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How AI Empowers Traditional Culture Short Videos in the New Media Environment

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Abstract

The rapid development of new media has changed the pattern of information dissemination, with short videos becoming one of the mainstream forms of communication. Traditional culture is facing challenges in inheritance and development in today's society, and it needs to attract the attention and participation of the younger generation by leveraging new technologies and methods to enhance cultural confidence. Nowadays, AI technology is constantly evolving and maturing, achieving remarkable results in image recognition, voice processing, and other aspects, which precisely provides technical support for the creation and development of traditional culture-related short videos. Research has found that AI technology not only can activate new expressions of traditional culture but also create immersive cultural experiences, optimize communication effects, and build digital memory banks. However, the process of AI empowerment also faces challenges such as excessive entertainment and uneven content quality. This study aims to deepen and expand the theory of cultural communication, provide theoretical support for the sustainable development of traditional culture, and promote the long-term and high-quality development of short videos.

Keywords

Artificial Intelligence (AI), Traditional Culture, Short Videos.

1. Introduction

Since the 18th National Congress of the Communist Party of China, the Party Central Committee has always placed the inheritance and development of China's fine traditional culture at a strategic height. The rise of new media, especially the vigorous development of short video platforms, has injected new vitality into the inheritance and innovation of traditional culture [1]. Against the backdrop of the rapid development of new media, short videos, with their unique advantages such as convenient content production, audio-visual integration, and networked dissemination, have become an important medium for the public to obtain information and entertainment, and have gradually formed a comprehensive platform integrating functions such as information acquisition, social interaction, knowledge learning, entertainment and leisure, and local life, which is deeply loved by people.

Therefore, the integration of AI and traditional culture short videos has become an important research direction in the field of cultural communication. Scholars have conducted many studies from different perspectives. Fan Qing expounded on the meanings of the two concepts of artificial intelligence and traditional culture short videos and put forward specific suggestions on how to promote the integration of artificial intelligence and traditional culture short videos [2]. Tian Ye, taking the short video "AI My China" as an example, analyzed the application value of digital technology in the dissemination of traditional culture and explored

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in depth the realization path of digital technology empowering the dissemination of traditional culture based on the case [3]. Fang Huimin conducted research on the communication strategies of Central Plains culture under the background of media convergence [4]. Liang Shuang, combining artificial intelligence technology, clarified the theoretical connotation of intelligent short video production of archives and focused on discussing the value implications of intelligent short videos of archives and the mechanism of artificial intelligence empowering literary creation [5]. However, most of the existing studies focus on the application cases of AI technology in the dissemination of traditional culture, but lack in-depth analysis of the internal mechanism of the integration of technology and culture and systematic research. This paper systematically analyzes the empowerment mechanism of artificial intelligence (AI) technology and its specific combination points, and takes the AI micro-short drama "The Monkey King" of CCTV as a case to explore how to use AI technology to innovatively shape traditional cultural characters.

2. The Essence and Specific Integration Points of AI Empowering Traditional Culture in Short Videos

2.1. Content Creation: AI Revitalizes the "New Expression" of Traditional Culture

2.1.1. Digital Generation of Traditional Elements - Utilizing AI generation technologies (such as AIGC) to transform traditional symbols into short video materials

In the new media environment, artificial intelligence (AI) technology offers new possibilities for the digital generation of traditional culture. Through AI generation technology (such as AIGC, artificial intelligence generated content), traditional symbols can be transformed into short video materials, thereby activating new expressions of traditional culture.

The core of AI generation technology lies in using algorithms and big data analysis to digitize elements such as symbols, patterns, and sounds from traditional culture, generating short video materials that meet modern aesthetic and technical requirements. This technology not only preserves the essence of traditional culture but also attracts the attention of the younger generation through innovative presentation forms.

By using AI generation tools, traditional painting and calligraphy elements can be transformed into Chinese-style illustrations. These illustrations not only retain the essence of traditional art but also undergo innovation and optimization through modern technological means. The generated Chinese-style illustrations can be combined with short videos to tell mythological stories or historical legends, thereby attracting more viewers' attention. For instance, AI technology can be used to digitize the singing styles of traditional operas, generating audio materials that meet modern aesthetic and technical requirements. These audio materials can be combined with short videos to present the highlights of operas and dances. A certain short video platform has utilized AI technology to digitize the singing styles of Peking Opera, generating audio materials with ancient charm and modern appeal, and presenting the highlights of the Peking Opera "Drunk Concubine" in combination with short videos.

2.1.2. Intelligent Reconstruction of Historical Scenes - Restoring

historical scenes through AI image restoration and 3D modeling. A netizen @Shi Cang commented in a Q&A post on the knowledge-sharing community "Zhihu" about "AI and Archaeology": "Most unearthed cultural relics face challenges such as fragility, incompleteness, deformation, and corrosion. To restore their original appearance is very difficult, and any slight mistake may cause irreversible damage." As he said, due to historical reasons, many cultural relics have suffered from damage, destruction, and loss. Traditional cultural relics protection methods are limited by human resources, material resources, and technical means, making the

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protection work extremely difficult. Nowadays, advanced digital technologies such as image recognition, big data analysis, virtual reality, and 3D modeling provide powerful assistance in restoring the original appearance of cultural relics and bringing back their former glory [6].

