Promotion of Traditional Music Education in China by Artificial Intelligence Technology

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Abstract: This paper holds that artificial intelligence technology can create modern music works with traditional music elements, simulate and reproduce the timbre of traditional instruments, and provide users with personalized music learning programs. Artificial intelligence technology can also help understand the technical problems of music and improve the efficiency and quality of teaching. Through the application of artificial intelligence technology, it can open up new ways for the dissemination and development of traditional music, enrich the content and form of the music industry, and further promote the education and dissemination of traditional Chinese music.

1. Introduction

Traditional music not only carries the development of human history, but also shows the depth of human emotions and thoughts, and is a precious heritage of world culture. Traditional Chinese music has been included in the field of professional education, taking the path of academic inheritance, and has made great contributions to the improvement of traditional music to the stage performance. However, in the quality education and professional music education, the teaching content of traditional Chinese music is still a little insufficient. The deficiency or lack of traditional music content in quality education from primary school to university and in higher music education is likely to further narrow the scope of traditional music audience and further aggravate the threat of Chinese traditional music in the process of globalization and social change, which is not only detrimental to China's protection and inheritance of human cultural diversity and national spiritual culture. In fact, intangible cultural heritage has rich economic, social and cultural values. Through rational use of intangible cultural heritage, it can promote the development of cultural industry, promote employment, increase people's income, and achieve comprehensive, coordinated and sustainable economic and social development. Therefore, how to integrate traditional music into public life and inherit excellent traditional culture is a problem worthy of in-depth exploration.

With the rapid development of artificial intelligence technology, it has brought revolutionary changes to various fields, and also brought new opportunities to the traditional music field. This paper aims to explore how artificial intelligence technology can promote the education and dissemination of traditional Chinese music and provide new ideas and methods for promoting the development of traditional Chinese music by sorting out the inheritance dilemma and the actual situation of traditional Chinese music in the contemporary cultural environment.

2. The Dilemma of Inheriting Traditional Music in Contemporary Cultural Environment

Music class in primary and secondary schools is the only way for most Chinese people to receive systematic music training. In a sense, how to inherit music and what kind of music in this education system determines and develops the listening habits and musical hearts of contemporary Chinese people. According to the data of Yang Xiao's ‘Traditional Music Expression of Music Textbooks for Compulsory Education in China-Data Sorting and Analysis Based on Human Voice Edition’, there are 389 tracks related to China in 614 entries of 18 textbooks, accounting for 63%; Among the

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389 tracks related to China, 184 tracks related to Chinese traditional music accounted for 47%; There are 184 tracks related to Chinese traditional music, among which 35 tracks with no clear creator account for 19%, 28 tracks adapted with traditional style account for 15%, 54 works created with traditional style account for 30%, and 66 works created with traditional style account for 36%. Obviously, while the 'intangible cultural heritage' of music is gradually promoted through the new media platform, the original ecological music, which can best represent the characteristics of Chinese traditional music, does not reflect its music culture and aesthetic value in the textbooks of compulsory education, which also causes the Chinese musicologists to strongly express their anxiety about the loss of traditional music in basic education and their demands for the inheritance of mother tongue music in a 'aphasia' [1].

The change of cultural identity and aesthetic concept is the inevitable result of social development and changes of the times. Modern music pays more attention to personality, fashion and commercial value, while traditional music is often considered too conservative and outdated because it originates from agricultural social life, and there is a sense of separation between the times and culture in listening, appreciating and understanding. This change of aesthetic concept makes traditional music face great challenges in attracting the younger generation and modern audience, such as the dragging of opera and paying attention to the lasting appeal of sound, which is often evaluated as "singing too slowly"; Although traditional vocal music also has rap, and even there is no lack of tongue twisters like fast rap and rap, it is difficult for young people to have aesthetic euphoria and resonance because they are mostly related to agricultural life and often sing in dialects.

