Integrating Artificial Intelligence Technology into Film and Television Production Education

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Abstract: Artificial intelligence has been widely applied across the entire film and television production process—from scriptwriting and character design to scene modeling and post-production editing—significantly improving production efficiency and creative possibilities. However, integrating AI into film and television education still faces challenges, including outdated curricula, insufficient faculty expertise, limited hardware resources, and ethical and copyright risks. This study proposes an AI-centered teaching integration pathway, which optimizes the curriculum system, strengthens faculty training, deepens industry-academia collaboration, and emphasizes practical training and ethics education, aiming to cultivate versatile talents adaptable to industrial development. Future efforts should focus on dynamically updating teaching resources, enhancing students' autonomous learning abilities, and advancing film and television education in step with the times.

Keywords: Artificial Intelligence; Film and Television Production; Teaching Pathway; Practical Teaching

1. Introduction

With the rapid advancement of artificial intelligence technology, its application in film and television production has become increasingly widespread. From pre-production scriptwriting and character design to post-production editing and special effects creation, AI is gradually emerging as a key factor in enhancing production efficiency and fostering innovation. However, the integration of AI technology into film and television production education remains in its infancy, necessitating urgent updates and improvements to teaching content, methodologies, and practical training components. This study aims to explore effective pathways for integrating AI with film and television production education. the goal is to cultivate high-caliber professionals capable of adapting to the future development of the industry while advancing the modernization and internationalization of film education.

2. Current Applications of Artificial Intelligence Technology in Film and Television

The rapid advancement of artificial intelligence has profoundly transformed film and television production, with applications spanning the entire creative process—from scriptwriting and analysis to character design, scene modeling, video editing, and post-production. These technologies not only enhance production efficiency and quality but also expand creative possibilities, offering artists greater freedom and robust technical support. As AI continues to evolve, its role in the industry will deepen, injecting fresh vitality into innovative development.

In scriptwriting, AI delivers powerful assistance through natural language processing. By analyzing vast script datasets, AI extracts common narrative structures, character archetypes, and plot patterns, inspiring screenwriters and accelerating the generation of story outlines, character backstories, and plot developments. Some tools can automatically draft scripts or plot frameworks based on user-input themes or keywords, providing a creative starting point. AI also performs emotional analysis and predicts audience feedback, helping writers optimize content to align with viewer preferences and market trends. For example, by parsing databases of hundreds of thousands of scripts, AI can identify patterns in narrative models and character archetypes. When analyzing classic series, it automatically flags key nodes—such as "multiple narrative intersection points" and "character-triggered events"—and generates visual story maps. This structured analysis acts as a "creative compass. " Upon keyword input, the system can output proposals within five minutes, including world-

building frameworks, core conflicts, and three-act structure pacing. In the suspense film Detective Chinatown, the production team integrated an AI script evaluation system. By analyzing classics like 24 and Detective Dee, the tool identified that successful scripts employing "time-pressure narratives" typically feature a minor conflict every 8 minutes. For a 15-minute courtroom debate scene in the initial draft, the AI flagged a high risk of audience attention loss and recommended inserting a plot twist—specifically, a secret report from the postal station interrupting the debate. Post-revision test screenings showed significantly improved audience retention rates for that segment.

Figure 1. AI Analysis and Evaluation of the Plot of "Detective Chinatown"

In character design and animation, AI significantly boosts efficiency and quality. Deep learning algorithms enable the generation of highly realistic virtual character models that closely resemble real people in appearance, with natural, fluid movements and expressions achieved through motion capture and facial animation. AI-powered software can rapidly produce detailed 2D or 3D character models from textual descriptions or simple sketches, complete with realistic textures. Machine learning also optimizes movement trajectories and behavioral patterns, ensuring adherence to physical and biological principles, thereby saving time and unlocking creative possibilities. Take Dreamina AIGC as an example: this intelligent tool integrates image generation, processing, video compositing, and output. It produces professional-grade images from text or pictures, and offers intelligent editing features like ultra-high-definition processing, detail restoration, and partial redrawing. Dreamina also supports image-based video generation, streamlining animation workflows. For instance, uploading a character line art sketch with the description "Keep the pose unchanged, color the character, set hair to black, generate a 3D rendering" yields vivid 3D characters almost instantly.

