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The Function of "Immersive Technology" in the Presentation of Folk Song Performance in CCTV Spring Festival Gala

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ABSTRACT

This research aims to 1. analyze the current situation of the application of immersive technology in the folk song performance of CCTV Spring Festival Gala and its effect. 2.To explore the impact of immersive technology on the heritage and innovation of folk songs. 3.To assess the limitations of immersive technology in the application of folk song performance and recommendations for future development.

This research utilizes the literature research method, the case study method, and the interview method. It is found that immersive technology has multiple functions and roles in folk song performances. Firstly, it enhances the sense of immersion and the sense of scene by constructing a virtual background space and three-dimensional sound effects, making traditional folk song performances more visually and aurally impactful. Secondly, it enhances the interactivity of the performance and brings the distance between the audience and the performer closer. Thirdly, immersive technology provides a new path for the inheritance and innovation of folk songs, making the art of folk songs more widely accepted by combining traditional elements with modern technology. This research further discusses the challenges and limitations that immersive technology may face in folk song performances, and also puts forward some suggestions for future development. immersive technology opens up new possibilities for folk song performances, and has a broad development prospect.

Introduction

Since its premiere in 1983, the CCTV Spring Festival Gala (CCTV Spring Festival Gala for short) has become an important cultural event for Chinese people around the world to welcome the Spring Festival, which not only showcases a rich and colorful variety of cultural and artistic programs, but also carries deep cultural connotations and social responsibilities. As an iconic event of Chinese culture, the Spring Festival Gala brings together a variety of art forms, including songs, dances, comedies, sketches, and operas, to provide an audio-visual feast for hundreds of millions of viewers during the Spring Festival. Among them, folk songs, as an important part of traditional culture, have long played an important role on the stage of the Spring Festival Gala. However, how to revitalize these traditional art forms in today's modernized and digitized world has become a major challenge for Spring Festival Gala directors and planners.

With the rapid development of technology, immersive technologies (e.g. Virtual Reality VR, Augmented Reality AR, etc.) are gradually becoming an important tool to enhance the audience experience. These technologies can not only provide a more vivid and interactive viewing experience, but also give traditional performances a new way of expression. In this context, exploring the application of immersive technologies in the CCTV Spring Festival Gala folk song performance not only has academic research value, but also provides a new direction for practice.

The purpose of this study is to analyze how immersive technology is innovatively applied to the folk song staging of the CCTV Spring Festival Gala in order to enhance the visual and cultural expression of the program. Specifically, we will focus on the functions of the technology in enhancing artistic performance, improving audience participation, and optimizing cultural communication. At the same time, we will also examine the challenges and limitations posed by the application of the technology and explore ways to find a proper balance between technological advancement and traditional cultural heritage.

In addition, the study will make a number of recommendations aimed at helping the Spring Festival Gala to further optimize its technology application strategy and improve the overall acceptance and satisfaction of the audience. By exploring these issues in depth, we hope to reveal how immersive technology can support and promote the inheritance and development of traditional folk song culture in the context of the new era.

This research is structured as follows: first, we will review relevant literature and case studies to construct a theoretical foundation; then, we will analyze the specific application of immersive technology in the Spring Festival Gala; subsequently, we will put forward practical suggestions based on the challenges and opportunities identified, and finally, we will summarize the main contributions of the study and future research directions. Through the development of this study, it is hoped that it can provide references and lessons for CCTV Spring Festival Gala and even other cultural platforms in the practice of technological innovation and traditional artistic expression.

Research objective

1. In order to analyze the current situation of the application of immersive technology in the folk song performance of CCTV Spring Festival Gala and its effect
2. In order to explore the impact of immersive technology on the heritage and innovation of folk songs
3. In order to assess the limitations of immersive technology in the application of folk song performance and recommendations for future development

