Analysis of the Factors Influencing the Effectiveness of English AI Digital Humans in the Dissemination of Chinese Culture in the Digital Intelligence Era

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Abstract: This study focuses on the role of English AI digital humans in the dissemination of Chinese culture, thoroughly analyzing the factors that influence their effectiveness. These factors include digital human image design, language expression capabilities, cultural content quality, and the cultural background of the target audience. Through case analysis and empirical research, the mechanisms of influence of these factors are revealed, providing theoretical support for understanding the role of English AI digital humans in cross-cultural communication.

Key Words: English AI Digital Humans; Cultural Dissemination; Influencing Factors; Chinese Culture

1. Introduction

1.1 Research Background
1.1.1 Technological Development in the Digital Intelligence Era and the Current Status of AI Digital Humans
In the rapidly evolving digital age, we have entered the "Digital Intelligence Era, " full of opportunities and challenges. Breakthroughs in cutting-edge technologies such as artificial intelligence, computer graphics (CG), and motion capture have transformed AI digital humans from science fiction concepts into reality, emerging as a new force in the field of cultural dissemination. AI digital humans, created through computer technology, possess multiple human-like characteristics, including appearance, performance, and interaction. They interact with the outside world through digital display devices, integrating various advanced intelligent technologies. They drive the development of various social industries and expand human experience, ushering in a new era of human-computer symbiosis[1] and serving as a key entry point to the metaverse and an important application of artificial intelligence in the field of graphic animation. In recent years, significant progress has been made in AI digital human technology, with expanding application scenarios. From virtual worlds, media entertainment to education and commerce, digital human hosts, virtual customer service representatives, and cultural tour guides have emerged, enhancing the efficiency of information transmission and improving user experience. the number of global virtual digital human enterprises saw a significant increase between 2020 and 2022. Domestic policies have also strongly supported the development of the digital human industry, such as including it in the "14th Five-Year Plan. " Beijing has also issued an action plan to clarify industry development goals. Despite this, the AI digital human industry is still in its infancy, with its potential in cultural dissemination yet to be fully explored. In recent years, with the reduction in technological costs, virtual digital humans have been widely applied in multiple industries and have become a new carrier for the inheritance of intangible cultural heritage[2] .
1.1.2 The Importance of English AI Digital Humans in Cross-Cultural Dissemination
In the context of globalization, cultural exchange and dissemination have become important manifestations of a nation's soft power. However, language and cultural differences pose challenges to cross-cultural communication. English, as the most widely used language globally, is a key bridge for cross-cultural dissemination. English AI digital humans, with their powerful language processing capabilities and high interactivity, have become effective ambassadors for disseminating Chinese culture. They can

bridge language barriers and vividly present China's rich cultural history, heritage, and social development experiences to a global audience in an engaging manner. Leveraging natural language processing and affective computing technologies, English AI digital humans can engage in deep emotional exchanges with users from diverse cultural backgrounds, avoiding cultural conflicts and enhancing the appeal and affinity of Chinese culture. Through various media formats, such as videos, live broadcasts, and interactive games, English AI digital humans can tell compelling Chinese stories and showcase cultural charm. Additionally, by utilizing big data and social media platforms, they can accurately grasp the interests of international audiences and achieve personalized dissemination, thereby enhancing the international influence of Chinese culture.

1.1.3 The Current Status and Challenges of Chinese Culture in Global Dissemination
The global dissemination of Chinese culture has made certain progress. the state places great emphasis on the construction of international cultural communication capabilities, promoting Chinese culture to the world through various channels such as Confucius Institutes, official media, and the Internet. Confucius Institutes have become important venues for people in various countries to learn Chinese language and culture and to understand contemporary China. Official media outlets such as Xinhua News Agency and China Central Television showcase China's image through international channels. Social media platforms like Weibo, WeChat, Douyin, and TikTok have also emerged as new forces in the dissemination of Chinese culture. However, Chinese culture still faces many challenges in international dissemination. the international communication capabilities, discourse power, and national comprehensive strength are not well matched. the global cultural landscape is characterized by a "West-strong, China-weak" situation, with China lagging behind major world powers in international public opinion guidance and the scale and quality of cultural industries. Limitations in communication thinking lead to rigid expression methods, overemphasis on positive publicity, and neglect of the characteristics and needs of overseas audiences. the communication model is one-way, hindering two-way interaction and weakening the effectiveness of dissemination. the communication channels are outdated, often relying on official mainstream media and traditional media forms, with a monotonous and conservative content presentation. Therefore, innovating communication methods and enhancing dissemination effectiveness are urgent tasks. English AI digital human technology offers a new direction for addressing these issues.

