC

AIGC (Artificial Intelligence Generated Content) refers to content generated by artificial intelligence, and is one of the most transformative technological forms in the current wave of generative AI. Its essence lies in using large-scale data training and model inference, leveraging deep neural networks to generate multi-modal content such as text, images, audio, and video, thereby achieving a leap from "human creation" to "human-machine co-creation" and even "AI originality."

1.2 The impact of AIGC on the traditional film creation process

In the field of film and television, the rise of AIGC breaks the traditional creative paradigm; its influence is not only at the technological level but more profoundly touches creative logic, production processes, and even artistic philosophy. Traditional film production mostly follows a linear process of "script planning – shot design – on-site shooting – post-production," with each stage highly dependent on professional manpower and time investment. In contrast, AIGC, with its powerful capabilities in information integration and expression, can already act as an intelligent collaborator in multiple stages such as script generation, scene concept design, character modeling, editing, and color grading.

1.3 Three major paradigm shifts: reconstruction of creative logic

In this technological context, film creation has witnessed the following three major paradigm shifts:

Content production shifts from "human-driven" to "data-driven": AIGC uses large models to understand user inputs and automatically generate content, introducing "algorithmic inspiration" at the outset of creativity, subverting the past human-centric one-way creation.

Creative process shifts from "linear collaboration" to "parallel collaboration": Multiple creative stages can be advanced simultaneously with AI collaboration, improving efficiency and consistency.

Artistic expression shifts from "single perspective" to "multimodal interaction": AIGC integrates language, visuals, sound, and other dimensions, making means of expression richer and expanding the boundaries of art.

1.4 From tool to partner: the evolution of the creator's role

This paradigm revolution not only enhances creative efficiency but also reconstructs the connotation of the identity of the “creator.” AI is no longer a cold tool, but gradually becomes a virtual co-creator with “aesthetic preference” and “narrative ability.” Based on this, this paper further focuses on how AIGC integrates with live-action visual art, examining its actual roles in early-stage concept generation, mid-stage scene rehearsals, and late-stage special effects production, ultimately achieving a dynamic balance between the “real” and the “virtual.”

2 Development of AIGC film creation in China and abroad

2.1 Development of AIGC creative practices in China

In recent years, China has made substantial progress in the field of AIGC film production, especially in emerging formats such as micro-dramas, experimental films, and promotional videos, where the penetration of AIGC continues to deepen. For example, Haima Qingfan AI participated in parts of the script development for *Hello, Li Huanying* and *The Wandering Earth*, using language models to assist in conceptualizing plot developments and character dialogues, providing early creative support for large film projects.

2.1.1 Policy support and university initiatives

At the level of policy and platforms, in 2025 the Shenzhen Short Film Festival took the lead in establishing an “AIGC Microfilm Support Program,” encouraging independent directors and technical teams to create short films using AIGC techniques. The all-AI microfilm *Chinese Myth* launched by China Central Television (CCTV) marks the official attempt of a mainstream media institution at AIGC film production. *Drunken Immortal's Abode* from Nanjing Institute of the Media won the “Excellent Film” award in the AIGC category at the Beijing International Film Festival, demonstrating that universities are promoting technological experimentation through industry-education integration.

2.1.2 Platform technology breakthroughs and industry demonstrations

Kuaishou's Kling AI represents a leading video generation model in China, noted for its semantic accuracy, visual quality, and stylistic coherence. Through its “Film Co-Creation Program,” prominent directors such as Li Shaohong have explored AI's application in short film production, advancing its practical integration into the film industry. In 2025, the Beijing International Film Festival introduced its first “AIGC Competition Section,” attracting 1,502 submissions from 33 countries—highlighting global recognition of AI-driven cinematic innovation. That same year, China's National Radio and Television Administration affirmed AIGC as a key driver for content innovation and production efficiency.

2.1.3 Challenges and reflections

Despite notable progress, domestic AIGC film production faces key challenges. Generated scripts often suffer from homogenization, lacking narrative depth, while unresolved issues of copyright and creative responsibility obscure accountability. Although trust cannot define the upper limits of AIGC applications, it holds decisive influence over user acceptance. Even with advanced capabilities, systems lacking perceived reliability may hinder audience engagement. To ensure sustainable development, a clear legal framework, along with educational initiatives and capacity-building for creators, is essential.