The Dunhuang Academy uses AI to repair cracks in murals and creates short videos to showcase their complete original appearance. The Palace Museum releases short videos of the "Four Seasons of the Forbidden City" restored by AI, showcasing the dynamic beauty of ancient architecture. By integrating 3D building data, historical documents, and cultural relic data, a spatio-temporal knowledge graph is constructed. AI completes the details of historical scenes based on Qing Dynasty materials, such as clothing and utensils. Utilizing 3D reconstruction technology, the colors and structures of the Forbidden City are accurately restored. Through AI simulation of Emperor Qianlong's daily life and the mechanical decay of ancient buildings, it supports preventive protection decisions. At the same time, it simulates the seasonal light and shadow and weather changes of the Forbidden City, allowing viewers to experience its unique charm.

2.2. Technology Enhancement: AI Creating Immersive Cultural Experiences

2.2.1. Interactive Cultural Experiences - AI + AR/VR Technology Enables Users to "Participate" in Traditional Culture

By integrating technologies such as virtual reality (VR) and augmented reality (AR), audiences can experience traditional culture in an interactive and immersive way, enhancing their sense of participation and memory. By generating understandable and attractive content, it helps young people and the general public to more easily access and understand traditional culture, promoting intergenerational transmission. The aim is to inherit and promote the national spirit, enabling the younger generation to understand and respect history, and enhancing cultural confidence. At the same time, digital means make cultural heritage easier to preserve and promote, thereby attracting more people to pay attention to and engage in cultural dissemination.

The development of VR technology is inseparable from computing power and content creation. High-performance computing devices and graphics processing units (GPUs) can render complex virtual scenes in real time, providing smooth visual effects. In terms of content creation, VR requires a rich variety of virtual environments and applications to meet the different needs and interests of users. Due to the nature of art collections, ordinary people rarely have the opportunity to come into contact with masterpieces. However, VR technology provides modern society with an opportunity to deeply perceive artistic classics and plays a special role in the preservation of traditional cultural heritage [7].

Nowadays, short video platforms have launched "AI Hanfu Try-on", which combines historical background explanations of clothing culture. Users only need to upload their photos or turn on the camera, and the AI technology can accurately identify facial and body features, fitting various styles of Hanfu onto the user, allowing them to instantly see themselves wearing Hanfu. At the same time, it can generate dynamic try-on videos based on different scenes and music, enhancing the experience.

2.2.2. Intelligent Voice and Dialect Protection - AI Voice Synthesis Technology Revives Endangered Dialects or Ancient Sounds

Voice synthesis technology, which converts text into speech, endows machines with the ability to speak like humans. It can convert text into highly natural-sounding speech in any situation. The speech generated by this technology can cover the speaker's identity, emotional state, and regional accent, among other rich elements, allowing it to present personalized speech in different situations and providing users with an excellent experience.

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However, to synthesize high-quality speech, two conditions must be met: one is to be based on rules such as semantics, vocabulary, and phonetics; the other is to accurately understand the content of the text [8]. This requires compliance with prosodic rules, not only having its own prosodic features but also statistically analyzing the prosodic features in natural language to adapt to different application scenarios and express customized speech.

Nowadays, due to the migration of the younger generation to cities, some local dialects are facing the risk of extinction, lacking inheritors. However, AI voice synthesis technology can precisely preserve these cultures. For example, AI can be used to simulate the pronunciation of the official language of the Song Dynasty to narrate the short video "Along the River During the Qingming Festival". Based on its content, it can understand the historical background, details of the painting, and cultural significance, and generate narration that reflects the pronunciation characteristics and phonetic system of the official language of the Song Dynasty.

2.3. Communication Optimization: Algorithm-driven Precise Reach

The pursuit of personal interests by netizens increases the probability of organic matching analyzed and screened by AI algorithms. Our historical records on the internet and so on expose our personal preferences, allowing large models to more accurately recommend video content that we are interested in to us.

Moreover, empowered by AI algorithms, it can identify users' potential demand for traditional cultural content and divide traditional cultural content into multiple vertical fields, making it more accurately pushed to users.

Douyin uses AI algorithms to find users interested in martial arts, combines traditional martial arts with modern elements, and precisely pushes related content. It also stimulates user interaction through challenge tags and invites martial arts masters and well-known bloggers to enhance influence, making related content gain high play and interaction volumes overseas.

2.4. Cultural Inheritance: AI Constructs Digital Memory Banks

2.4.1. Digital Preservation of Endangered Cultures - AI Collects, Analyzes, and Stores Traditional Cultural Data

In the face of the surging tides of time, many precious endangered cultures are on the verge of vanishing. Fortunately, AI technology has brought new hope for the preservation of endangered cultures. By collecting, analyzing, and storing traditional cultural data, it builds a solid bridge between endangered cultures and modern technology.

The powerful data collection ability of AI is the cornerstone of the digital preservation of endangered cultures. Utilizing technologies such as image recognition and voice recognition, AI can quickly and accurately collect various elements of endangered cultures.