1.2 Research Purpose and Significance
1.2.1 English AI Digital Humans in the Dissemination of Chinese Culture
In the context of globalization, cultural exchange is increasingly important, and how to effectively disseminate Chinese culture has attracted significant attention. English AI digital humans, as an emerging communication tool, offer a new solution to this problem. However, there is currently limited research on their effectiveness and influencing factors in cultural dissemination. This study aims to fill this gap by analyzing the performance of English AI digital humans in international dissemination and exploring their actual effectiveness and key influencing factors in disseminating Chinese culture. In today's era, the pace of technological development is accelerating. Not only does it provide new ways for the dissemination of English culture, but also constantly absorbs new elements and develops new modes of expression. Therefore, we can observe the continuous emergence of new vocabulary, expressions, and cultural phenomena in English culture, injecting new vitality into it[3] .
1.2.2 Providing a Theoretical Basis for Future Research and Practice
With the development of digital technology, the application prospects of AI digital humans in the field of cultural dissemination are broad. However, relevant theoretical research lags behind, lacking a systematic framework and practical guidance. This study, by thoroughly exploring the effectiveness and influencing factors of English AI digital humans in disseminating Chinese culture, provides a solid theoretical basis for future research and practice from aspects such as building a research framework, proposing specific suggestions, and promoting interdisciplinary integration. This will help address complex

issues in cultural dissemination.

1.3 Research Methods
This study employs a combination of literature review, case analysis, and empirical research. the literature review is used to organize the current applications and theoretical foundations of digital intelligence technology in cultural communication, exploring the advantages and challenges of English AI digital humans in cross-cultural communication. Representative cases from platforms such as YouTube and TikTok are selected for in-depth analysis of the application effects of English AI digital humans. Empirical research is conducted through surveys and data analysis to assess audience acceptance and communication effectiveness, verifying the conclusions drawn from theoretical analysis and case studies. This approach provides a multi-dimensional perspective for the research and offers support for future studies and practices.

2. The Current Status and Advantages of English AI Digital Humans in Disseminating Chinese Culture

2.1 Definition and Characteristics of English AI Digital Humans
2.1.1 Technological Basis and Functions
English AI digital humans are constructed based on multiple technologies, including artificial intelligence, computer graphics, and speech synthesis. Natural language processing enables them to understand user inputs, while speech synthesis technology generates fluent and natural English expressions. Computer graphics create lifelike human images and movements, facilitating interaction and communication with users. They are equipped with functions such as multilingual dialogue, information retrieval, and content generation, allowing them to quickly and accurately respond to various questions about Chinese culture.
2.1.2 Unique Advantages in Cultural Dissemination
English AI digital humans integrate multiple modalities, including voice, text, images, and gestures, to convey information. For example, when introducing traditional Chinese festivals, they can provide detailed explanations in English about the origins and customs of the

festivals, display relevant images and videos, and use vivid gestures to offer an immersive experience to the audience. They can also interact with global audiences in real-time, adjusting content and expression methods based on feedback to enhance the relevance and effectiveness of dissemination.

2.2 Current Status and Case Analysis
2.2.1 Existing Case Analysis
The English AI tour guide digital human launched by the Palace Museum can fluently introduce the history, architecture, and cultural relics of the Forbidden City to foreign visitors. Through mobile applications, visitors can interact with it to understand the stories behind the exhibits, enhancing their tour experience and deepening their understanding of ancient Chinese palace culture. Some media outlets have created English cultural AI anchors who introduce Chinese poetry and traditional arts in a professional and lively manner through news reports and special programs, attracting a large number of overseas viewers and expanding the reach of Chinese culture.
2.2.2 Dissemination Channels and Audience Feedback Overview
The channels for English AI digital humans to disseminate Chinese culture mainly include official websites, social media platforms, and mobile applications. On social media, the sharing and interaction volumes of related content continue to grow. Audience feedback is generally positive, with many believing that English AI digital humans make Chinese culture more understandable and interesting, breaking down language and cultural barriers. However, some audiences hope for more lifelike digital human images and richer emotional expressions.

2.3 Potential Value and Challenges
2.3.1 Potential Value
With the help of the Internet and AI technology, English AI digital humanscan disseminate Chinese culture 24/7, breaking through the limitations of time and space to rapidly deliver information to every corner of the globe. This significantly enhances the efficiency and coverage of dissemination. the younger generation tends to prefer digital and interactive ways of obtaining information, and English AI digital humans align well with this preference, attracting their attention to Chinese

culture and fostering interest and identification with it.

2.3.2 Challenges Faced

Despite continuous technological advancements, English AI digital humans still have limitations in emotional understanding and expression, as well as in handling complex contexts. This may lead to misunderstandings or less human-like responses during interactions with audiences. Given the vast cultural differences across countries and regions, ensuring that the disseminated Chinese cultural content remains authentic while being accepted and understood by audiences from diverse cultural backgrounds, and avoiding cultural misunderstandings, is an urgent issue to be addressed.

