

Research on Non-heritage Cultural Innovation and Inheritance Based on AI Visual Technology in the Perspective of New Quality Productivity

-- Taking Lizhuang Grass Dragon as an Example

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Abstract: Under the new quality productivity perspective, artificial intelligence (AI) visual technology provides new opportunities for the innovation and inheritance of non-heritage culture. The Grass Dragon of Lizhuang, as a unique cultural treasure of Lizhuang Town, Cuiping District, Yibin City, not only carries a profound historical and cultural heritage, but also shows the traditional wisdom and creativity of the Chinese nation with its unique art form and production process. In this paper, we will take the Grass Dragon dance of Lizhuang Town, Cuiping District, Yibin City as an example to explore how to use AI visual technology to promote the digital transformation and dissemination of non-heritage culture. The study first analyses the current situation of the innovative inheritance of non-heritage culture in the case of the Grass Dragon in Lizhuang, and then introduces the significance of the innovative inheritance of non-heritage culture based on AI visual technology in the perspective of the new quality productivity, as well as the measures of the innovative inheritance of non-heritage culture based on AI visual technology. Through case studies, the paper shows how these technologies can enhance public awareness and participation in NRH culture, thus promoting the protection and inheritance of NRH culture. Finally, the study points out the challenges faced in practical application and proposes corresponding solutions, emphasising the importance of the deep integration of technology and culture in the innovation of non-heritage culture. The study provides new perspectives and practical paths for promoting the combination of traditional culture and modern technology.

Keywords: Lizhuang Grass Dragon; Artificial Intelligence; Non-Heritage Culture; Innovation and Inheritance.

1. Analysis of the Current Situation of Cultural Innovation and Inheritance of Intangible Cultural Heritage

In today's society, intangible cultural heritage, as an important part of China's outstanding traditional culture, carries rich historical and cultural values. However, with the acceleration of the modernization process, many intangible cultural heritage projects are facing a crisis of inheritance and are in urgent need of innovation and development. Taking the Grass Dragon dance of Lizhuang Town, Cuiping District, Yibin City as an example, we can see the current situation of inheritance and innovation path of NRH culture in the current context.

The ancient town of Lizhuang has the reputation of "China Lizhuang", a long history and culture, and rich tourism resources, however, due to the shallow development of tourism resources, the development of tourism in the ancient town of Lizhuang is not ideal³⁴. As a national intangible cultural heritage, Lizhuang Grass Dragon Dance has a history of more than a thousand years and embodies strong local cultural characteristics. Constructed with natural materials such as bamboo bones, straw and twine, the Grass Dragon dance is lifelike when it dances, showing the concept of harmonious coexistence between human beings and nature. This traditional folk activity is not only an important symbol of local culture, but also a reflection of the unique identity of

Lizhuang Town. However, in recent years, due to the low visibility of the Grass Dragon Dance, the lack of effective publicity and promotion and cultural excavation and other factors, this cultural treasure is facing a serious challenge of inheritance. Under the background of cultural and tourism integration, it is worth reviewing and pondering how to realize the living inheritance of the thick historical and cultural deposits of Lizhuang Ancient Town, and how to comply with the trend of the times and revitalize the new vitality and vigor³⁴.

At present, the current status of the inheritance of the Grass Dragon in Lizhuang is not optimistic. Most of the performers of the Grass Dragon Dance are older people, and young people have little interest in this traditional art form. The research shows that the reason why the skill transmission of the Grass Dragon dance is constrained is due to the lack of systematic training and education for modern young people. Although some non-heritage projects have begun to experiment with digital preservation, the Lizhuang Grass Dragon is still insufficiently explored in this field and still faces a huge gap between tradition and modernity.

Against this background, it was decided to utilize AI visual technology to add to the innovative inheritance of non-heritage culture. This technology is not only able to digitally protect non-heritage culture, but also to enhance the dissemination of culture through image recognition and video analysis. Using AI technology to identify and analyze the

patterns and motifs of the Grass Dragon dance can effectively preserve these unique artistic elements. In addition, with the help of virtual reality technology, such as the creation of a “digital museum”, it is possible for the audience to experience the charm of the Grass Dragon dance in an immersive way, enhancing the sense of participation and interactive experience.