3. The Current Situation of Artificial Intelligence Technology Used in Traditional Music Education in China

As the main economic form after agricultural economy and industrial economy, digital economy has evolved to a new stage of intelligent economy with "artificial intelligence" as the core driving force [2]. The key components of Artificial Intelligence (AI) include machine learning and deep learning. These sub-fields use powerful data sets and computer science and technology to solve problems, create expert systems, and predict or classify. In terms of specific technologies, artificial intelligence involves technologies such as machine learning, deep learning and natural language processing. For example, machine learning is an interdisciplinary subject involving statistics, system identification, approximation theory, neural network, optimization theory, computer science, brain science and many other fields. It studies how computers simulate or realize human learning behavior in order to acquire new knowledge or skills and reorganize existing knowledge structure to continuously improve their own performance[3]. In addition, according to the learning mode, machine learning can be classified into supervised learning, unsupervised learning and reinforcement learning. According to learning methods, machine learning can be divided into traditional machine learning and deep learning [4].

In 2019, the Department of Music Artificial Intelligence and Music Information Technology was established at the Central Conservatory of Music of China. The discipline of Music Artificial Intelligence and Music Information Technology was awarded as a high-precision and cutting-edge discipline in Beijing, and its construction has leading and demonstrative significance nationwide. The Department of Music Artificial Intelligence and Music Information Technology has a Music Artificial Intelligence Center, an Electronic Music Center, and a Music Therapy Teaching and Research Office, which includes eight professional directions: Music Artificial Intelligence and Music Information Technology, Electronic Music Production, Electronic Music Composition, Electronic Music Technology Theory, Music Recording, Sound Art Guidance, Music Therapy, Artistic Vocal and Vocal Medicine[5]. These majors have been adjusted and placed under the same category, indicating that the application of artificial intelligence in music has gradually become a hot topic in Chinese music creation, performance, education, and other fields, and is a promising and promising music technology. So the innovative application of the integration and development of traditional music and artificial intelligence industry is also an area that still needs to be explored

in China's music artificial intelligence.

4. Ways of Artificial Intelligence Technology to Promote the Application of Chinese Traditional Music

With the rise of "national tide" culture in China, traditional cultural content has become an innovative breakthrough in radio and television programs [6]. In such a cultural environment, artificial intelligence technology can provide better ways of creation, performance and dissemination for traditional music, and also provide new ideas and ways for the education and inheritance of traditional music. Through more exposure opportunities, traditional music can be widely promoted, thus stimulating public interest in it and promoting its integration with modern elements. In addition, the commercial value of traditional music can be enhanced, so that it can better interact and communicate with modern society. The following is an exploratory analysis and research on the new channels and possibilities of inheriting traditional music by artificial intelligence technology from four aspects.

4.1. Intelligent music creation

Through artificial intelligence technology, automatic analysis and processing of traditional music materials can be achieved, creating modern music works with traditional music elements.

Intelligent music creation is an amazing technology that utilizes artificial intelligence technology to automatically analyze and process traditional music materials, thereby creating modern music works with traditional music elements. Through this technology, music enthusiasts can create stunning music works in a short period of time without the need for profound knowledge and skills in music theory.

Intelligent music creation, especially composition methods that combine artificial intelligence technology, will inject new vitality into the development of traditional Chinese music. Firstly, by combining artificial intelligence composition technology with the protection of intangible cultural heritage in music, it not only brings new creative dimensions to traditional music, but also provides young music enthusiasts with creative tools that are closer to traditional culture. For example, the Chinese style music album ‘Aiwa’ eleased by artificial intelligence composer AVIA showcases the potential of artificial intelligence in creating classical music.

In addition, intelligent music creation also provides new means for the promotion of traditional folk songs. Han Baoqiang, Director of the Music Technology Department of the China Conservatory of Music, once stated that through technological means, the public's interest and attention to traditional folk songs can be enhanced, thereby changing the current phenomenon of popular songs being dominated by one song. For example, the anti epidemic songs ‘Spring Returns to Jiangcheng’ and ‘Hometown’ created by AI have received widespread attention.

