

AI in Micro-Short Drama Production: A Comprehensive Review of Applications and Challenges

Yixuan Ma

School of Fine Arts, History of Art and Cultural Studies, University of Leeds, Leeds, UK
me22y2m@leeds.ac.uk

Abstract:

The rapid growth of micro-short dramas as a dominant form of digital entertainment has been significantly influenced by advancements in Artificial Intelligence (AI). This paper presents a systematic review of AI technology applications across the full production chain of micro-short dramas, encompassing content creation, production, and distribution. Through a comprehensive analysis of 15 seminal works and industrial case studies, we identify and elaborate on AI's role in three critical phases: pre-production (e.g., data-driven ideation and scriptwriting assistance), mid-production (e.g., automated dialogue synchronization and editing), and post-production (e.g., recommendation algorithms and personalized content delivery). The findings indicate that while AI significantly enhances production efficiency and the precision of audience targeting but introduces new challenges such as creative homogenization, intellectual property ambiguity, and ethical concerns regarding algorithmic governance. The study concludes that sustainable integration requires human-AI collaboration, more robust regulatory frameworks, and standardized ethical audit protocols. This review contributes a structured framework to understanding the current landscape and future trajectory of AI's role in micro-short drama production.

Keywords: Artificial Intelligence, Micro-Short Drama, Content Production, Algorithmic Recommendation, Intellectual Property

1. Introduction

Micro-short dramas, defined as serialized narrative videos with each episode typically under ten minutes in duration, have rapidly emerged as a mainstream

form of mobile entertainment. Platforms such as Douyin and ReelsShort have leveraged AI-powered recommendation systems to match short-form narratives with fragmented viewing habits, resulting in explosive growth in both audience size and market

value [1]. Simultaneously, Artificial Intelligence (AI) has evolved from a theoretical construct into a versatile toolkit reshaping creative industries globally. In micro-short drama production, AI is now used in topic prediction, script generation, automated editing, and personalized distribution [2].

Despite the widespread adoption of AI technologies, current research often isolates technical or economic factors and lacks a holistic synthesis of AI's integrated influence across production phases. To address this gap, this study adopts a systematic literature review methodology combined with industrial case analysis explores the AI applied throughout the production and distribution chain of micro-short dramas, and points out challenges and future directions define this integration.

The review has three key objectives: to map AI applications across pre-, mid-, and post-production; to identify challenges concerning creativity, copyright, and ethics; and to propose a future research and policy agenda.

2. Literature Review

2.1 Definition and Market Dynamics of Micro-Short Dramas

Micro-short dramas are defined as serialized video content featuring compact episodes (1–10 minutes in length), fast-paced storytelling, and vertical-screen optimization tailored for mobile viewing [3]. Designed for viral dissemination, their opening few seconds—known as the “hook”—are critical in retaining users' attention [4]. According to research, micro-short drama market exceeded ¥50 billion in revenue in 2023, with over 800 million active users. Monetization models typically follow a “freemium” strategy, offering free pilot episodes followed by paid unlocks [5]. Globally, platforms such as ReelsShort and Instagram Reels are replicating this model. The explosive market expansion highlights the urgent need for technological efficiency improvements and creative differentiation strategies.

2.2 Existing Research on Micro-Short Dramas

Scholars have approached micro-short dramas from multiple dimensions. Wang and others analyzed narrative tension and audience immersion mechanisms, emphasizing sustained suspense [6]. Li and Wang explored payment behaviors within freemium models, while Wei examined platform algorithms' roles in content discovery [1,4]. Wu further highlighted the genre's influence on youth identity formation [7].

However, these studies treat technology as a peripheral

enabling factor rather than a core driver. Few studies address AI as a transformative force that shapes content creation processes, enhances production efficiency, and influences cultural dissemination. Therefore, this paper positions AI as a structural driver within the entire value chain.

3. AI Applications Across the Production Chain

3.1 AI-Driven Pre-Production: Data-Guided Ideation and Scriptwriting

The pre-production stage increasingly leverages AI to improve efficiency and reduce market uncertainty. By analyzing large datasets—search trends, audience feedback, and social media engagement—AI can identify promising genres and narrative themes [8]. For instance, Douyin's *TrendLens* algorithm assists studios in identifying top-performing subjects, reportedly reducing project selection time by 40%. Chinese online literature platform, as a benchmark in the short drama industry's global expansion, utilizes its ReelShort app to analyze overseas readers' preferences through AI. This enables the reverse customization of short drama themes, such as adapting the Chinese “domineering CEO” trope into localized Western storylines featuring vampires and werewolves.

Scriptwriting has been revolutionized by large language models such as GPT-4, which generate plot outlines, character dialogues, and scene descriptions. The Alibaba Lingxi AI Script Assistant, used in the 2023 micro-short drama *Love in 8 Seconds*, generated preliminary drafts that were subsequently refined by human writers. These systems enable co-creation: AI handles structural tasks while human creators infuse emotional and cultural depth [9].