3. Factors Influencing Dissemination Effectiveness

3.1 Digital Human Image Design

3.1.1 Appearance and Cultural Identification

The appearance of digital humans is crucial for establishing emotional connections with audiences. Skillfully incorporating traditional cultural symbols such as costumes, hairstyles, and accessories can quickly evoke a sense of identification with Chinese culture. For example, a digital human dressed in Hanfu or cheongsam, with a classical hairstyle, visually showcases the charm of Chinese culture and enhances its cultural attributes, providing an entry point for cross-cultural communication. High-precision modeling and rendering technologies enable digital humans to display lifelike skin textures, vivid expressions, and natural movements, increasing their appeal. Personalized design elements, such as unique costume styles or signature accessories, can help digital humans stand out and enhance their recognizability and memorability.

3.1.2 Cross-Cultural Adaptability of the Image

In cross-cultural communication, the image of digital humans must consider the acceptance levels in different cultural contexts. Different cultures have varying standards of beauty and interpretations of visual symbols. For instance, some cultures prefer realistic styles, while others are more receptive to cartoonish or exaggerated designs. When designing digital human images, it is essential to conduct thorough research on the cultural preferences of the target audience to ensure that the image

is well-received across different cultural environments. the English AI tour guide digital human launched by the museum, which combines traditional Chinese costumes with a modern technological design, successfully attracts the attention of foreign tourists and serves as a model for cross-cultural communication.

3.2 Language Expression Capability

3.2.1 Accuracy and Naturalness of Language

Language is the core tool for cultural dissemination, and the language expression capability of English AI digital humans directly affects the effectiveness of communication. Natural language processing (NLP) technology ensures grammatical and lexical accuracy and authenticity, generating expressions that conform to English language conventions and avoiding misunderstandings. By integrating semantic understanding and contextual analysis, digital humans can accurately grasp user intentions and provide precise responses. the diversity of English culture requires digital humans to adjust their language style according to different communication scenarios. In educational settings, the language should be concise, clear, and well-organized; in entertainment contexts, it should be more engaging and interactive. Digital humans also need to flexibly switch language styles based on the context. For example, when introducing Chinese culture, they should adopt a vivid narrative style, while using a more rigorous language for academic explanations.

3.2.2 Affinity of Voice and Tone

Although current speech synthesis technology has made progress in generating natural and fluent speech, maintaining naturalness and rich emotional expression in complex contexts remains a challenge. Additionally, it is necessary to optimize the technology to adapt to the pronunciation characteristics of different languages and dialects, ensuring the accuracy and affinity of the voice. Tone is an important component of language expression, conveying emotions and attitudes. In cultural dissemination, digital humans can establish emotional resonance with the audience by adjusting their tone. A gentle and friendly tone can enhance audience acceptance, while an enthusiastic tone can stimulate their interest and participation. Therefore, digital humans

need the ability to dynamically adjust their tone based on the content and context to improve the effectiveness of cultural dissemination.

3.3 Accuracy and Attractiveness of Cultural Content

3.3.1 Accuracy of Cultural Content

In cross-cultural communication, English AI digital humans should accurately convey the core values and connotations of Chinese culture to avoid misunderstandings due to language or cultural differences. When introducing traditional Chinese festivals, it is essential to provide in-depth explanations of their historical origins, cultural significance, and traditional customs to prevent stereotyping. When discussing traditional Chinese arts, they should be interpreted in the context of specific plays and historical backgrounds to avoid cultural misinterpretations. the cultural content disseminated by English AI digital humans should be based on authoritative academic research and official sources. For example, when introducing Chinese history, classic historical texts can be cited, and when interpreting traditional culture, works by well-known scholars can be referenced. Additionally, the sources of the content should be clearly indicated to enhance the transparency and credibility of the dissemination.

3.3.2 Attractiveness and Innovation of Content

Engaging stories can capture the audience's attention and evoke emotional resonance. English AI digital humans can combine classic stories with modern values. For example, the story of Sun Wukong can be presented as a pursuit of freedom and a brave struggle, making it more relevant to contemporary times. Creating situational content, such as simulating ancient Silk Road trade scenes, can immerse the audience and enhance the sense of immersion in cultural dissemination. Integrating various forms of media, such as video, audio, and images, can provide a comprehensive display of Chinese culture. High-quality video clips can showcase natural landscapes, traditional architecture, and folk activities; audio stories can be recorded for the audience to listen to; and visually appealing e-books or web pages can be designed to introduce various aspects of Chinese culture, meeting the preferences and needs of different

audiences.

