

The Dialogue Between Art and Technology: An Exploration of the Effectiveness of AISOMA and Its Application in Intangible Cultural Heritage Traditional Dance

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Abstract

This paper aims to explore the effectiveness and potential of the Artificial Intelligence (AI) choreography tool AISOMA in the inheritance and innovation of Intangible Cultural Heritage (ICH) traditional dance. Faced with the challenges of globalization and modernization, the protection and inheritance of ICH traditional dance are of great significance. By adopting multi-dimensional research methods including literature analysis, case study, and assessment based on the APEC (Aesthetic, Practical, Emotional, & Cognitive) model, this study conducts an in-depth analysis of the technical characteristics of AISOMA and its application effects in ICH traditional dance. The research findings indicate that through deep learning mechanisms, style transfer technology, and real-time feedback mechanisms, AISOMA has effectively achieved the digital preservation of ICH traditional dance and promoted the innovative development of dance art. Moreover, AISOMA has not only enhanced the interactivity of dance education but also strengthened the emotional expression and cultural experience of dance works. Although AISOMA faces challenges in terms of technological dependence, cultural adaptability, and ethical aspects, it has demonstrated tremendous potential in the protection, inheritance, and innovation of ICH traditional dance. The conclusion of this study points out that as an AI choreography tool, AISOMA provides a new direction for the future development of ICH traditional dance and is expected to play a more significant role in protecting and promoting human intangible cultural heritage.

Keywords: AI choreography tool, intangible cultural heritage traditional dance, AISOMA, digital preservation

1. Introduction

1.1 Research Background

1.1.1 The Importance of Intangible Cultural Heritage Traditional Dance

The significance of traditional dance, as an integral part of Intangible Cultural Heritage (ICH), cannot be overstated. According to the definition of the United Nations Educational, Scientific and Cultural Organization (UNESCO,

2003), intangible cultural heritage encompasses social practices, forms of expression, knowledge, skills, as well as the associated tools, objects, handicrafts, and cultural venues. Article 2 of Chapter 1 of the “Law of the People’s Republic of China on Intangible Cultural Heritage” stipulates that “intangible cultural heritage refers to various traditional cultural expressions passed down from generation to generation by people of all ethnic groups and regarded as an integral part of their cultural heritage, as well as the physical objects and venues related to these traditional cultural expressions”. As a core component of intangible cultural heritage, ICH traditional dance is not only a major driving force for cultural diversity but also a cornerstone of sustainable development. These dance forms have been passed down through generations and continuously recreated in the process of communities and groups adapting to their surrounding environment and interacting with nature and history. They provide these communities and groups with a strong sense of identity and continuity, thereby deepening the respect for cultural diversity and human creativity.

Against the backdrop of globalization and modernization, traditional dance is confronted with unprecedented challenges, such as the trend of cultural homogenization, the gradual disappearance of traditional dance practices, and the alienation of the younger generation from traditional culture. These challenges pose a threat to the protection, inheritance, and development of traditional dance. Meanwhile, the involvement of modern technological means has offered new possibilities and necessities for the protection and inheritance of traditional dance.

The application of AI technology In the inheritance and innovation of ICH traditional dance has gradually attracted attention. With its unique advantages, AI technology provides a new approach for the protection, inheritance, and development of ICH traditional dance. The application of AI technology in the field of ICH traditional dance can not only promote the digital protection of ICH traditional dance but also enhance its communication power and influence through innovative methods, injecting new vitality into the inheritance and development of ICH traditional dance. Therefore, this study aims to explore the application of AI technology in the inheritance

and innovation of intangible cultural heritage traditional dances. With choreography as the core, it analyzes how AI technology can assist in the protection, inheritance and development of intangible cultural heritage traditional dances, as well as its potential for development and challenges in the future.

1.1.2 The Potential of AI Technology in the Inheritance and Innovation of Intangible Cultural Heritage Traditional Dance

In the protection and inheritance of intangible cultural heritage, Artificial Intelligence (AI) technology has demonstrated enormous potential and innovative prospects. The advancement of AI technology has provided unprecedented opportunities for the preservation, dissemination, and innovation of traditional dance. Through deep learning and machine learning algorithms, AI can analyze and learn a large amount of dance movement data, thereby generating new dance movements and sequences. This not only facilitates the digital archiving of traditional dance but also opens up new possibilities for dance creation.