3.2 Mid-Production: Automation in Filming and Editing

AI also enhances mid-production efficiency through computer vision and audio processing. Automated dialogue matching tools synchronize subtitles in real-time, cutting post-production labor costs by up to 60% [10]. Tencent's AI Dubbing Studio can automatically select the optimal takes from multiple performances using acoustic similarity analysis.

AI-assisted editing platforms, such as ByteDance's CapCut AI Suite, automatically recommend optimal transitions, lighting adjustments, and tone corrections. During the production of *The Double Life of My Billionaire Husband*, in pivotal scenes where the conflict between the

male and female leads erupts, AI automatically analyzes the content and emotional tone of adjacent shots, recommending the most impactful transition effects, such as “dissolve,” “flash white,” or “slide”, to heighten the dramatic tension.

What’s more, according to an interview with the Fuzi AI team conducted by Gudao Network Film and Television, the three-person team used Stable Diffusion to generate images and AI tools for automatic editing, reducing the post-production time of a single episode from the traditional 8 hours to 3 hours, and shortening the overall production cycle of a 10-episode short series to 1 month.

3.3 Post-Production: Algorithmic Distribution and Personalization

In post-production and dissemination, AI-powered recommendation systems are crucial to visibility. Platforms like Douyin and Kuaishou employ hybrid deep-learning algorithms analyzing user dwell time, completion rate, and reaction data [10]. These models deliver content with precision, achieving up to 35% higher completion rates and improving return-on-investment for producers [10]. According to the director of Wushuang, this phenomenal 2023 short drama boasts a male-to-female audience ratio, a stark contrast to typical short dramas, at 6:4, with men predominating. The production and distribution teams leveraged this data to analyze user profiles through the platform’s AI system, precisely targeting users with a preference for “male-oriented” content. This strategy accurately reached core potential users, significantly increasing click-through and completion rates, ultimately contributing to the series’ commercial success.

Furthermore, AI-driven caption generation and adaptive thumbnail selection optimize click-through rates. Continuous algorithmic refinement ensures that producers can target specific demographics, bridging creative output with audience analytics in real time.

3.4 Case Study: Douyin’s AI-Enhanced Micro-Drama Production

The successful 2023 series “21 & 31,” co-produced by Douyin’s collaboration with *Huace Film Studio* in 2023, demonstrates the practical application of AI in micro-drama production. Using AI-assisted storyboarding, the production team automatically generated visual scripts and editing templates. The series topped Douyin’s charts for three consecutive weeks, garnering over 200 million views and setting a new record for engagement. The project reported a 45% reduction in production time and a 25% increase in viewer engagement [11]. This demonstrates AI’s tangible impact not only on workflow but also

on audience satisfaction.

4. Challenges in AI Integration for Micro-Short Drama Production

4.1 Creative Homogenization

The phenomenon of creative homogenization in micro-dramas reveals a dual dilemma inherent to AI’s role in both production and distribution. Generative AI, represented by Large Language Models (LLMs), is essentially a pattern recombination of a large-scale dataset. When the training data is highly homogeneous, this recombinatorial creation inevitably results in a homogenized output. For example, on mainstream short drama platforms such as Hongguo, popular themes such as “wealthy families” exhibit highly standardized character archetypes and plot structures. At the same time, on the distribution side, the recommendation algorithm-based platforms has continuously strengthened and solidified the homogenized preferences, thus lead to “algorithmic monoculture” [12]. To counter this, some studios are retraining AI on localized datasets (e.g., regional folklore or dialect scripts) to promote diversity and originality [13].

4.2 Intellectual Property Ambiguity

AI-assisted content raises unresolved questions of ownership and authorship. Current copyright frameworks globally fail to clearly delineate rights and obligations between human creators and AI systems in collaborative creation [14]. Chinese regulators have begun issuing interim guidelines, suggesting that ownership belongs to the human operator who directs the AI system. However, cross-platform enforcement remains inconsistent. Industry experts propose blockchain-based attribution systems to record the extent of AI contributions, thus clarifying liability and creative credit.

4.3 Ethical and Governance Concerns

The proliferation of AI-generated micro-dramas introduces risks related to misinformation, bias, and inappropriate value dissemination. For example, an automated script-generation tool was found producing stereotypical gender narratives in 2023 [15]. Ethical auditing systems—like Tencent’s *Media Integrity AI*—are now employed to detect sensitive content and offensive phrasing before publication. These mechanisms must continuously evolve to preserve cultural integrity and prevent the large-scale misuse of AI in content production.

5. Future Directions

5.1 Human-Centric Co-Creation

To break the phenomenon of homogenization, the next stage of AI integration in micro-short drama production should prioritize human augmentation over complete replacement. Within a “human-AI collaboration” framework, AI is primarily responsible for data-driven pattern recognition and structural suggestions. In contrast, the creation of plotlines requires humans to inject authentic emotion, cultural context, and most importantly, the original inspiration and themes that break from established patterns [12]. The value of human creators is to provide original input, which is fundamental to reshaping a diverse and authentic micro-drama ecosystem. The value of AI, in turn, lies in executing the scaled recombination of these novel ideas.