Meanwhile, some well-known artificial intelligence platforms such as Microsoft Xiaobing have mastered various styles of music creation, including pop, folk, and ancient styles. During her studies at Shanghai Conservatory of Music, Xiaobing had in-depth exchanges and learning with classmates from the Department of Sound Engineering. This mutual ‘learning’ and ‘inspiring’ process helped promote the innovation and development of traditional music.

4.2. Virtual Instrument Performance

Using artificial intelligence technology, the timbre of traditional musical instruments can be simulated and reproduced, providing users with more convenient and rich music experience. Virtual musical instrument performance, especially virtual musical instrument combined with artificial intelligence technology, can provide new expression and innovation space for Chinese traditional music, and help promote its development and move towards a broader stage.

First of all, for some large-scale and complex traditional musical instruments, such as chimes, interactive performance can be realized through virtual reality technology, which has important reference significance for the technical realization of other percussion instruments.

Secondly, virtual instrument performance can also make traditional music more vivid, visually

appealing, and infectious. For example, the composer Zhao Zeming used modern composition and performance techniques in his new work Man Jianghong, which was tailored for the 'Qingshandu' group, and mixed the elements of pop and rock, as well as the rhythm and style of operas, showing the image of Yue Fei, the melody of ancient operas, and the artistic conception of ancient words with great appeal.

In addition, virtual musical instrument performance is also beneficial for teenagers to understand and accept traditional culture. Excellent traditional culture needs to be passed down from generation to generation, and teenagers are the hope of the future. The folk music performance video 'Warrior Lanling Entering the Array' , jointly produced by the Central Committee of the Communist Youth League of China, has gained wide attention on the network platform, which shows that the new performance form combining science and technology with traditional culture plays an important role in attracting young Chinese audiences.

In terms of digital protection, China Academy of Art and Tencent Mutual Entertainment jointly launched the 'Hear Digital Mountains and Rivers' digital protection project of Chinese traditional instrumental music, which also achieved remarkable results. Special attention should be paid to the inheritance and activation of chimes and guqin. In the first phase of the project, the audio team collected the sound source of Zeng Houyi Chime systematically, omni-directionally and with high precision, and achieved initial results. The project also developed a WeChat applet of 'Digitalization of Traditional Instrumental Music' to display professional knowledge such as musical instruments, music sounds and music scores. In order to better integrate ancient music into daily life, QQ Music and tencent games jointly produced the album 'Healing of Ancient Music', which created the sound source of ancient music in multiple styles across borders [7]. These measures aim to protect and inherit traditional music, and at the same time let more people know and appreciate ancient music. This project gives the Millennium ancient music a new life in the digital world, and also indicates the possibility that the new technology of artificial intelligence will be more applied to the inheritance of traditional music in the future.

4.3. Music Education Platform

Through artificial intelligence technology, users can be provided with personalized music learning programs to help users better understand and appreciate traditional music, which can provide new possibilities and paths for the protection and development of Chinese traditional music.

First of all, by combining artificial intelligence composition technology with intangible cultural heritage music protection, we can realize the innovative inheritance of traditional music. For example, the 'Application Demonstration of Multidimensional Cloud Interactive Demonstration System' project of Shanghai Conservatory of Music uses artificial intelligence technology to help protect and spread 'Songyang Gaoqiang', which is one of the oldest operas in Zhejiang Province. Young music lovers and music educators can also use artificial intelligence to deeply understand and master the essence of traditional music and give it new life.

Secondly, artificial intelligence can help understand technical problems such as melody and rhythm of music, and help improve teaching efficiency and quality. Using artificial intelligence technology to realize digital music classroom scheme, combining music teaching method to realize intelligent whiteboard and other rich teaching methods, provides an important tool for improving the quality of music education, enables teachers to better impart knowledge and skills, and students to have a deeper understanding of the connotation of traditional music and improve teaching effect. For example, customizing the evaluation schemes such as the music senior high school entrance examination not only improves the efficiency of the examination, but also makes the evaluation more fair and accurate, which can greatly enhance the modernization level of traditional music education.