The application of AI technology c’n en’ance the communication power and influence of traditional dance, enabling it to radiate new vitality in modern society. By means of Virtual Reality (VR) and Augmented Reality (AR) technologies, audiences can experience and participate in ICH traditional dance in a more intuitive manner. This immersive experience helps to increase the public’s awareness and interest in ICH culture. In addition, AI technology can assist in dance education and training by analyzing the patterns and styles of dance movements, making the learning process more efficient and personalized.

An analysis of the “2023 Annual Development Report on Art and Technology” (China National Institute of Art and Technology, 2024) reveals that the potential of AI technology in the inheritance and innovation of ICH traditional dance is reflected in the following aspects:

Firstly, in terms of digital protection, applications such as “Henan ICH Map” integrate Henan’s ICH resources through knowledge graph technology, achieving an intuitive and visualized presentation of relevant content including the intergenerational inheritance of ICH and the geographical distribution scope. This provides technical support for the preservation and research of

dance movements.

Secondly, in innovative creation, by analyzing and learning dance data, AI technology can assist choreographers in creating new dance works, promoting the innovative development of dance art. For example, the holographic recording method used for the ICH "Chashan Haozi" (Tea Mountain Chant) records the performances of ICH inheritors through holographic technology and constructs virtual 3D scenes, achieving a stage effect that combines virtual and real elements.

Thirdly, in cultural communication, AI technology, through technologies such as Virtual Reality (VR) and Augmented Reality (AR), has enhanced the communication power of ICH traditional dance, making it more accessible and appreciated by the public. In the case of the integrated production of Kunqu opera digital humans, the traditional Kunqu art form is combined with modern art forms through digital human technology, presenting vivid and three-dimensional Kunqu character images.

Fourthly, in education and training, AI technology can assist in dance education and training, providing personalized learning programs and improving learning efficiency. The European Cultural Heritage Crowdsourcing Platform (<https://crowdheritage.eu>) integrates data on both tangible and intangible cultural heritage through crowdsourcing, thereby fostering the shared and appropriate management of cultural heritage.

Fifthly, in policy support, policy support at the national level has created a favorable development environment for the application of AI technology in the field of ICH traditional dance. The immersive exhibition case of Castello di Casanova demonstrates how to link intangible cultural heritage with material cultural heritage and achieve an immersive exhibition of the ancient castle across time through VR technology.

Through the comprehensive application of these aspects, AI technology is expected to play a key role in the inheritance and innovation of ICH traditional dance, contributing to the protection and promotion of human intangible cultural heritage. Zhang Yimou's "Dialogue Fable 2047" is another example of the combination of AI technology and traditional art. By integrating high-tech means with traditional art forms, it demonstrates the new vitality of traditional art

in modern society.

1.2 Research Questions

This study aims to conduct an in-depth exploration of the application of Artificial Intelligence (AI) technology in the inheritance and innovation of Intangible Cultural Heritage (ICH) traditional dance, with a particular focus on the core role of AI choreography tools.

Firstly, this study will explore the significance of AI choreography tools in the inheritance and innovation of ICH traditional dance. It will analyze how these tools promote the protection and inheritance of ICH traditional dance, evaluate their effectiveness in enhancing the communication power and influence of ICH traditional dance, and explore their potential in inspiring innovation and artistic expression. The expected goal is to clarify the value and application prospects of AI choreography tools in the field of ICH traditional dance, providing theoretical support and practical guidance for the future development of ICH dance.

Secondly, the study will analyze the working principles of AI choreography tools, including the machine learning algorithms and deep learning models they adopt, as well as how they process and analyze dance data to generate new dance movement sequences. In addition, it will also explore the ability of AI choreography tools to understand and learn the relationship between music and dance. The expected goal is to gain an in-depth understanding of the technical mechanisms of AI choreography tools, providing a scientific basis for the optimization and improvement of these tools.