In recent years, the development of interactive display methods combined with AI technology has gradually become a new trend. This approach not only attracts more young audiences, but also promotes public interest in and awareness of non-heritage culture. Through these innovative initiatives, the Lizhuang Grass Dragon is expected to take on new life and vitality. By utilizing social media and online platforms, the spread of the Grass Dragon dance will be greatly expanded, attracting audiences from different regions to understand and appreciate this folk art.

In the face of the inheritance dilemma, the future innovation and inheritance of the Grass Dragon in Lizhuang will require efforts in many aspects. First of all, it is necessary to strengthen the publicity of the Grass Dragon dance and carry out cultural exchange activities to enhance its popularity. By organizing festivals and community performances, more people can participate in it and enhance their understanding and love of the Grass Dragon dance. Secondly, the education and training of the younger generation should be emphasized to cultivate a new generation of inheritors of the Grass Dragon Dance. Relevant courses should be offered in schools and communities to stimulate children's interest, so that they can experience and learn the importance of traditional culture through participation. At the same time, it is also crucial to explore a more effective digital preservation and dissemination model by combining AI technology. By establishing a digital archive to record the performance videos, music and related materials of the Grass Dragon Dance, it can not only provide reference for subsequent research, but also support future performances. Through the application of these digital technologies, the Lizhuang Grass Dragon Dance will be able to better preserve its traditional skills and build on them for innovative development.

In conclusion, as an important part of China's intangible cultural heritage, the inheritance and development of the Lizhuang Grass Dragon is a matter of great urgency. In the context of modern society, through technological innovation and cultural integration, it can not only provide new opportunities for the protection of intangible cultural heritage, but also open up new paths for its promotion and inheritance among the younger generation. Only through the cooperation and efforts of many parties can we ensure that this precious cultural heritage can be inherited and carried forward, so that the Lizhuang Grass Dragon Dance can shine more brightly.

2. Significance of Non-Heritage Cultural Innovation and Inheritance Based on AI Visualization Technology under the Perspective of New Quality Productivity

2.1. Cultural Connotation

Intangible cultural heritage (ICH) is a vital part of China's rich traditional culture, encapsulating deep historical and cultural significance while reflecting the national spirit and

cultural identity. The protection, inheritance, and utilization of ICH are crucial for maintaining historical continuity, reinforcing cultural confidence, promoting exchanges and mutual understanding among civilizations, and building a strong socialist cultural nation³⁴. In today's rapidly evolving society, ICH faces numerous challenges, such as the aging of its custodians, a sense of disconnection among younger generations, and a lack of effective communication channels. Thus, the question of how to leverage modern technology—especially AI visualization technology—to innovate and perpetuate non-heritage culture has become a focal point for scholars and practitioners alike.

The art of Lizhuang Grass Dragon Dance is a national folk cultural heritage rooted in the rich history of Lizhuang Town, Cuiping District, Yibin City—a recognized historical and cultural town³⁴. The Grass Dragon is crafted from bamboo, straw, and hemp thread, making it entirely natural and environmentally friendly. As a unique folk activity, the Grass Dragon Dance is a significant part of non-heritage culture, with a long history and unique artistic appeal that deserves broader attention and protection.

2.2. Significance of the Selected Topic

New quality productivity emphasizes the integration of innovative technologies to elevate both economic and cultural development amidst technological revolutions and productivity changes. Utilizing AI visualization technology enables the digital protection and dissemination of non-heritage culture, enhancing its relevance and impact in contemporary society. For instance, despite the rich historical and cultural background of the Grass Dragon Dance, it remains relatively unknown to the public due to inadequate promotion. By employing AI visualization techniques, we can not only digitally archive the traditional skills associated with the Grass Dragon Dance but also use emerging technologies like virtual reality to provide engaging cultural experiences that spark public interest and recognition.

The application of AI visualization technology offers new forms of expression and dissemination for non-heritage culture. Traditional methods of sharing ICH are often limited to live performances or exhibitions. However, AI can facilitate a multidimensional display of such cultures. For example, image recognition technology can analyze and showcase the intricate patterns of the Grass Dragon Dance, helping audiences gain a clearer understanding of its cultural context and artistic features. Furthermore, by leveraging social media and online platforms, the reach of non-heritage culture can be significantly expanded, allowing more individuals to engage with the unique artistic traditions of Lizhuang.