Literature Review

Immersive experience was first proposed by the American psychologist Harry Chekson Milha, and through his “Flow” theory, he revealed to us the optimal state of experience that an individual can achieve in a specific environment. This state describes a psychological phenomenon of total commitment, forgetfulness of self, and distorted sense of time, and lays the theoretical foundation for the subsequent development of immersive art. With the progress of science and technology and the innovation of art forms, immersive technology has gradually penetrated into a number of art disciplines such as theater, music, etc. Immersive technology, which was mainly used in the game and entertainment industry in the early days, has been gradually expanded to the field of art and culture in recent years. Wang Wei pointed out in “An Exploration of the Viewing Forms of Immersive Theater” that this technology opens up new ways for theater creation by reshaping the relationship between the viewer and the performer and enhancing the audience's sense of live participation. Her research points out that immersive technology can break the fourth wall, allowing the audience to be more than passive recipients, but can participate in the advancement of the play. This change also energizes traditional performance forms such as folk songs and enhances the viewing experience(Wang W.,2023).Li Xi explores in detail the historical development trajectory of immersive art in The Origin and Development of Immersive Art, pointing out that this technology is not something completely new, but is based on multimedia art and human-computer interaction technology. His literature review shows that immersive technology has played an important role in enhancing artistic expression and enriching art forms, and has injected new vitality into traditional art.(Li Xi . ,2019)

Since its inception, the CCTV Spring Festival Gala has been committed to promoting program quality through technological innovation. In Wang Eiru's article, “Technology Empowers the Artistic Innovation of CCTV Spring Festival Gala,” she analyzes how the application of various advanced technologies in the Spring Festival Gala in recent years has played a key role in enhancing the program's visual effects and narrative capabilities. The study points out that by utilizing holographic projection and augmented reality, the Spring Festival Gala was able to realize unlimited creative imagination within the limited stage space(Wang, E. ,2024)。Haizhi Wang and Zhen Wang delve into the evolution of the Spring Festival Gala's choreography, analyzing in detail how technological advances have broken through the limitations of traditional stage design and provided new possibilities for program presentation. The article points out that in recent years, AR technology has made the stage of folk song performances more vivid and three-dimensional by generating virtual backgrounds in real time, enhancing the audience's sense of immersion(Wang, H.-Z. & Wang, Z.. ,2023).Chen Hao, on the other hand, in “Innovative Expressions of CCTV Spring Festival Gala Empowered by Technology”, introduced in detail how the Spring Festival Gala in recent

years has utilized high-definition technology, multi-dimensional sound system and interactive technology to enhance the audience's experience. He pointed out that the application of 8K UHD technology in the Spring Festival Gala has greatly improved the clarity and color expression of the TV screen, enabling viewers to experience the colorful content of the program in an immersive way(Chan H. ,2022).In the article “Performing Arts Technology Helps CCTV Spring Festival Gala in the Year of the Ox”, the editor cites a number of examples of the application of technology in the 2021 Spring Festival Gala, such as real-time switching of LED holographic screens on the stage, AR special effects, and interactive lighting design. These technologies not only enhance the visual impact of the program, but also improve audience participation and satisfaction through real-time interaction with the audience(Editorial. ,2021).

Research Methodology

This study adopts a qualitative research and analysis method in order to comprehensively analyze the application and effect of immersive technology on folk song performances in the CCTV Spring Festival Gala.

Literature analysis method

A systematic overview of the historical development of immersive technologies through a documentary research method. This includes the initial artistic attempts in the early 20th century to the rise of Virtual Reality (VR) and Augmented Reality (AR) technologies in the mid-to-late 20th century, as well as the evolution of the application of these technologies in different periods, providing an in-depth understanding of how immersive technologies have influenced artistic expressions at different stages.

Second, the literature research method is also used to explore specific application examples and theoretical frameworks of immersive technologies in folk song performances, case studies and theoretical analyses on the application of immersive technologies to stage performances, and to discuss the significance of these changes on the inheritance and innovation of folk songs as a traditional art form. In addition, by analyzing the relevant literature, the researcher is able to identify current research gaps in the combination of immersive technology and folk song performance. Although there has been a large amount of literature exploring the wide application of immersive technology and its artistic expression, research on the application of specific folk song performances in the environment of large-scale variety shows such as the CCTV Spring Festival Gala is still relatively scarce. Therefore, the research in this research not only fills this research gap, but also provides a reference basis for future related research.

Case study method

1. Case Selection

- Several representative folk song performance programs from the CCTV Spring Festival Gala in 2019, 2020 and 2023 are selected as specific cases for in-depth analysis. These programs have significant features in terms of choreography, lighting and sound effects, and the application of virtual reality (VR) and augmented reality (AR) technologies.

2. Content of analysis

- Choreographer

Analyze in detail the choreography of folk song performances in the Spring Festival Gala over the years, and evaluate the innovative application of immersive technologies in stage backgrounds, props, and scene transitions.