Finally, this study will evaluate the application effects and potential value of AI choreography tools in the creation of ICH traditional dance. It will use the APEC model to assess their application effects in actual dance creation and analyze their feasibility and limitations in the inheritance and innovation of ICH traditional dance. At the same time, it will explore the applicability of AI choreography tools in different cultures and regions. The expected goal is to provide a new perspective and method for the protection and inheritance of ICH traditional dance, while offering empirical research and theoretical support for the application of AI technology in the field of dance.

Through these specific research questions, this study expects to provide a new perspective and

method for the protection and inheritance of ICH traditional dance, while offering empirical research and theoretical support for the application of AI technology in the field of dance, thereby promoting the innovative development of intangible cultural heritage traditional dance.

2. Literature Review

2.1 Current Development Status of AI Choreography Tools

The application of Artificial Intelligence (AI) technology in the field of dance is multifaceted, among which the development of AI choreography tools is particularly eye-catching. By analyzing dance data and using machine learning algorithms to generate new dance movement sequences, these tools provide choreographers with innovative inspiration (Dou & Jia, 2022). AI choreography tools such as AI Choreographer, AISOMA, and EDGE utilize advanced deep learning models and large-scale datasets, demonstrating advantages in the quality and diversity of movement generation (Liu & Sra, 2024). These tools can also understand and learn the complex relationship between music and dance, providing users with an intuitive interface and real-time feedback, and enhancing the interactivity of creation.

2.2 Application of the APEC Model in the Evaluation of AI Choreography Tools

The APEC model, whose full name is the Aesthetic, Practical, Emotional, & Cognitive framework, was proposed by Dhaval Vyas and Gerrit C. van der Veer in 2005 (Vyas & Veer, 2005). This model is a framework for designing user experience, which conveys the expected meaning based on the behaviors and feedback of the interaction between users and the environment. It includes four main dimensions: Aesthetics, Practicality, Emotion, and Cognition (Vyas & Veer, 2005).

The four components of the APEC model are as follows: the Aesthetics dimension focuses on the sensory information and immediate responses of a product or system; the Practicality dimension is related to the actual functions of the system used by users and the degree of satisfaction; the Emotion dimension involves the emotional responses triggered by interactive products; and the Cognition dimension relates to the cognitive process by which users understand the narrative structure of the product, the possibilities of actions, and the expected results (Vyas & Veer,

2005). The APEC model fully takes into account the dynamics of the interaction between users and the system to adapt to the differences between different interactive systems (Gong et al., 2020), which indicates the flexibility of the application of this model.

When applying the APEC model to the evaluation of AI choreography tools, its feasibility is reflected in its ability to comprehensively evaluate the user interface design, technical performance, emotional expression ability, and user interactivity of the tools. The Aesthetics dimension can be used to evaluate the visual presentation of dance movements; the Practicality dimension evaluates the efficiency and accuracy of movement generation; the Emotion dimension explores the emotional expression ability of works; and the Cognition dimension assesses the ease of use of the tools and their support for choreographic creativity. Therefore, the APEC model provides a comprehensive evaluation framework for AI choreography tools, which helps to gain an in-depth understanding of the performance and user experience of the tools, thereby guiding the optimization and improvement of the tools.

2.3 Protection and Inheritance of Intangible Cultural Heritage Traditional Dance

The protection and inheritance of intangible cultural heritage is a focus of global cultural policies. The Chinese government attaches great importance to the protection of intangible cultural heritage and has issued a series of policies and plans to improve the level of systematic protection of intangible cultural heritage (Ministry of Culture and Tourism, 2021). At the international level, the United Nations Educational, Scientific and Cultural Organization (UNESCO) emphasizes the importance of the protection of intangible cultural heritage and the promotion of its inheritance through the "Convention for the Safeguarding of the Intangible Cultural Heritage" (UNESCO, 2003). As an important part of intangible cultural heritage, the protection, inheritance, and development of ICH traditional dance are not only a manifestation of cultural diversity but also the inheritance of the common cultural heritage of mankind (Jiang, 2018).

2.4 Relevant Ethical Discussions

With the in-depth application of AI technology in the field of dance, ethical issues have

gradually attracted attention. AI choreography tools may have an impact on the creative work of dance artists. How to protect the intellectual property rights of dance artists and ensure the purity of cultural inheritance has become a key issue (Tong & Hu, 2024). In addition, the role of AI choreography tools in the protection of cultural diversity has also been discussed. How to use AI technology while maintaining the uniqueness and regional characteristics of dance culture and avoiding cultural homogenization is a problem that needs to be solved in future research and practice (Wang & Jiang, 2023).