2.2 Development of AIGC creative practices abroad

Internationally, AIGC technology started earlier and related film practices are more abundant. As early as 2016, the AI-written science fiction short film *Sunspring* was shortlisted for the London Sci-Fi Film Awards, becoming a pioneering work of AIGC in film narrative applications. In 2022, *The Crow*, directed by AI artist Glenn Marshall, won the Jury Prize at the Cannes Short Film Festival, further establishing the exploratory value and international recognition of AIGC films in artistic expression.

2.2.1 Platform applications and technological integration

International streaming platforms like Netflix are increasingly adopting AIGC technologies across the film production pipeline. Netflix's partnership with *runna* on *The Dog* and *The Boy* highlights AI applications in storyboarding, visual effects, and IP development, including scene generation and dialogue scripting. Meanwhile, companies such as Runway,

Meta, and OpenAI are enhancing video synthesis, multimodal control, and real-time rendering, forming the infrastructure for AI-driven content. Emerging approaches in audience-interactive editing and preference-based storytelling further personalize viewing and redefine user-content engagement.

2.2.2 Ethical risks and social controversies

As AIGC adoption expands, ethical and legal challenges are becoming more prominent. The 2023 Hollywood Writers Guild of America (WGA) strike, driven in part by demands to limit AI's role in writing, underscored concerns over job displacement and creative integrity. Debates around copyright ownership, creative accountability, and algorithmic bias further highlight the need for regulatory frameworks. Globally, there is growing consensus on establishing legal and industry governance to balance technological advancement with humanistic values.

2.3 Significance of AIGC development

AI's development has driven deep innovation in film and television production:

Cost structure optimization: shorten production cycles and reduce manual input.

Lower creative threshold: empower non-professional creators to participate in film production.

Enhanced dimensions of expression: achieve a natural transition from text to multimodal content.

Transformation of cultural export methods: provide more technologically supported channels for the dissemination of Chinese culture.

3 Tool collaboration mechanisms: analysis of seven core systems

AI's integration into film production extends beyond creative content to a structured, tool-based workflow. Seven core systems now form the foundational ecosystem for merging AIGC with live-action visuals, participating modularly across production stages—from concept development and visual generation to shot rehearsal and sound design—creating a closed-loop creative process.

3.1 Creative generation systems: script Co-Creation with Doubao and DeepSeek

In film creation, the script serves as the narrative foundation, shaping structure, pacing, and character arcs. While traditional screenwriting relies heavily on individual inspiration and experience, AIGC offers enhanced scalability and efficiency. Doubao and DeepSeek exemplify complementary AI systems focused on creative generation and logical refinement, respectively. Doubao generates diverse script outlines, character profiles, and segmented plots based on keyword prompts across various genres. For instance, given "a cyberpunk suspense story with a memory-altering protagonist," it can rapidly produce multiple narrative trajectories. DeepSeek enhances these drafts through structured reasoning and external knowledge integration, enriching context, technological plausibility, and sociopolitical coherence. In tandem, the two systems alleviate conceptual workload, streamlining and systematizing the script development process.

3.2 Storyboard and shot preview system: visual rehearsal by Doubao

As a bridge between script and visual execution, the shot script is essential for pacing, visual language, and emotional modulation. Leveraging visual generation models, Doubao can now translate script text into static storyboards and dynamic shot previews. Drawing from shared large-scale models with Dreamina, Doubao functions effectively as a previsualization tool. Upon script input, it extracts key scenes and generates compositions and camera schemes. For instance, in a chase sequence, it may propose a mix of bird's-eye, tracking, and close-up shots based on spatial dynamics and narrative tension. These are presented in a storyboard table with parameters such as duration, scale, and motion. Additionally, Doubao produces preview videos to support intuitive assessment and early-stage optimization, reducing inefficiencies in live-action production.

3.3 Aesthetic keyword generation system: visual style extraction by Doubao

Visual style is central to film aesthetics, shaping audience perception and emotional engagement. AIGC enhances this process by analyzing reference visuals to extract key elements—such as color palettes, composition, and lighting—supporting cinematographers and artists in establishing a cohesive artistic tone. Doubao excels in this aspect: it can generate detailed visual descriptions for semantic labels like "Nolan style" or "Wang Jiawei film texture," and output

keywords like “low saturation + cool tones + low contrast + handheld camera + shallow depth of field.” Trained on open-source image datasets, AIGC models map language to visual features, enabling text-driven image style generation. This allows directors to communicate intent precisely, ensuring stylistic consistency throughout the film.