-Light & Sound

Examine the application of immersive technologies for lighting and sound enhancement, including intelligent lighting control systems, surround sound audio, etc., to enhance audience immersion.

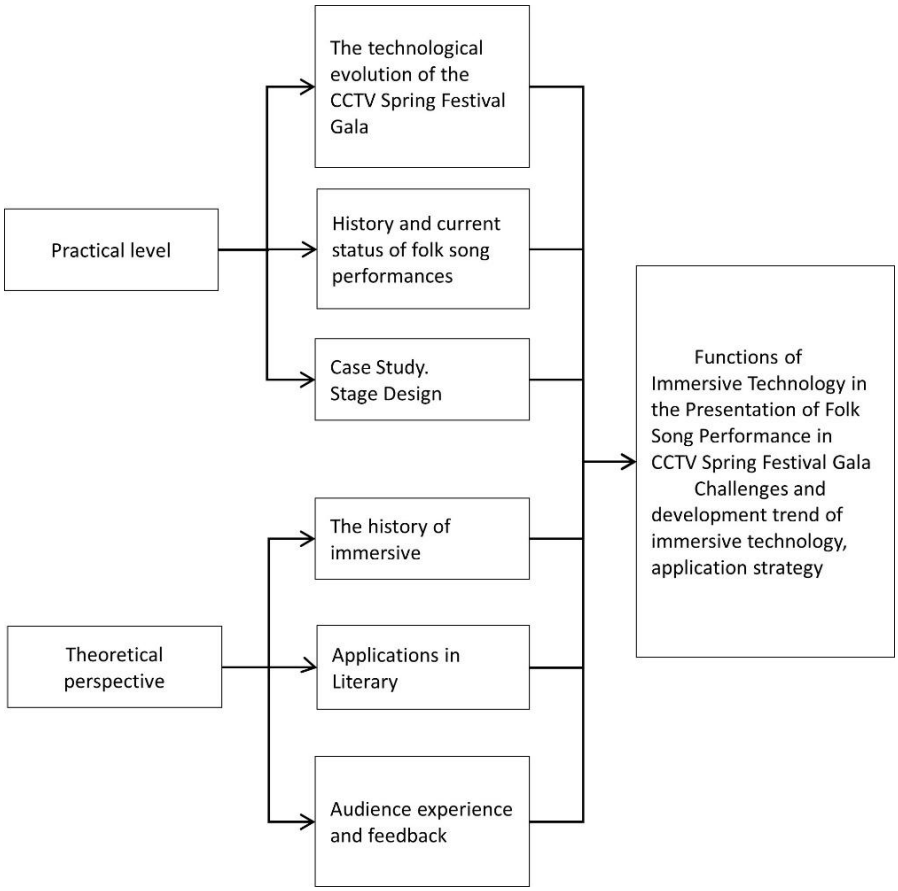
- Virtual Reality and Augmented Reality

Analyze the use of VR and AR technologies in specific programs, such as holographic projection, 360-degree panoramic video, and real-time interactive projection, and explore the role of these technologies in enhancing performance effects and audience experience.

Interview method

- Invite several experts with extensive experience in the fields of immersive technology, TV program production, and folk song performance to conduct semi-structured interviews. Obtain their professional insights on the effects of technology application and future development. Understand their application ideas, technical challenges and solutions to immersive technology in the process of program design and realization.

The conceptual framework



Research results

Research objective 1 :

Immersive technology provides an innovative narrative for the stage performance of folk songs, allowing the audience to participate more directly in the performance through virtual reality and augmented reality, enhancing interactivity and sense of immersion. This new presentation not only improves the audience's visual and auditory experience, but also effectively promotes the modernization of folk songs, a traditional art form. Relevant literature points out that the application of immersive technology in the Spring Festival Gala is not only a combination of culture and technology, but also an inheritance and innovation of traditional art forms.Literature analysis also reveals the dual challenges of immersive technology in the Spring Festival Gala program: on the one hand, how to retain the unique cultural value of folk songs while attracting more viewers through modern technological means; and on the other hand, how to technically ensure synchronization with artistic expression. The results of the study show that although current technological advances have brought more possibilities for program production, the rapid development of science and technology also requires that cultural and art workers quickly adapt to and master new technologies in order to avoid the phenomenon of artistic expression lagging behind technological development.