3. Research Methods and Design

3.1 Research Methods

This study adopts multi-dimensional research methods, comprehensively using literature analysis, case analysis, and APEC model analysis to conduct an in-depth exploration of the effectiveness of AI choreography tools and their application potential in ICH traditional dance. Firstly, by extensively collecting and reviewing relevant literature, including academic journals, conference papers, and technical reports, the theoretical foundation of the research is constructed, and the current development status, technical characteristics of AI choreography tools, and their application in the field of dance are understood. Secondly, representative AI choreography tools are selected for case analysis to conduct an in-depth exploration of their technical architecture, choreographic mechanisms, user feedback, and application effects in actual dance creation. Finally, the APEC model is applied to conduct a multi-dimensional evaluation of the selected AI choreography tools, so as to comprehensively evaluate the performance and user experience of the tools.

3.2 Research Design

In the early stage of the research, a preliminary screening was conducted on 13 representative domestic and foreign AI choreography tools. Through a comparative analysis of the technical maturity, user evaluations, application cases, and open-source availability of these tools, AISOMA was finally determined as the research object. There are two reasons for choosing AISOMA: firstly, AISOMA is not only an AI choreography tool but also can interact with real dancers to jointly complete dance works. This characteristic of combining AI technology with human creativity endows AISOMA with unique

application value in dance creation. Secondly, the movement system of AISOMA is unified and is all derived from the movement collection of the famous choreographer Wayne McGregor. This unity ensures that AISOMA can maintain consistency and coherence of style in the choreographic process. Through the above research design, this study aims to provide in-depth insights and suggestions for the practical application and future development of AI choreography tools, while offering a new perspective and method for the protection and inheritance of ICH traditional dance.

4. Evaluation and Analysis of the AISOMA Tool

4.1 Rationality of the APEC Model

The rationality of the APEC model lies in its comprehensive consideration of four key dimensions: aesthetics, practicality, emotion, and cognition. These dimensions collectively form the evaluation framework for the effectiveness of AI choreography tools, providing a comprehensive and precise standard for defining the value of these tools. This model not only focuses on the aesthetic quality of dance movements but also includes the execution efficiency of movements, emotional expression, and the interactive experience between users and the tool. In the Aesthetics dimension, the APEC model evaluates the visual appeal and artistry of the dance movements generated by the tool, which is crucial for dance art. In the practicality dimension, the technical performance of the tool is examined, such as the speed, accuracy of movement generation, and synchronization with music, which is essential for the professionalism and appreciation of dance performances. In the Emotion dimension, an analysis is conducted on whether the tool can stimulate the emotional resonance of users, which is of great significance for the appeal and influence of dance works. In the Cognition dimension, the ease of use and user interactivity of the tool are evaluated, which is critical for the popularization and application of the tool. The APEC model provides a comprehensive evaluation framework for AI choreography tools, which helps to gain an in-depth understanding of the performance and user experience of the tools, thereby guiding the optimization and improvement of the tools. Through this multi-dimensional evaluation, the APEC model ensures that the evaluation of AI choreography tools is both comprehensive and

targeted, enabling them to play a key role in the inheritance and innovation of ICH traditional dance.

4.2 Introduction to AISOMA

At the intersection of dance art and technological innovation, AISOMA (also known as SOMA) emerged. It is a revolutionary artificial intelligence dance creation tool jointly developed by the world-renowned choreographer Wayne McGregor and the Google Arts and Culture Lab (McGregor's Studio, 2024). AISOMA is a symbol of the in-depth integration of dance art and artificial intelligence, marking the beginning of a new era, specifically a new era of human-machine collaboration in the field of dance creation. Through deep learning mechanisms, AISOMA can analyze and absorb the essence of Wayne McGregor's 25 years of dance creation, learn and reproduce the unique styles of those dancers, capture their creative identities, and convert them into computable data. This process not only injects new vitality into dance creation but also opens up unlimited possibilities for the future development of dance art.