Moreover, the pathways for non-heritage cultural inheritance and innovation explored in the project are applicable and scalable to other non-heritage initiatives. The insights gained from the digital protection, virtual reality displays, and intelligent education related to the Lizhuang Grass Dragon Dance can serve as practical models for the inheritance and innovation of various non-heritage cultures. This process not only facilitates cultural preservation but also aids in fostering local economic development and the advancement of the cultural industry, achieving a symbiotic relationship between culture and economy.

In conclusion, within the framework of new quality productivity, the innovative inheritance of non-heritage

culture through AI visualization technology represents not only a means of protecting and perpetuating traditional culture but also a critical approach to integrating culture and economy for sustainable development. By harnessing the power of modern technology, we can revitalize the Lizhuang Grass Dragon Dance, allowing it to play a significant role in contemporary cultural transmission. Through the exploration of innovative pathways for inheritance, non-heritage culture can be seamlessly integrated into modern life, serving as a vital cultural link between history and the future.

3. Measures of Non-heritage Cultural Innovation and Inheritance Based on AI Visualization Technology in the Perspective of New Quality Productivity

3.1. Research objectives

The project is dedicated to exploring the innovative application of AI visualization technology in the inheritance of non-heritage culture under the perspective of new quality productivity, taking the example of the Grass Dragon of Lizhuang, Cuiping District, Yibin City. The core objective of this study is to reveal the unique charm and inheritance value of the Lizhuang Grass Dragon in modern society through in-depth analysis of the cultural connotation, artistic characteristics and historical value of the Dragon, and to explore how to utilize the advanced AI visualization technology as a starting point to open up new paths for the inheritance and innovation of non-heritage culture.

Specifically, this study aims at the following.

3.1.1. Deeply explore the potential and value of AI visualization technology in the inheritance of non-heritage culture.

This includes not only the evaluation of existing AI technologies, such as image recognition and deep learning, in the collation and analysis of NRM cultural materials, but also involves exploring how these technologies can enhance the visualization and interactivity of NRM culture so that it can become a bridge between the past and the future.

3.1.2. Comprehensively analyze the artistic characteristics and cultural connotations of the Lizhuang Grass Dragon Dance.

Through a detailed examination of its production process, performance form and ritual significance, it reveals the unique value of the Lizhuang Grass Dragon as an intangible cultural heritage, especially how to understand its importance as a symbol of regional cultural identity in the context of contemporary society, as well as its role in promoting cultural diversity and enhancing national cohesion.

3.1.3. To study strategies to enhance the communication effectiveness and influence of the Lizhuang Grass Dragon through AI visualization technology.

This includes the design and implementation of a series of

innovative communication solutions based on AI technology, such as digital museums, virtual reality experiences, and interactive social media platforms, aiming to broaden the audience base of the Lizhuang Grass Dragon, in particular to attract the attention and participation of the younger generation, and thus inspire their interest in and respect for traditional culture.

3.2. Research Ideas and Methods

The study follows the logical framework of “theoretical analysis - technology introduction - empirical application”, aiming to provide scientific basis and practical guidance for the inheritance of the non-heritage culture of Lizhuang Grass Dragon through the integration of interdisciplinary methodology.

3.2.1. Literature research method

The comprehensive knowledge framework is constructed through the systematic collection of domestic and international historical documents, academic papers, news reports, etc. on the Lizhuang Grass Dragon. This process is not only limited to textual materials, but also includes the organization of multi-media materials such as images and videos, in order to understand the cultural background and artistic characteristics of the Lizhuang Grass Dragon in multiple dimensions.

3.2.2. Fieldwork method

In-depth fieldwork in Lizhuang, face-to-face interviews with the inheritors of the Grass Dragon dance, performers, local residents and cultural workers to obtain first-hand information. This method enables us to directly observe the current status of the inheritance of the Grass Dragon dance in Lizhuang, to understand its cultural significance and social function in the local community, and at the same time to discover the challenges and opportunities encountered in the process of inheritance.