By comparing domestic and international literature, there are differences in the use of immersive technology in different cultural contexts, but the general trend is to enrich the audience's cultural experience with the help of technology. This global exploration provides a useful reference on how to modernize while preserving the traditional elements of folk songs.Immersive technology also serves to promote cultural identity and international communication. As an important cultural event, the CCTV Spring Festival Gala carries the important task of showcasing Chinese culture. Through immersive technology, ethnic folk songs can not only be presented more vividly and three-dimensionally on stage, but also let the audience feel the charm of Chinese culture more deeply through advanced visual effects and interactive experience. This technical means can break the limitations of traditional performance forms, make it easier for the audience to understand and identify with the cultural characteristics of different regions, and enhance cultural self-confidence and national identity. Secondly, the use of immersive technology helps to enhance the program's international communication power. The use of technologies such as virtual reality (VR) and augmented reality (AR) not only expands the geographic scope of the program's audience, but also improves the program's competitiveness in the international market, and establishes a new channel for the foreign dissemination of Chinese culture. Immersive technology is not only an innovation in the means of entertainment, but also an important tool for the innovative dissemination of Chinese excellent traditional culture in the context of the new era, which helps to realize the diversified integration and dissemination of culture.

Research objective 2 :

Year	Program	Forms of performance	Immersive broadcast content
2012	“The Great New Year's Greetings from the South-East to the North-West	Song cycle	Folk song interpretation song and dance by star families, T-shaped three-dimensional elevated stage extended to the audience
2013	“Jasmine”	Creative Duets	Adaptation of folk songs, ethnic and international combination, flower cavity to increase the freshness, 360-degree LED screen, elevated ladder stage, surround lens with 3D stage
2014	“The Lights and the Colors”	Antiphonal answer	New folk songs, sung by grassroots singers in popular singing style, incorporating research-cutting folkloric stage effects
2015	“Nostalgia”	Soprano	New Folk Songs, Ambient Realistic Pictures Played on Big LED Screen
2016	“A Shout from the Huayin Laoqiang”	Antiphonal answer	Creative folk songs, combining traditional “family theater” and popular elements, with traditional instruments into the electro-rock band, the background to restore the traditional atmosphere, special stage props
2017	“Songs from the Li River”	Antiphonal answer	Traditional adaptation, traditional song and dance performances in the clubhouse, incorporating Weiya to make the stage elements richer, adding the evening live stage, water features, lighting to match
2018	“Singing into the sunset”	Antiphonal answer	Songs and dances in the sub venue, new folk songs using traditional folk song interpretation, integration of chorus, fireworks, dragon dance performance, wandering camera reflecting the immersive atmosphere
2019	"The Time Bugle”	Leader, Chorus	Jilin branch of the new folk songs, the use of traditional folk songs, “a leader of the crowd and” the era of the horn singing, the integration of fireworks, car shows, drone performances, to enhance visual effects
2020	“The Spring Breeze 100,000 Leagues”	Girls' duet	Song and dance, naked eye 3D effect, three-dimensional stage with rich layers, new folk songs of the times, integration of popular singing, actors cross-border cooperation

Year	Program	Forms of performance	Immersive broadcast content
2021	China in Lights	Antiphonal answer	Folk songs and popular fusion, naked eye 3D effect, AR virtual technology song and dance, three-dimensional sense to create a high-rise cityscape immersive effects

(2012-2021 CCTV Spring Festival Immersion Folk Song Performance Statistical Tables)

Through the case study of the above 10 Spring Festival works, we explore how the introduction of immersive technology in folk song performances can promote the modernization and innovation of traditional culture, and the results of the study can be summarized as follows:

1.The fusion of tradition and modernity: immersive technology provides a new path for the modernization of traditional folk songs. Works such as “Jasmine Flower” and “A Shout from Huayin Laoqiang” reinterpret traditional folk songs by integrating international elements and modern music forms (such as electro music and rock), so that they retain their national characteristics and are modern at the same time, thus realizing an innovative combination of traditional and modern art forms.

1. Enhanced Audience Experience and Interactivity: By adopting advanced technologies such as 360-degree LED screen, naked-eye 3D effect, AR virtual technology and so on, the work greatly enhances the immersive experience of the audience. For example, “China in Lights” creates an immersive feeling through the three-dimensional stage and virtual cityscape, making the traditional folk song performance more vivid and attractive. The use of such high-tech means helps to capture the attention of young audiences.