3.4 Image generation system: visual creation by dreamina

In recent years, Dreamina has been gradually applied in visual content creativity and pre-production design for film and art; in film creation, it primarily undertakes visual concept design and scene keyframe generation tasks. Compared to traditional art design, Dreamina has advantages such as high speed, diverse styles, and strong scene expandability. For example, in the world-building of a fantasy film, the director can input keywords like “on a mountain peak + swirling mist + ruin style + twilight atmosphere,” and Dreamina can generate multiple images with a consistent style and rich details for the director to choose or further modify. Dreamina also has local repainting and style transfer capabilities, enabling partial elements (such as sky, characters, vegetation) to be replaced based on the director’s chosen composition, thus allowing creative iterations to proceed quickly without losing unity.

3.5 Text-to-video system: dynamic image construction by dreamina and kling

Following static image generation, AIGC advances to “text-to-video” synthesis. The combined use of Dreamina and Kling enables multi-frame interpolation, camera motion simulation, and action-driven animation, allowing visuals to evolve from stills to dynamic sequences. Dreamina animates static images with simulated camera moves, creating short narrative clips—e.g., transforming a city night scene into a sweeping panorama. Kling excels in video composition and effects, integrating clips with transitions and lighting changes for seamless visual flow. Together, they support rapid generation of dynamic previews and VFX drafts, aiding set design, camera planning, and reducing post-production time and cost.

3.6 Sound effect generation system: auditory atmosphere creation by dreamina and kling

Sound plays a vital role in shaping a film's emotional atmosphere, with ambient noise, music, and effects forming a layered auditory environment. Dreamina and Kling now enable synchronized audio-visual generation. Dreamina produces ambient sounds and music aligned with scene content and mood—e.g., intense drums and wind for chase scenes, or soft piano for emotional moments—though its outputs often require refinement. Kling offers higher-quality audio, more closely matched to visual cues, and can tailor sound for various playback scenarios. Together, they support immersive, context-aware sound design across diverse film environments.

3.7 Dubbing system: voice rendering with dubbingX

DubbingX is a dubbing platform based on AI voice synthesis technology, supporting the simulation of voice lines in multiple languages, different genders, and age groups. It is widely used in voice anthropomorphism scenarios such as animated characters, virtual hosts, documentary narration, and promotional videos. The system allows users to upload a text script and select a voice template; the platform automatically generates corresponding voice content, and also supports adjustments in speech speed, intonation, and emotion settings. In addition, users can upload reference audio for the system to perform voice cloning and transfer, producing a new synthesis that closely resembles the original vocal style but with the desired emotion. Currently, DubbingX has been used in fields such as media, advertising, and education to improve audio production efficiency, especially showing significant advantages in content multilingual adaptation, rapid auditioning, and low-cost mass production. As voice synthesis models continue to evolve, AI dubbing technology is gradually permeating film production processes, becoming an important component of post-production.

4 The threefold paths of creative integration

Substitutional integration entails AI assuming repetitive, mechanical creative tasks, thereby reallocating human effort and enhancing efficiency. Augmentative integration denotes human-AI collaboration where AI generates initial drafts or concepts, subsequently refined by human creators to produce polished outputs. Transformative integration represents AI’s leading role in creation, catalyzing novel modes of artistic expression and expanding creative paradigms.

Collectively, these three pathways form a hierarchical framework of creative integration, underscoring AI’s profound impact on artistic creation paradigms.

5 Technical bottlenecks and ethical challenges

Following the era of mechanical reproduction, public access to and ownership of artworks have become increasingly widespread. The advancement of AI tools has further lowered the barriers to artistic creation. Once closely tied to social status and material conditions, high art is now “liberated” by emerging technologies; creative practice no longer depends on specialized skills, expensive tools, or innate talent, but can be conducted through electronic devices and AI models.

5.1 Creative bottlenecks and model limitations

AIGC relies on large-scale data training and primarily generates content through imitation of existing works. Studies highlight a “centripetal tendency” in mainstream models, favoring high-frequency narrative patterns and dominant aesthetic norms, which limits originality. For instance, urban romance scripts often follow repetitive structures like “meet–misunderstanding – reconciliation,” resulting in formulaic plots and characters. While AIGC expands expressive possibilities, its creative depth and emotional authenticity still depend on human insight and refinement.