3.4 Cultural Background of the Target Audience

3.4.1 Cultural Cognitive Differences

Audiences from different cultural backgrounds have significant differences in cognitive patterns and acceptance habits. Western audiences tend to prefer logical and well-organized presentation of information, while Eastern audiences place more emphasis on emotional resonance and holistic understanding. When disseminating Chinese culture, English AI digital humans need to adjust the form of content presentation based on different cultural backgrounds. For Western audiences, clear logical explanations and case analyses can be used to introduce the philosophical ideas of Chinese culture; for Eastern audiences, emotional language and vivid stories can be employed to convey cultural connotations. When introducing traditional Chinese festivals, the origins, customs, and symbolic meanings should be explained to Western audiences, while the emotional bonds and family values of the festivals should be emphasized to Eastern audiences. Through questionnaires, focus group interviews, and other methods, it is important to gain a deep understanding of the different cultural backgrounds of audiences, their levels of understanding of Chinese culture, their points of interest, and their acceptance barriers. For example, it has been found that Western audiences are interested in traditional Chinese martial arts but have limited understanding of their cultural connotations. English AI digital humans can design specialized content modules that combine martial arts performance videos with in-depth explanations of their cultural roots, philosophical ideas, and spiritual connotations. Utilizing social media platform data analysis, the hot topics and interaction patterns of cross-cultural audiences can be understood to optimize dissemination strategies. For instance, based on the popular topic tags related to Chinese culture on TikTok, relevant content can be created to attract audience interaction.

3.4.2 Digital Literacy and Technology Acceptance of the Audience

Audiences of different ages, regions, and educational backgrounds have varying levels of digital literacy and acceptance of

technology. the younger generation has a high acceptance of new technologies and is familiar with digital communication channels. English AI digital humans can attract them through short videos and live broadcasts. Middle-aged and older audiences are more suited to a combination of traditional media and digital technology, such as incorporating AI digital human explanations of Chinese culture into television programs. the level of digital technology adoption varies across different regions, which affects audience acceptance. In developed countries and regions, where digital infrastructure is well-established and audience acceptance of AI technology is high, more advanced dissemination methods can be employed. In developing countries and regions, it is necessary to consider the adoption rate of digital devices and network conditions and adopt simpler and more efficient dissemination methods, such as lightweight applications on mobile devices for spreading Chinese culture. Based on the digital literacy and acceptance levels of the audience, differentiated dissemination strategies should be formulated. For audiences with high digital literacy, immersive cultural experiences using virtual reality (VR) and augmented reality (AR) technologies can be provided. For those with lower digital literacy, the operation process should be simplified, and intuitive and easy-to-understand content forms should be provided, such as illustrated brochures or short videos. Combining offline activities with online dissemination can also be used to attract their participation.

4. Conclusion

4.1 Research Summary

This study has thoroughly analyzed the factors influencing the effectiveness of English AI digital humans in disseminating Chinese culture in the digital intelligence era, covering four aspects: digital human image design, language expression capability, accuracy and attractiveness of cultural content, and the cultural background of the target audience. Image design, through visual presentation, evokes emotional resonance and cultural identification among the audience, affecting their attention to the content being disseminated. Language expression capability is crucial for the quality of information

transmission; accurate, natural, and affable expressions facilitate cultural dissemination. the accuracy of cultural content is the foundation of dissemination, while its attractiveness and innovation stimulate audience participation. the cultural background of the target audience determines the direction of dissemination strategies. Adjusting the content and methods of dissemination based on audience differences can enhance the effectiveness of dissemination.

4.2 Research Limitations and Future Outlook

The current study has certain limitations. the case analysis and empirical research mainly focused on well-known platforms and popular fields, with insufficient exploration of niche platforms and specialized applications of English AI digital humans. This may affect the comprehensiveness of the research findings. Additionally, the current stage of AI technology development imposes limitations on the language expression and emotional interaction capabilities of English AI digital humans, which in turn affects the in-depth assessment of their dissemination effectiveness. the research methods employed were not sufficiently diverse, lacking in-depth interviews with audiences and long-term tracking studies, making it difficult to understand changes in audience attitudes and deeper needs.

In the future, with continuous advancements in AI technologies such as natural language processing and computer vision, English AI digital humans are expected to possess more powerful capabilities. Future research could focus on how new technologies can enhance the effectiveness of English AI digital humans in disseminating Chinese culture, as well as on developing innovative forms of dissemination and application scenarios. It is also important to expand the scope of cross-cultural research, investigating the integration and conflicts between different cultures in the context of cultural dissemination and exploring methods for incorporating diverse cultural elements. the sample size should be expanded to include a wider range of English AI digital human cases across various types and platforms, as well as different audience groups. the research methods should be enriched by combining in-depth interviews, focus group discussions, and

long-term tracking surveys to provide more targeted and effective recommendations for practice.

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