2. Diversified forms of performance: The cases show that immersive technologies have led to diversified forms of performance. For example, the club performances in “Song Pairing to Sunset Slope” and “Time Horn” combined visual effects such as live stage, drones and fireworks to create a more dynamic and interesting form of performance, breaking the singularity of traditional performances and adapting to the diversified aesthetic needs of modern audiences.

3. Promotion of cultural inheritance and identity: Works such as “Songs from the Li River” enhanced the presentation of local traditional culture by incorporating ethnic folklore and local characteristics in the performance. Immersive performances not only help more audiences to understand and identify with traditional Chinese culture, but also enhance cultural exchanges and dissemination in a global perspective, such as the joint performance involving Celine Dion, which promotes international cultural dialogues.

4. Technology's promotion of artistic innovation: Immersive technology not only assists and enhances traditional art forms, but is also an important driving force for artistic innovation. Through the deep integration of technology and art, directors and performers are able to explore more creative and expressive art forms.

In summary, the introduction of immersive technology in folk song performances not only provides a modernized way of displaying traditional culture, but also plays a significant role in promoting the inheritance of folk songs, attracting audiences of different ages, especially young audiences, and enhancing the sense of cultural identity. The application of new technologies provides a broad space for the future development of the art of folk songs,

and at the same time poses the challenge of innovation based on the preservation of traditional cultural values.





Research objective 3 :
(Author Interview with CCTV Spring Festival Gala Director Langkun&Author Interview with CCTV Spring Festival Gala Music Director Bian Liunian)

The authors collected valuable insights from Lang Kun, the director of the Spring Festival Gala, and Bian Liunian, the music director of the CCTV Spring Festival Gala, through the interview method, which provided in-depth perspectives and reflections for evaluating the limitations of the application of immersive technologies in folk song performances and suggestions for future development.

1. Limitations of immersive technology

Inadequate integration of technology and art: Director Langkun pointed out that current technical means are often ahead of artistic expression, resulting in insufficient integration between the two. The rapid development of technology often makes it difficult for artists to grasp and effectively apply it in time, resulting in a disconnect between technical performance and artistic expression in some programs. Although immersive technology significantly improves the audience's visual and sensory experience, it often faces the problem of how to harmoniously integrate with traditional art forms in the process of technology implementation. Folk songs have their own unique cultural heritage and forms of expression, and over-reliance on technology may lead to the weakening of the core cultural connotations of the performance. Therefore, the directing team needs to find a balance between technology and art in order to avoid the masking effect that excessive penetration of technology has on the art itself.

Diversity in audience acceptance: Although immersive technologies can enhance the audience's immersive experience, their acceptance varies depending on the audience's cultural background and level of exposure to technology. Some traditional audiences may be uncomfortable with overly modernized presentations, which may affect the effectiveness of the program.

High Cost and Resource Consumption: According to Director Bian Liunian, the use of immersive technology requires the investment of large amounts of money and resources, which to a certain extent increases the cost of recording and producing the program. For program production teams with limited resources, this may become a constraint.

Adaptability of traditional art forms: Folk songs themselves have profound cultural values and traditional artistic charms, but in the metropolitan context, their integration with modern technological forms may face the phenomenon of incompatibility. Although technological packaging can close the distance with modern audiences, a balance needs to be found between original traditional expression and modern technological presentation.

2. Proposals for future development

Enhancing synergistic development of technology and the arts: To realize the deep integration of technology and the arts, art creators need to constantly update their knowledge base and enhance their understanding and ability to apply new technologies. Directors and artists should work closely with technical teams to explore how to effectively integrate technological innovation into artistic expression.

Exploration of diversified presentation: Through immersive technology, diversified forms of presentation can be realized on stage, thus enabling better transmission of traditional national culture in the modern context. In the future, the distance between the folk songs and the audience can be further shortened by introducing more interactive and participatory elements to increase the audience's participation and sense of belonging.

Protecting and innovating at the same time: in the constant pursuit of the use of new technology, it should always be based on the protection of traditional culture, and innovation should be regarded as a modern extension and expression of traditional culture rather than a substitute for it. This will require planners to always adhere to the cultural value as the core when designing each performance, to ensure that the audience, while enjoying the shocking effects of modern technology, can feel the unique spiritual charm and cultural value of folk songs.