4.3 Choreographic Methods of AISOMA

The choreographic method of AISOMA is its core charm. By combining an advanced movement analysis engine and a creative generation engine, it encodes and generates dance movement data, and then models the relationship between dance movements and creativity through a cross-modal processing unit. This model architecture not only enhances the quality and diversity of dance movement generation but also enables AISOMA to extract features from a large number of dance movements through deep learning mechanisms and generate new dance movements, thereby providing choreographers with innovative inspiration.

The workflow of AISOMA starts with inputting a dance video and a short seed movement, and then generates a long-time sequence of original dance movement sequences through its complex algorithms. This process is difficult to achieve in traditional choreography because it involves an in-depth understanding of dance movements and innovative reorganization. The key designs of AISOMA include deep learning mechanisms, style transfer, real-time feedback, and the use of datasets. The deep learning mechanism enables AISOMA to extract features from historical

dance works, providing possibilities for the digitization and pattern recognition of ICH traditional dance. The style transfer technology allows AISOMA to understand and imitate the unique styles of specific dancers, which is crucial for the inheritance and protection of the unique styles in ICH traditional dance. The real-time feedback mechanism enables choreographers to adjust and optimize dance movements in real time. This interactivity provides a new platform for the innovation of ICH traditional dance.

The choreographic method of AISOMA generates continuous movements in an autoregressive manner, which integrates the application of deep learning mechanisms, style transfer, and real-time feedback, making the choreographic process both scientific and artistic. This choreographic method not only promotes the innovative development of ICH traditional dance but also provides a new approach for the digital protection and inheritance of ICH traditional dance.

Another innovative aspect of AISOMA lies in its real-time feedback mechanism. During the process of dance movement generation, AISOMA can receive feedback from dancers in real time and adjust the generated movements accordingly. This interactivity provides a new platform for the innovation of intangible cultural heritage traditional dance, enabling traditional dance to more flexibly adapt to modern aesthetics and performance needs. This real-time interactivity of AISOMA not only provides a new dimension for dance creation but also opens up new possibilities for the future development of dance art.

To sum up, the technical details and working principles of AISOMA demonstrate the enormous potential of AI technology in dance creation. The combination of its deep learning mechanisms, style transfer technology, and real-time feedback mechanisms not only promotes the innovative development of ICH traditional dance but also provides a new approach for the digital protection and inheritance of ICH traditional dance. Through the application of these technologies, AISOMA has demonstrated significant effectiveness in the creation of ICH traditional dance, providing strong technical support for the protection, inheritance, and innovation of ICH traditional dance. AISOMA is not only a tool but also a bridge between dance art and technology

integration, and a new chapter in future dance creation.

4.4 APEC Analysis of AISOMA

The APEC analysis of AISOMA reveals its multi-dimensional advantages among AI choreography tools and demonstrates its application potential in the inheritance and innovation of ICH traditional dance. In terms of Aesthetics, the dance movements generated by AISOMA not only possess a high level of artistry and professionalism visually but also demonstrate a high level of aesthetic value according to expert evaluations and audience feedback, meeting the aesthetic needs of ICH traditional dance creation.

In terms of practicality, AISOMA performs excellently in matching dance movements with music rhythms. It can generate corresponding dance movements based on the rhythm and emotion of the music, enhancing the expressiveness and appreciation of the dance. The Emotion analysis shows that as a choreography tool, AISOMA provides an innovative platform that allows choreographers and dancers to generate dance movements based on personal creativity and musical inspiration, greatly enhancing the users' emotional engagement and creative pleasure.

In the Cognition evaluation, the design of AISOMA's user interface and operation process takes user convenience into account, enabling even non-professional users to quickly get started and generate dance movements, which indicates its high ease of use. At the same time, AISOMA supports user input and provides real-time feedback on the generated results. This real-time interactivity allows users to adjust and optimize dance movements in real time, improving the flexibility and interactivity of creation.