Quanzhou puppetry has a long history, but some manipulation techniques have been lost over time. With the help of AI technology, an AI teaching system for Quanzhou puppetry has emerged. Through in-depth mining of existing puppetry movement data and the application of motion transfer algorithms, the system has successfully restored seven lost manipulation techniques, laying a solid foundation for the inheritance of Quanzhou puppetry.

The forging process of Miao silver ornaments is complex, and traditional transmission faces challenges. The Miao Silver Forging VR Workbench, relying on virtual reality technology, creates a realistic scene. By using sensors to capture key parameters such as hammering force and temperature in real time and presenting them visually, it immediately warns and provides correction plans when parameters deviate from the standard range, facilitating the inheritance and development of the craft.

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2.4.2. Intelligent Content Innovation Experiment - AI Mines Traditional Cultural Elements and Generates Innovative Combinations

AI excels at large-scale data analysis and can conduct a thorough scan of traditional cultural materials. From ancient poetry and folk tales to exquisite traditional crafts and unique folk festivals, these cultural elements all become the targets of AI's mining. Through natural language processing technology, AI can precisely extract imagery and allusions from classical literature; by using image recognition technology, it can analyze aesthetic symbols in traditional paintings and architecture.

The Tsinghua University team used AI as a tool to deeply analyze "Shan Hai Jing". With advanced natural language processing technology, it precisely extracted the characteristics of mythical creatures such as their forms, habits, and meanings, converting them into design elements. By integrating modern aesthetics and trendy elements, it created novel and unique modern IP images and produced short videos to visually demonstrate the integration of traditional culture and modern technology.

3. How to Avoid Excessive Entertainment in the Process of Cultural Dissemination by AI

The entertainment-oriented development of AI is a typical manifestation of the trend of pan-entertainmentism. This trend regards fun, leisure, and pleasure as the primary purpose of human existence and promotes the idea that everything can be entertaining. Postman believes that contemporary society is experiencing a trend of "entertainment to death". The main reasons for the entertainment-oriented development of AI are technological empowerment, capital-driven forces, and changes in demand. Among them, technological empowerment is the logical support, thanks to the increasingly powerful capabilities of AI large models, the increasingly convenient natural language processing capabilities, and the increasingly sophisticated algorithm technologies. Capital-driven forces are the primary cause, as the unlimited expansion of capital for profit leads the AI industry to follow the logic of profit growth, embracing commercialization, entertainment, and utilitarianism. Changes in demand are an important inducement for the entertainment-oriented development of AI, as the industry has to actively cater to the public's entertainment psychology and consumption concepts to meet people's endless pursuit of life's pleasures, entertainment interests, and behavioral joys.

(1) Technological Regulation: Technology uses a cultural value recognition system to monitor the entertainment index in real time and assess content quality through multimodal analysis. By using multi-objective optimization algorithms, it dynamically balances user appeal and cultural inheritance to ensure that the generated content maintains both dissemination effectiveness and cultural depth, achieving an intelligent balance between entertainment and seriousness. The system supports threshold warnings and automatic corrections to ensure precise regulation of cultural dissemination.

(2) Content Stratification: A three-level content stratification system is established for precise dissemination: the popular science type focuses on the authority of cultural knowledge, the experience type emphasizes interactive immersion, and the entertainment type moderately innovates in expression. AI intelligently matches content forms based on user profiles, striking a balance between knowledge accuracy and dissemination appeal, meeting the needs of different audiences while maintaining cultural boundaries.

(3) Construction of a Dissemination Ecosystem: A digital resource library of traditional culture is built to provide high-quality training data for AI, while cultivating compound talents who understand both culture and technology. A virtuous ecosystem of "culture + technology" integration is created to inject innovative impetus into cultural inheritance in the intelligent era.

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(4) Feedback Regulation System: By monitoring users' cultural cognition data in real time, an intelligent feedback loop system is constructed. Based on dimensions such as user understanding and acceptance, the AI output strategy is dynamically optimized to achieve a continuous iteration mechanism of "evaluation - adjustment - optimization", ensuring precise and controllable cultural dissemination effects.

4. Conclusion

As a tool, the core objective of AI is to infuse new vitality into traditional culture rather than replace its humanistic essence. This study focuses on the role of AI in empowering traditional culture-related short videos in the new media environment, conducting a multi-dimensional analysis. It is found that AI can play a role in content creation, technological enhancement, dissemination optimization, and cultural inheritance, such as generating traditional elements digitally, creating immersive experiences, precisely pushing content, and building digital memory banks. The micro-drama "The Monkey King" is a successful example. At the same time, strategies to address the issue of AI's entertainment-oriented nature are proposed [9].

The innovation of this research lies in systematically analyzing the mechanism of the integration of technology and culture, conducting multi-field integrated analysis, expanding the boundaries of cultural communication theory, and providing practical guidance for the development of traditional culture short videos. However, the research still has limitations, such as limited data sources, a lack of quantitative research, and insufficient exploration of ethical and legal issues. Future research can expand the scope of data collection, strengthen quantitative analysis, and delve deeper into ethical and legal issues to further promote the development of this field.

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