Cultivating the audience's technological adaptability: While actively introducing technologies, the audience's awareness and acceptance of new technologies should be improved through multi-channel and multi-form popularization and education. Through benign interaction with the audience, the new technology will gradually be transformed into a powerful tool for the dissemination of traditional culture.

Long-term Planning and Resource Integration: Develop a long-term program production plan, rationally allocate resources, and minimize the high cost of technology. Through multi-party cooperation and resource sharing, a sustainable program production ecosystem will be established.

Overall, although the application of immersive technology in folk song performance faces many challenges, through scientific and reasonable planning and continuous innovation, it has the potential to become an important form of artistic expression in the near future, strengthening the link between cultural heritage and innovative development. These development proposals not only promote the effective application of immersive technology, but also open up new space for the future of folk song performance and promote its new vitality in the new era.

Summarize

This research examines the role of immersive technology in enhancing folk song performances at the CCTV Spring Festival Gala, focusing on its impact on modernization and innovation. Using case studies and expert interviews, the findings reveal that immersive technology has significantly transformed these performances. Firstly, technologies like VR, AR, and 3D effects introduce novel visual and auditory elements, allowing traditional songs,

such as "Jasmine Flower" and "Huayin Laoqiang Shouting," to blend national characteristics with contemporary aesthetics. This fusion attracts younger audiences and strengthens cultural identity. Secondly, immersive elements, including 360-degree LED screens and naked-eye 3D, heighten audience participation and interactivity, as seen in performances like "China in Lights." Thirdly, diversified formats, including drones and fireworks in shows like "Song Pairing to Sunset Slope," cater to modern aesthetic preferences.

Challenges include maintaining cultural depth amid technological integration, variations in audience acceptance, and high costs. To address these, the research recommends aligning artistic and technical collaboration, expanding interactive presentation formats, preserving folk song essence, and educating audiences on new technology. Overall, immersive technology offers significant potential for the future of folk song performance, enriching cultural heritage while expanding its appeal across age groups.

Discussion

This analysis of immersive technology in folk song performances at the CCTV Spring Festival Gala reveals both its revitalizing impact on traditional folk music and the challenges it presents.

Firstly, immersive technology significantly enhances audience engagement and the sense of presence in performances. Advanced VR and AR allow audiences to experience the show more interactively, bridging the gap between viewers and traditional folk songs, while also enriching the visual and artistic dimensions of national culture.

However, the integration of technology with artistic expression remains problematic. According to directors Langkun and Bian Liunian, the pace of technological advancement often surpasses creators' ability to incorporate it meaningfully, leading to a disconnect between technical effects and artistic intent. Addressing this requires artists to deepen their technological knowledge and collaborate closely with technical teams to align technology with creative goals.

Additionally, immersive technology increases production complexity and costs, posing challenges for teams with limited resources. Balancing innovation with budget constraints is essential.

Another issue is maintaining the core essence of folk songs in modern urban contexts. While immersive technology helps engage contemporary audiences, finding a balance between traditional authenticity and modern presentation is critical to cultural transmission. Successfully merging these aspects means preserving the cultural integrity of folk songs while enhancing their appeal with modern tools.

Audience diversity also affects technology acceptance, which varies based on age, background, and digital literacy. Promoting public understanding and acceptance of immersive technology through education and cultural outreach is essential to using it as a tool for cultural communication.

In conclusion, immersive technology offers valuable opportunities to enrich folk song performances but also demands thoughtful integration to address artistic coherence, cost, and cultural fidelity. With continued exploration, this fusion of tradition and technology can broaden the future of folk song presentation, meeting modern audience expectations while reinforcing cultural heritage and identity.

Recommendations

After analyzing the application of immersive technology in CCTV Spring Festival Gala folk song performance and the challenges and opportunities it brings, we put forward the following suggestions to further promote the development and application of immersive technology in Spring Festival Gala folk song performance:

1. Enhancing synergy and innovation between art and technology
2. Enhancing the technological literacy of arts workers
3. Diversified Presentation and Audience Education
4. Balancing Innovation and Cost Control
5. Discovering and Inheriting the Core Values of Folk Song Culture
6. Strengthening the Program Evaluation and Feedback Mechanism

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