5.2 Copyright controversies and responsibility attribution

The issue of copyright ownership of AI-generated content is one of the most controversial topics at present. The legal framework has not yet provided a unified interpretation of “whether AI-generated works enjoy copyright” or “to whom the rights should belong: the algorithm developer, the user, or the platform.” In 2023, in a copyright lawsuit involving an AI-generated virtual singer image, the court ruled that “the work was human-led in creativity, with AI as assistance,” thus awarding the copyright to the user team. However, such cases lack systematic regulation; in the future, legislation is needed to clarify the degree of AI involvement and the proportion of rights.

5.3 Job impacts and industry structure reconstruction

According to a 2024 report by the Motion Picture Association (MPA) of the United States, AIGC could lead to a 30% reduction in positions such as film post-production editing, concept art, and script writing over the next decade. During the 2023 writers’ strike by the Writers Guild of America (WGA), the call to “limit AI replacing writers’ positions” became a core demand, reflecting the widespread anxiety among front-line practitioners about technological displacement. In the future, the industry should strengthen support for talent transformation, such as offering courses in “AI content design” and “human-AI collaborative art,” to guide creators in mastering new creative tools.

5.4 Cultural bias and content safety

Concerns have emerged over the sources, distribution, and biases in AIGC training data. A corpus dominated by Western cultural contexts may lead to value homogeneity, reinforce stereotypes, and provoke misunderstandings around race, gender, or religion. Additionally, AI-generated deepfakes pose risks in misinformation, political manipulation, and identity fraud. In 2024, a fabricated “historical documentary” on social media sparked public panic over content authenticity. To address these issues, technical transparency and content labeling are essential—such as embedding metadata to track generation pathways, model origins, and operator identities.

6 Prospects for AIGC film revolution

In the AIGC era, the movie screen has become a “digital mirror” that appears both real and surreal; as audiences “view/experience” AI virtual characters, they are also reflecting themselves, achieving the stitching together of the “object” of the digital and the “object” of the subject.

6.1 Direction of technological evolution: multimodal integration and real-time Co-Creation

In the future, AIGC will tend toward “seamless full-modal generation,” achieving unified output of text, images, audio, and video. For example, if a user inputs “future city background + lonely boy + synthesized soundtrack,” the system can automatically generate a supporting script, concept art, a short film edit, and a sound effects package, all with highly consistent style. Real-time co-creation is also a trend. The director can input modification requests on set via voice or tablet, and the AI will adjust virtual sets, lighting styles, and character performances in real time, realizing a “digital set designer’s on-the-go assistant” function.

6.2 Reconstruction of industry ecology: decentralized creation and customized viewing experiences

AIGC will drive the rise of the “cloud-based collaborative creation” model, where small teams can complete an integrated script–shooting–post-production workflow via cloud platforms. Audiences can also participate in “customized viewing” — the system generates versions corresponding to their preferences, such as focusing on action, emphasizing emotions, or highlighting visuals. Cinemas or platforms can use “real-time generation + emotion recognition” systems to dynamically adjust sound effects, lighting, and endings, creating a truly immersive viewing experience.

6.3 Ethical governance framework: establishing regulatory mechanisms and social consensus

A standardized AIGC content labeling system should require clear tags, such as “AI-assisted creation,” for scenes and characters generated by AI—mirroring Netflix’s use of warnings like “This content contains AI-generated elements.” Drawing on the concept of neighboring rights, regulations should allocate AI-generated content rights: developers retain technical patents, users hold copyrights, and an “AI Creation Fund” should be established to support professionals impacted by automation. Content review standards must also address risks like historical distortion and misinformation. The EU’s Digital Services Act, for instance, mandates verifiable metadata for AI-generated media. Ultimately, a balance must be maintained between technological freedom and ethical responsibility, ensuring AIGC supports rather than supersedes artistic expression.

7 Conclusion

The integration of AIGC and live-action audiovisual art represents not merely a technological addition, but a profound reconfiguration of creative paradigms, industrial logic, and artistic expression. AI functions both as an efficient tool and a creative collaborator, generating novel aesthetic possibilities through human–machine synergy. Yet, technical and ethical constraints underscore the need for a balance between innovation and regulation. The future of AIGC cinema may realize a “human – machine symbiosis,” where humans contribute emotional depth and value orientation, while AI offers computational precision and structural coherence. As André Bazin observed, the ultimate aim of technology is to serve artistic truth. AIGC, in this light, empowers filmmakers with more liberated expressive tools to explore the human condition with renewed clarity.

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