Figure 2. 3D Character Generated by Dreamina AI

Scene modeling and special effects production also benefit greatly from AI. Through computer vision and deep learning, AI can rapidly generate complex virtual scenes, automatically adding background elements, lighting, and environmental textures from input images or video clips. In special effects, AI creates realistic natural phenomena (flames, water flow, smoke) and intricate particle effects, enhancing visual impact without significantly increasing costs. Deep learning algorithms can optimize and adjust effects in real-time, ensuring seamless integration into frames. the AI modeling platform Meshy exemplifies this: it rapidly generates high-quality 3D models and textures from text or images. Users can input descriptions like "A wooden country cottage with a steep roof covered in wooden shingles and a prominent chimney topped with a small decorative element" to create a house model ready for scene construction. Further text input, such as "red roof, wooden house, " refines materials and textures. Once downloaded, these models are immediately usable in 3D software for scene creation.

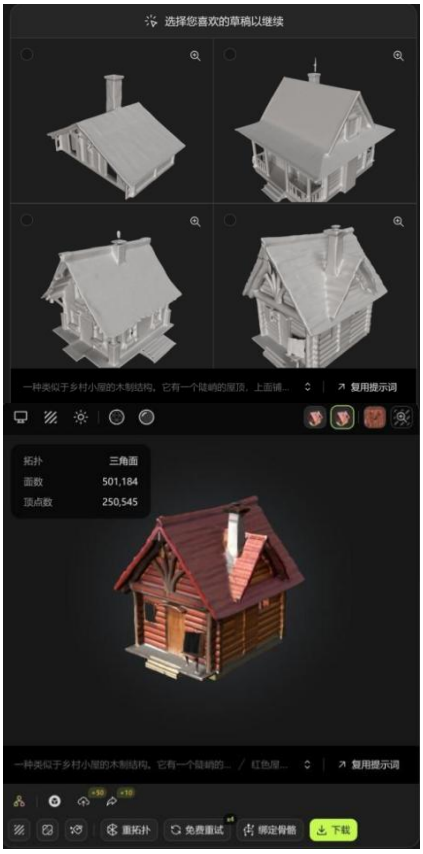

Figure 3. Meshy-Generated Scene Production Model

In video editing and post-production, AI dramatically improves efficiency and output quality. It automatically identifies key shots, emotional pacing, and narrative structures to generate preliminary edits based on preset styles, saving time and providing a refinement framework. For subtitles, AI uses speech recognition to rapidly produce, translate, and proofread captions. It also excels in color grading by intelligently analyzing color distribution and lighting to meet industry standards or specific visual styles, while performing audio noise reduction, enhancement, and mixing to elevate sound quality. A prominent tool is Autopod, an Adobe Premiere plugin for multi-camera AI editing. Its core functionality is intelligent synchronization: it automatically recognizes and synchronizes footage from multiple cameras and microphones, then uses AI algorithms to switch to the optimal shot and balance audio levels. Autopod also features a jump cut editor that detects silent segments by decibel thresholds, rapidly generating tight jump-cut effects ideal for social media shorts. With one click, it produces vertical, square, and other aspect ratio versions, automatically adding transitions, watermarks, and end-page effects for platforms like TikTok.

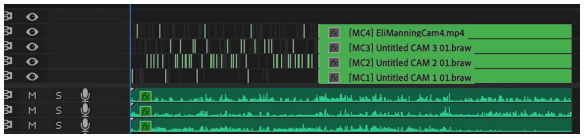

Figure 4. Screenshot of Autopod's Automatic Editing

3. Challenges in Integrating Artificial Intelligence with Film and Television Production Education

The rapid penetration of artificial intelligence (AI) is profoundly transforming the deeply ingrained "craft-based" training model in film and television production education. Taking the School of Art and Communication at Beijing Normal University as an example, the introduction of Stable Diffusion 3.0 enables the generation of high-resolution images from text prompts, far surpassing the efficiency of traditional hand-drawn storyboards. However, this technological advantage has sparked debates about the value of foundational instruction. Students may become overly reliant on AI-generated compositional templates, weakening training in core competencies such as physical lighting and spatial observation. While AI can assist in script logic analysis, works risk falling into formulaic traps without manual refinement of character arcs and narrative pacing. A deeper contradiction emerges in hybrid virtual-reality production environments. the "Virtual Shooting Assistant" system developed by the Central Academy of Drama uses motion capture to generate real-time shot composition suggestions, significantly boosting short-video production efficiency. Yet this may diminish the value of traditional "cinematic language experimentation" in teaching. Acting instructor Zhang Jingying emphasizes that while AI-powered improvisational dialogue tools like Improbotics can inspire actors to transcend formulaic performances, overreliance on their absurd dialogue frameworks may actually hinder students' exploration of authentic emotional resonance. This tension between tool efficiency and the "slow cultivation" logic of artistic education compels educators to redefine the boundaries between "AI assistance" and "creative leadership. "