5.2 Strengthening Legal and Regulatory Frameworks

To ensure sustainable growth, governments and platform operators must update and refine legal frameworks governing AI-generated works. Clear policies on ownership, liability, and royalties are needed. The *China National Copyright Administration* has initiated pilot programs to categorize AI-assisted scripts as “derivative works” under human supervision [16]. Future laws should harmonize such standards globally to facilitate cross-border collaboration.

5.3 Ethical Standards and Algorithmic Transparency

Ethical governance must become a formal requirement across production platforms. Developers should implement transparent audit systems capable of detecting misinformation and harmful content. Standardized evaluation criteria, such as fairness, accountability, and bias mitigation—should be publicly documented. Industry coalitions, including *ByteDance’s 2024 AI Ethics Alliance*, are pioneering unified guidelines for responsible creative AI deployment.

6. Conclusion

This review has systematically examined how AI technologies reshape micro-short drama production across all phases—from pre-production ideation to post-release distribution. The evidence shows that AI not only improves operational efficiency but also enables precise audience targeting and market prediction. Nonetheless, critical challenges remain: creative homogenization, copyright

uncertainty, and inadequate ethical oversight.

The future of AI in this domain lies in balanced human–AI collaboration, supported by legal clarity and algorithmic accountability. By integrating ethical governance with technological innovation, the industry can preserve creative diversity while leveraging AI’s analytical and operational strengths.

Future research should expand toward longitudinal case studies comparing regional AI implementation models and exploring audience reception to AI-assisted content. Such efforts will provide valuable insights into building a sustainable, creative, and ethically grounded ecosystem for AI-driven micro-short dramas.

References

- [1] Li, M., & Wang, J. (2023). “Paying for the next episode: A study of user payment behavior in micro-short drama platforms,” *Journal of Consumer Behaviour*, vol. 22, no. 3, pp. 255–270
- [2] Zhang, L. (2024) “Artificial intelligence and the future of film and television production,” *Science and Technology Review (China)*, vol. 42, no. 5, pp. 60–67.
- [3] Gao, F. (2023). “The rise of micro-dramas: Format, distribution, and audience in the Chinese digital market,” *International Journal of Communication*, vol. 17, 17, 1–20
- [4] Wei, L. (2022). Platformization of short-form video entertainment: The case of Douyin. *New Media & Society*, vol. 24, no. 5, pp. 1089–1106
- [5] iResearch Inc. (2024) reported that the market size of China’s micro-short drama industry reached 35.86 billion yuan in 2023, with advertising marketing and paid subscriptions as the main profit sources. <https://www.idigital.com.cn/report/4360?type=0>
- [6] Wang, Y., & Guo, J. (2025). A Narrative Revolution in Vertical Framing: The Aesthetics of “Spatial Compression” and Multimodal Reconstruction in Vertical Screen Short Dramas. *Journal of Media, Journalism & Communication Studies*, 1(1), 18–28.
- [7] Hou, B. Y. (2025). A study on the pleasure consumption of micro-short dramas among youth groups under social acceleration. *Audio-Visual (in Chinese)*, 19, 20–24.
- [8] Brown, T. (2020). Language models are few-shot learners. *Advances in Neural Information Processing*. In 34th Conference on Neural Information Processing Systems (NeurIPS 2020), Vancouver, Canada. <https://proceedings.neurips.cc/pa>.
- [9] Miller, A. I. (2022). *The Artist in the Machine: The World of AI-Powered Creativity*, MIT Press.
- [10] Zhao, H., & Bi, J. L. (2024). Innovation exploration of AIGC micro-short dramas in the generative media environment: Technology-driven, integrated innovation, and audio-visual transformation. *Dangdai Dianshi*, (12), 15–21.
- [11] Zhejiang Huace Film & Television Co., Ltd. (2025, October 13). New Force in micro-short drama production: Coordination

between long and short dramas and Huace's construction of a new development pattern. Huace Film & Television.<https://www.huacemedia.com/mobile/index.php/news/info/1157.html>

[12] R. Abbott, *The Creative Code: Artificial Intelligence and the Future of Human Creativity*, Columbia University Press, 2023.

[13] Yu, T., Yang, W., Xu, J., & Pan, Y. (2024). Barriers to industry adoption of AI video generation tools: A study based on the perspectives of video production professionals in China. *Applied Sciences*, 14(13), 5770.

[14] J. Kim and P. Johnson, "Intellectual property in the age of

generative AI: Challenges and solutions," *Harvard Journal of Law & Technology*, vol. 37, no. 2, pp. 305–350, 2024.

[15] Joshi, G., Singh, A., Yogi, M., Sharma, G., Savadatti, M. B., & Mittal, S. (2024). Algorithmic Governance: Legal Frameworks for AI-Driven Mass Media Management. *Frontiers in Health Informatics*, 13(3).

[16] National Copyright Administration of China & other relevant authorities. Interim measures for the management of generative artificial intelligence services. (2023). https://www.cac.gov.cn/2023-07/13/c_1690898327029107.htm