To sum up, the APEC analysis of AISOMA has demonstrated its effectiveness as an AI choreography tool in the creation of ICH traditional dances. It not only promotes the digital protection and inheritance of ICH traditional dances, but also drives their innovative development, opening up new paths for the future of ICH traditional dances. Through this comprehensive analysis, the application prospects of AISOMA in the field of ICH traditional dances are optimistic. It not only promotes the innovative development of ICH traditional dances but also provides new

approaches and methods for the education, protection, and international exchange of ICH traditional dances. With the continuous development of technology, it is expected that AISOMA will play a greater role in protecting and promoting intangible cultural heritage.

5. Application of AI Choreography Tools in Intangible Cultural Heritage Traditional Dance

5.1 Technical Characteristics and Innovations

The technical characteristics and innovations of AISOMA lie in its in-depth integration of artificial intelligence technology, and it has demonstrated significant application potential especially in the digital preservation, educational popularization, integration of innovation and tradition, and protection of cultural diversity of ICH traditional dance. Its core advantages are reflected in the following aspects:

Firstly, the deep learning mechanism of AISOMA enables it to conduct accurate digital preservation of ICH traditional dance movements, which is of great significance for preventing cultural loss and promoting cultural inheritance. This technical characteristic not only contributes to the preservation of endangered dance forms but also provides valuable resources for dance research and education. Secondly, as an educational tool, AISOMA, through its intuitive interface and interactivity, makes the process of learning and understanding the creation of ICH traditional dance easier and more interesting, thereby enhancing the interactivity and interest of education.

In addition, the style transfer and real-time feedback mechanisms of AISOMA enable traditional dance to integrate with modern aesthetics and performance needs, providing technical support for the innovative development of ICH traditional dance. This not only allows traditional dance to adapt more flexibly to the modern stage but also provides choreographers with an innovative platform to explore new artistic expression methods. Finally, the application of AISOMA is conducive to maintaining the uniqueness and regional characteristics of dance culture, avoiding cultural homogenization, and promoting the protection of cultural diversity.

To sum up, the technical characteristics and innovations of AISOMA not only promote the innovative development of ICH traditional

dance but also provide a new approach for the digital protection and inheritance of ICH traditional dance. With the continuous development of technology, it is expected that AISOMA will play a more significant role in protecting and promoting human intangible cultural heritage.

5.2 Contributions to the Inheritance of Intangible Cultural Heritage Traditional Dance

AISOMA plays a multi-dimensional role in the inheritance of ICH traditional dance and has made significant contributions at multiple levels. Firstly, in terms of digital preservation, AISOMA uses its deep learning mechanism to conduct digital preservation of ICH traditional dance movements, which is of great significance for preventing cultural loss and promoting cultural inheritance (Dou & Jia, 2022). Secondly, as an educational tool, AISOMA can help students and enthusiasts gain a deeper understanding of and learn the creation process of ICH traditional dance, thereby enhancing the interactivity and interest of education (Tong & Hu, 2024). In addition, through style transfer and real-time feedback mechanisms, AISOMA enables traditional dance to integrate with modern aesthetics and performance needs, providing technical support for the innovative development of ICH traditional dance (Wang & Jiang, 2023). Finally, the application of AISOMA is conducive to maintaining the uniqueness and regional characteristics of dance culture, avoiding cultural homogenization, and promoting the protection of cultural diversity (Jin, 2017).

However, AISOMA also faces challenges and limitations in practical applications. Technological dependence may lead to the neglect of the humanistic value of dance art and the personal expression of dancers. Especially in terms of cultural adaptability, AISOMA requires more localized data and algorithm adjustments to better handle dances of different cultures and styles. How to maintain the traditional essence of ICH traditional dance while pursuing innovation is a problem that needs continuous exploration and solution. In addition, whether the application of AISOMA can promote the sustainable development of ICH traditional dance rather than just serving as a technical demonstration is also a key point that needs attention in future research and practice. Through further localized adjustments and cross-cultural verification, it is expected that

AISOMA will play a more significant role in protecting and promoting human intangible cultural heritage.

5.3 Discussion on the Feasibility of Creation

When discussing the feasibility of AISOMA in the creation of ICH traditional dance, based on the analysis results of the APEC model, the application prospect of AI choreography tools in this field is demonstrated. Firstly, in the Aesthetics dimension, the dance movements generated by AISOMA meet the aesthetic needs of ICH traditional dance creation with their visual appeal and artistry. This benefits not only from its deep learning algorithm but also from its in-depth understanding of dance art. Secondly, in the Practicality dimension, the technical performance of AISOMA, including the speed, accuracy of movement generation, and synchronization with music, provides reliable technical support for the performance of ICH traditional dance, ensuring the professionalism and appreciation of dance performances.