The impact on teaching ethics is equally significant. Professor Xu Peng from Northeast Normal University points out that large language models (LLMs) predict word sequences solely based on textual data, lacking genuine perception

of the physical world. This results in generated content frequently containing fundamental errors. For instance, a university's initial draft script generated by GPT-4 featured one-dimensional character motivations and formulaic conflict design, requiring teachers to spend extra class hours on "manual corrections. " This disconnect between technological logic and the essence of artistic creation necessitates that educational systems reconstruct a balanced mechanism between "tool application" and "creative incubation. "

Currently, the implementation of AI tools in film and television education faces hardware support bottlenecks. Although Chinese AI algorithm technologies like Deepseek and Manus are developing rapidly, AI tools suitable for teaching remain insufficient. Take Stable Diffusion 3.0 as an example: generating 4K images requires at least 32GB of GPU memory, a demand that standard lab graphics cards struggle to meet. This results in lower-resolution output and heightened copyright risks. Professor Li Ye from the School of Film and Art noted that while the After Effects plugin DeepSeek enhances compositing efficiency, data interoperability with industrial-grade software like Nuke and DaVinci Resolve remains challenging.

The shortcomings in teaching content adaptation are even more pronounced. AI-generated scripts often lack emotional depth. For instance, scripts completed using ChatGPT-4 feature mechanical character dialogue, requiring additional teacher guidance for manual refinement. the limitations of video generation tools in complex scenes are also evident. Director Cui Xiaoliang pointed out that AI-generated particle effects exhibit coarse dynamic details compared to manually keyframed results and struggle to precisely match directorial intent. When simulating rainfall with the Sora model, raindrop trajectories lack physical realism, failing to meet cinematic-grade standards.

Furthermore, the lag in standardizing teaching resource libraries exacerbates the challenge. China's film industry currently lacks a unified Chinese screenplay database, limiting the training effectiveness of Chinese-language screenplay models. Professor Xu Peng emphasizes that the absence of specialized large models for Chinese film art hinders teaching tools from deeply adapting to local creative needs. Simultaneously, gaps in teaching about AI copyright disputes introduce legal risks. Students often overlook the copyright ownership of training data when using AI-generated character designs, potentially triggering disputes.

In film and television production education, the advancement of AI presents unprecedented opportunities while exposing a disconnect between curriculum systems and industry practices. This disconnect hinders students' mastery of cutting-edge technologies and weakens alignment between university talent cultivation and industry demands. the industry has widely adopted AI-driven end-to-end tools, such as automated storyboard generation and intelligent green screen keying, which enhance production efficiency and innovation. However, university curricula have failed to keep pace. Many courses still rely on outdated case studies and lack in-depth exploration of AI's practical applications. For instance, traditional production management curricula remain focused on linear workflows, failing to incorporate AI-enabled parallel production models like AI-assisted budget optimization and intelligent crew scheduling. This makes it difficult for graduates to quickly adapt, exacerbating the structural mismatch between university-trained talent and market needs.

The absence of robust industry-academia collaboration mechanisms further exacerbates this issue. Faculty members struggle to access industry-grade tools, causing teaching content to lag behind practical demands. In contrast, institutions that have reformed curricula through industry partnerships have achieved significant progress in integrating AI technologies. This demonstrates that strengthening industry-academia collaboration is crucial for bridging the gap between academic curricula and industrial practice.

The application of AI also faces copyright and ethical issues often overlooked in teaching. Students using AI tools may trigger legal disputes due to a lack of understanding of training data copyright. This teaching gap not only increases legal risks but also hinders the in-depth application of AI technology. Therefore, higher education institutions must urgently address the disconnect between curriculum systems and industry practice. They need to update teaching content, enhance faculty training, improve university-industry collaboration mechanisms, and prioritize copyright and ethics education to cultivate high-caliber professionals who can truly meet the demands of the AI era in the film and

television industry.