3.2.3. Case study method

Select cases of successful use of modern technology to inherit non-heritage culture at home and abroad, such as the combination of digital and traditional crafts in Japan and the “Digital Forbidden City” in China, to analyze their successful experiences and shortcomings, and to provide inspiration for the innovation and inheritance of the Grass Dragon in Lizhuang. Through comparative analysis, identify the strategies and technical paths that can be learned from.

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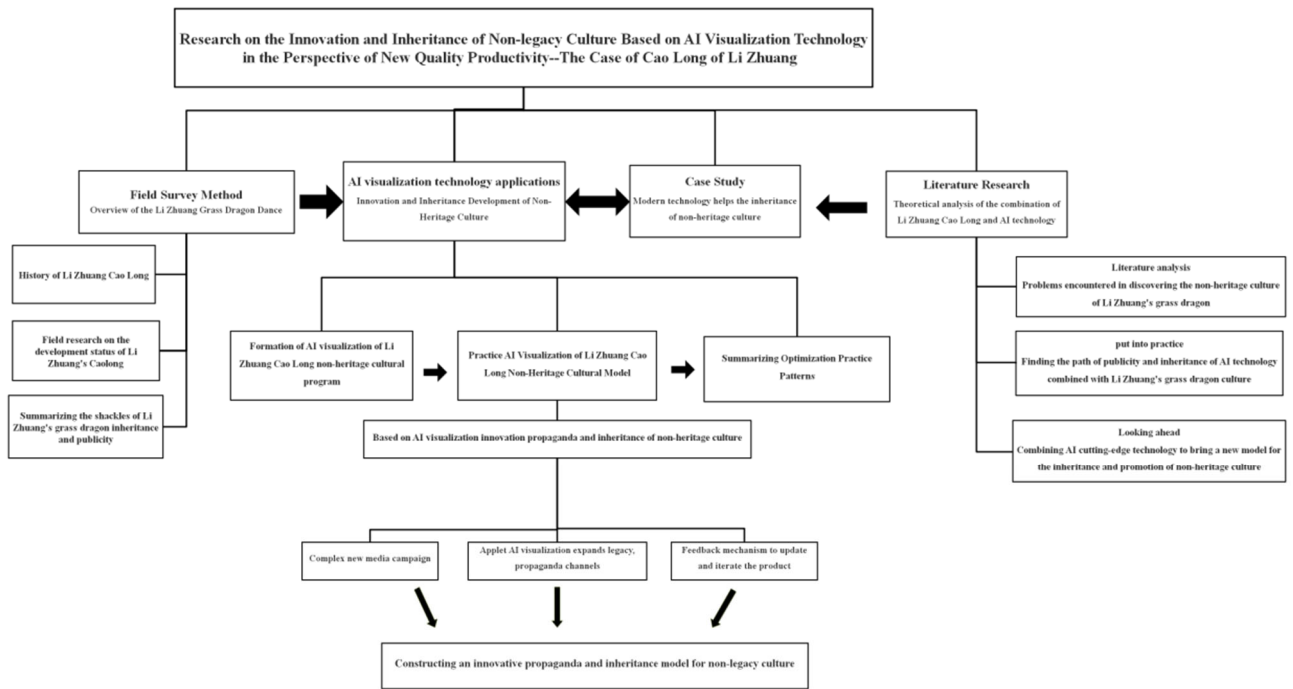


Figure 1. Research Ideas and Methods

4. Achievements and Future Development Suggestions of Non-heritage Cultural Innovation and Inheritance Based on AI Visual Technology in the Perspective of New Quality Productivity

4.1. Practical achievements

4.1.1. Promotion of non-heritage culture Lizhuang Grass Dragon based on AI visualisation technology

The project carries out an innovative heritage research activity for the non-heritage culture of Lizhuang Grass Dragon by combining AI visualisation technology. As a traditional folk non-heritage culture, the Lizhuang Grass Dragon carries a rich history and culture, but its influence is gradually weakening in modern society. The project uses the Internet and AI visualisation technology to design a series of vivid and intuitive promotional materials. These materials not only show the artistic charm of the Lizhuang Grass Dragon, but also popularise the cultural connotations behind it to the public through animation, video, images and other forms.