Finally, through AI music education platform, learners can learn traditional Chinese notation methods such as 'Gongchi Notation'. Artificial intelligence system needs to store the learned knowledge in a structured form. Through such a platform, artificial intelligence technology can be used to interactively learn a kind of Gongchi spectrum and even different kinds of Gongchi

spectrum notation or Guqin subtraction spectrum, etc., and real-time error correction can be achieved through instant feedback, virtual counseling and demonstration, and personalized learning experience can be obtained. AI can also grasp the actual situation of learners according to the adaptive learning system, so as to adjust the teaching content and difficulty and improve the learning efficiency and effect.

4.4. Music recommendation system

Artificial intelligence technology and music recommendation system can help protect and promote unknown traditional music tracks in various ways.

From the classification of songs, dances, operas, songs and music types, Chinese traditional music has a vast number of tracks, including folk songs and national instrumental music that are well known to the public, and more tracks need to be inherited, sorted out and disseminated urgently, and artificial intelligence can also be applied in this respect.

First of all, the music recommendation system based on deep learning can provide users with personalized and diversified music experiences, so that more users can contact and understand traditional music. For example, some music recommendation systems can recommend traditional music with similar styles or themes according to users' listening history and preferences, so that users can discover and like traditional music while enjoying music. This deeply customized music recommendation can not only enhance the user experience, but also help promote more traditional music and tracks with traditional music elements.

Secondly, combined with the protection of intangible cultural heritage music, this recommendation system can combine traditional music with artificial intelligence composition technology, and artificial intelligence tools can create brand-new music from scratch, including automatically generating lyrics, chords and musical instruments, so that traditional music can be inherited in innovation. For example, young music lovers can understand and learn the essence of traditional music through AI technology. This innovation not only makes it possible for all people interested in music to create music, but also gives traditional music a new form of expression, which can not only inject new vitality into traditional music, but also enable the younger generation of listeners to contact and understand traditional music in a more acceptable way.

In addition, some advanced recommendation systems also combine content information and collaborative filtering methods to solve the ‘cold start’ problem of new songs. This means that even if a song or music has never been heard by users, it can be recommended to users according to its characteristics and similarity with users' listening habits[8]. Generally speaking, the application of artificial intelligence technology and music recommendation system can open up a new way for the protection and development of traditional music, and at the same time enrich the content and form of music industry.

5. Summary

Concept innovation is the key to promote the success of traditional music education reform. With the advent of artificial intelligence era, music educators need to pay attention to traditional music education, clarify its importance to students' growth and national culture inheritance, and consciously grasp the direction of traditional music education reform. Although concept innovation is the key to promote the reform of traditional music education, how to make artificial intelligence better serve the protection and development of Chinese traditional music while maintaining the original artistic charm is still a problem worthy of continuous discussion.

Through the exploratory analysis of the innovative application of artificial intelligence technology in the field of Chinese traditional music, the following conclusions can be drawn.

The innovative application of artificial intelligence technology in the field of traditional music provides a new way and means for the inheritance and educational development of traditional music. Intelligent music creation can create modern music works with traditional music elements and promote the innovation and inheritance of traditional music. Virtual musical instrument performance can simulate and reproduce the timbre of traditional musical instruments, and provide

users with personalized music experience. Music recommendation system can promote unknown traditional music tracks and enrich the content and form of music industry. Artificial intelligence technology can also help understand the technical problems of music and improve the teaching efficiency and quality. However, there are still some challenges and problems in the application of artificial intelligence technology in traditional music. Concept innovation is the key to promote the reform of traditional music education. How to make better use of artificial intelligence to serve the education and inheritance of traditional music while maintaining the original artistic charm still needs in-depth research and exploration.

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