4. Building Pathways for Integrating Artificial Intelligence into Film and Television Production Education

The rapid advancement of AI in film and television production education demands curricula that evolve with the times. Curriculum design should deeply integrate AI throughout the entire production pipeline—from scriptwriting to post-production—ensuring students master cutting-edge techniques while maintaining a focus on artistic essence. First, the curriculum must cover all stages of production. During scriptwriting, AI-assisted tools such as Deepseek, ChatGPT-4, and Wenxin Yiyan can be introduced to help students rapidly generate story frameworks and plot branches, while guiding them to refine drafts and focus on creativity and emotional expression. In character and scene design courses, generative tools like Jiemeng, Keling, and Midjourney should be incorporated, enabling students to produce high-quality design drafts and explore diverse artistic styles. Additionally, foundational theory courses on AI technology—covering topics such as the philosophy of technology, image generation techniques, and language model principles—should be included. This helps students understand how AI tools operate, prevents blind reliance on technology, and enhances their subjective creative agency and creative thinking abilities.

Faculty development is crucial for integrating AI into film and television education. However, many instructors currently possess only basic operational skills, falling short of teaching requirements. Strengthening faculty capabilities is therefore urgent. Universities should implement AI technology training programs, equipping teachers with proficiency in commonly used tools like Runway ML and MidJourney. Workshops on Hollywood virtual production, for instance, can provide in-depth insights into AI applications, enabling teachers to integrate these technologies into their courses. Institutions should also establish a "technology+art" interdisciplinary training system, inviting industry experts and AI engineers to provide hands-on guidance. Furthermore, university-industry collaboration mechanisms should encourage faculty participation in industry projects—such as partnerships with film studios on AI-driven productions—allowing teachers to accumulate practical experience and bring it back to the classroom. Adjusting faculty evaluation systems to incorporate metrics on technological application capabilities, including integrating AI achievements into professional title reviews, can incentivize teachers to actively learn and apply new technologies.

Practical training is a vital component of film and television education, and AI presents new opportunities for hands-on instruction. Institutions can establish industry-academia integration models based on studios and workshops, partnering with film and television companies to bring real AI-driven projects into the classroom. Students can participate in script development, character design, or post-production, enhancing practical skills and industry awareness. Practical training should emphasize interdisciplinary collaboration, forming teams of screenwriters, designers, animators, and other specialists to collectively complete projects, thereby strengthening teamwork and broadening perspectives on AI applications. Universities should also encourage students to apply AI technologies in graduation projects—using AI tools for scripts, character design, or special effects—to demonstrate technical proficiency and innovative thinking, accumulating substantial project experience before entering the workforce. Finally, establishing efficient feedback and mentoring systems, such as regular project review sessions with professional evaluations and individualized guidance, helps students correct mistakes and refine skills. This ongoing support enhances practical abilities, boosts confidence, and fosters creativity. Through these approaches, film and television education can better adapt to the AI era, cultivating versatile professionals who master both technical expertise and artistic creativity.

5. Reflections on Integrating Artificial Intelligence Technology into Teaching

The rapid advancement of AI has rendered teaching resources outdated. Current courses predominantly use generic AI tools and cases, lacking film-industry customization, while cutting-edge applications in visual effects and virtual production are underrepresented, creating a gap between education and industry demands. Future curricula should collaborate with industry to introduce the latest AI cases and technical resources, involve experts in course design, and

bring real projects into classrooms. Dynamic resource libraries should be established for regular updates.

Meanwhile, students often rely excessively on teachers, showing insufficient self-directed learning and initiative in exploring advanced AI features, which hinders deep mastery and innovation. Task-oriented teaching with open-ended projects can stimulate autonomy, while instructors provide online resources and facilitate "AI Exploration Groups" and student sharing sessions to foster a proactive learning environment.

Additionally, ethical and copyright issues—such as ownership of AI-generated content—are increasingly prominent. Current curricula lack sufficient discussion, risking legal and ethical problems. Courses should integrate AI ethics and copyright education via case studies and lectures, helping students recognize legal boundaries and prioritize originality over over-reliance on AI-generated content.

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