In the Emotion dimension, AISOMA provides a rich user experience, enhancing the users' emotional engagement and creative pleasure, which is crucial for the emotional communication and cultural experience of ICH traditional dance. Finally, in the Cognition dimension, the ease of use and interactivity of AISOMA enable non-professional users to quickly get started and generate dance movements, which lowers the technical threshold for the creation of ICH traditional dance and increases the level of participation. Through the comprehensive consideration of these dimensions, AISOMA can not only promote the digital protection and inheritance of ICH traditional dance but also drive the innovative development of ICH traditional dance, opening up a new path for the future development of ICH traditional dance.

To sum up, the technical characteristics of AISOMA and the analysis results of the APEC model indicate that AI choreography tools have high feasibility in the creation of ICH traditional dance. They can not only promote the digital protection and inheritance of ICH traditional dance but also drive the innovative development of ICH traditional dance, opening up a new path for the future development of ICH traditional dance. With the continuous development of technology, it is expected that AISOMA will play

a more significant role in protecting and promoting human intangible cultural heritage.

6. Conclusions

The technical characteristics of AISOMA, especially the application of its deep learning and machine learning algorithms, provide an innovative solution for the creation of ICH traditional dance. For an ICH traditional dance with a unified style and clear movement scope, AISOMA can realize the digital preservation of dance movements through its high-precision motion capture technology and establish a comprehensive movement database, which is of great significance for preventing cultural loss and promoting cultural inheritance. In addition, the style transfer technology of AISOMA can maintain the originality and authenticity of the dance during the innovation process, while its real-time feedback mechanism allows choreographers to adjust movements in real time, enabling traditional dance to flexibly adapt to modern aesthetics. Through the cross-modal processing unit of AISOMA, ICH traditional dance can also be integrated with other art forms to create richer artistic effects.

The educational and popularization functions of AISOMA should not be ignored either. It can help students and enthusiasts better understand and learn the creation process of ICH traditional dance, improving the interactivity and interest of education. At the same time, AISOMA plays a significant role in the protection of cultural diversity. It respects and reflects the original style and cultural connotation of ICH traditional dance, ensuring the purity of cultural inheritance. To sum up, the technical characteristics and innovations of AISOMA provide strong technical support for the protection, inheritance, and innovation of ICH traditional dance, opening up a new development path.

The application prospects of AI choreography tools, especially AISOMA, in the creation of ICH traditional dance are promising. Through technological innovation, these tools provide new approaches and methods for the protection, inheritance, and innovation of ICH traditional dance. Firstly, the technological innovation of AI choreography tools means that they will become more intelligent with the advancement of AI technology, capable of providing more abundant and accurate support for dance creation. This can not only improve the efficiency of dance

creation but also expand the forms of expression and creative space of dance art. Secondly, AI choreography tools can be used as educational tools to help more people understand and learn ICH traditional dance, thereby increasing the popularity and influence of ICH traditional dance. Through intuitive interfaces and interactivity, these tools make learning and creating ICH traditional dance easier and more interesting. In addition, AI choreography tools will play a more significant role in the digital protection of ICH traditional dance. Through high-precision motion capture and 3D reconstruction technologies, AI choreography tools can provide strong technical support for the preservation and research of ICH traditional dance, ensuring the inheritance of these precious cultural heritages. At the same time, these tools also contribute to the international communication of ICH traditional dance. Through natural language processing and machine translation technologies, language barriers are overcome, promoting communication and understanding between different cultures.

To sum up, the application prospects of AI choreography tools in the creation of ICH traditional dance are optimistic. They can not only promote the innovative development of ICH traditional dance but also provide new approaches and methods for the education, protection, and international communication of ICH traditional dance. With the continuous development of technology, it is expected that AI choreography tools will play a more significant role in protecting and promoting human intangible cultural heritage, while also making contributions to the protection and promotion of global cultural diversity.

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