4.1.2. Detailed research on the historical origin and cultural characteristics of Lizhuang Grass Dragon

As a key part of the culture of the ancient town, the Lizhuang Grass Dragon demonstrates its unique historical origin and cultural characteristics. The project has collected abundant first-hand information through several field surveys, in-depth exchanges and interviews with local folklore experts, art workers and local residents. Through the systematic collation and in-depth analysis of these data, the project reveals the origin and evolution of the Lizhuang Caolong and its central position in the local cultural system.

The findings show that the Lizhuang Grass Dragon is not only a form of performing art, but also an important medium for local farmers to convey blessings and pray for a good agricultural harvest during festivals and celebrations. Its

distinctive colours, diverse shapes and lively performance style deeply reflect the local residents' love and pursuit of life. Based on these findings, the project proposes a series of cultural tourism development strategies, aiming to help Lizhuang Ancient Town make more effective use of the cultural resources of the Grass Dragon and promote the deep integration of cultural tourism. These suggestions are not only of guiding significance for the protection and inheritance of the Grass Dragon in Lizhuang, but also provide a reference model for the development of cultural tourism for other ancient towns with similar cultural characteristics, which in turn promotes the overall enhancement of regional culture.

4.1.3. Apply for a patent related to the inheritance and innovation of non-heritage culture based on AI visualisation technology

In order to promote the combination of non-heritage culture and modern technology, the project conducts in-depth research on the application of AI visualisation technology in non-heritage cultural heritage. By innovatively combining AI technology with the manifestation of Lizhuang Grass Dragon, a set of non-heritage culture dissemination system based on visual recognition and interactive experience is designed.

The system can not only enhance the public's interest in the Lizhuang Grass Dragon, but also enhance their understanding of non-heritage culture through interactive experience. To the end, it is planned to apply for a relevant patent to protect this innovation and provide practical technical support for the future dissemination and transmission of NHM culture. The continued development of this innovation will provide a new impetus for the protection and inheritance of non-heritage culture and contribute to the sustainable development of culture.

4.2. Theoretical achievements

4.2.1. Preparation of a Study on the Non-Heritage Culture of the Lizhuang Grass Dragon

Based on the in-depth research on the Lizhuang Grass

Dragon, the project compiles a detailed research report, aiming at introducing and retaining in detail the historical origin, cultural connotation, inheritance status, and development suggestions of the non-heritage culture of the Lizhuang Grass Dragon in a number of aspects. In addition, the use of new media and social media platforms to publicise the unique charm of the Lizhuang Herbal Dragon in conjunction with modern technological means will help to attract more young people to pay attention to and participate in the inheritance of the non-heritage culture.

4.2.2. Publication of academic papers

In order to further promote the academic exchange of non-heritage culture research, an academic paper related to the research topic was published in an open journal. Through this paper, it is hoped that it can trigger the general attention of the academia and the society to the inheritance and development of non-heritage culture. At the same time, it is hoped that more researchers will be inspired to devote themselves to the study of non-heritage culture, and jointly explore how to effectively protect and pass on these precious cultural heritages in the process of modernisation.

5. Conclusion

By summarizing the above practical and theoretical results, the project has made certain achievements in promoting the inheritance and development of the non-heritage culture of Lizhuang's Grass Dragon, as well as providing an important reference basis for future cultural protection, dissemination

and innovation. These results not only enhance the public's understanding of non-heritage culture, but also provide valuable experience for the protection and development of non-heritage culture in other regions. In the future, it will continue to devote itself to the research and practice of non-heritage culture and promote the deep integration of traditional culture and modern society.

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References

- [1] LI Wei, LI Pengju. Research on the sustainable development path of rural tourism based on network evaluation--Taking Lizhuang ancient town as an example[J]. Intelligent Agriculture Guide, 2023, 3(16):109-112.
- [2] Lei Jingmei,Zhang Junxiang. Protection and Development of Historical and Cultural Resources of Lizhuang Ancient Town in Sichuan under the Perspective of Culture and Tourism Integration[J]. Journal of Sichuan Cadre Correspondence College,2020,(04):16-23.
- [3] Xiao Gan,Li Ying. Let the non-legacy in the inheritance of new vigor[N]. Huaibei Daily, 2024-10-24(006).
- [4] Sichuan Intangible Cultural Heritage - Introduction to Lizhuang Grass Dragon Dance - Memory of Sichuan, <http://www.scview.cn/system/20141117/000002213.html>.