

The Impact of the Development of AI Dubbing Technology on the Live Dubbing Industry and Its Countermeasures

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Abstract: With the swift growth of AI in speech, AI dubbing has emerged as a key player. Its development status, impact on the live dubbing industry, and strategies to address these changes are explored in this paper through literature analysis. AI dubbing has made remarkable progress in speech quality, emotional expression, speed and intonation control, and is widely used in audiobooks, film and television, advertising, and intelligent voice interaction. While it enhances content production efficiency and reduces costs, it also poses challenges to the live dubbing industry by taking over some basic and repetitive work, leading to fewer job opportunities and a more competitive market. However, AI dubbing still lags behind excellent live dubbing in emotional and artistic expression. To tackle these challenges, this paper suggests strengthening the training of live dubbing talents, exploring a collaborative model between live and AI dubbing, and promoting innovation and policy support for the live dubbing industry.

Keywords: AI dubbing technology, live dubbing industry, impact, countermeasures

1. Introduction

In the wave of artificial intelligence, AI dubbing technology is reshaping the voice industry at an unprecedented speed. As an emerging technology, it has been widely used in audiobooks, film and television production, advertising, intelligent voice interaction and other fields, greatly improving content production efficiency, reducing production costs, and bringing new development opportunities to related industries. However, the rapid development of technology has also brought new challenges, especially in the live dubbing industry. The popularization of AI dubbing technology has had a profound impact on the traditional dubbing business and triggered a profound change in the industry.

With the continuous maturity of AI dubbing technology, it has made significant progress in sound synthesis quality, emotional expression ability, speech speed and intonation control. For example, AI dubbing has been able to achieve multi-lingual dubbing to meet the needs of different regions and cultural backgrounds, while performing well in efficient output. However, live dubbing still has an advantage in some high-quality projects due to its unique emotional expression and artistic appeal.

In this context, this study aims to deeply analyze the opportunities and challenges brought by the development of AI dubbing technology to the live dubbing industry, provide useful references for live dubbing practitioners, industry-related enterprises and policy makers, and help the sustainable development of the live dubbing industry in the AI era. This will not only help practitioners adapt to market changes and assist companies in balancing innovation and competition, but also provide a basis for policy makers to promote the overall progress of the industry, promote industrial integration, ensure employment stability, and enable the dubbing industry to move forward steadily in the wave of technology.

2. Research Purpose and Scope

In today's era, artificial intelligence technology is developing rapidly, and all fields are deeply affected by it. Among them, AI dubbing technology has emerged in the field of voice and has become an important force that cannot be ignored. The progress of AI dubbing technology is changing with each passing day. It has achieved remarkable achievements in the quality of speech synthesis, the delicacy of emotional expression, and the precise control of speech speed and intonation. It has been widely used in many industries such as audiobooks, film and television production, advertising, and intelligent voice interaction. This not only greatly improves the efficiency of content production, but also effectively reduces production costs, injecting new vitality and opportunities into related industries. However, just as a coin has two sides, the rapid development of AI dubbing technology has also brought huge impact and unprecedented challenges to the traditional live dubbing industry, triggering profound changes in the industry. Therefore, in-depth exploration of the development status of AI dubbing technology, analysis of its impact on the live dubbing industry, and seeking effective response strategies have

become important issues that need to be solved urgently.

The main purpose of this study can be summarized as follows: First, a comprehensive and in-depth analysis of AI dubbing technology is conducted, covering its development history, technical principles, and application practices in different fields. Deeply explore the driving factors behind its success, analyze the deep logic hidden under the surface phenomenon, and make reasonable predictions about its future development trends, so as to outline a complete and meticulous panorama of AI dubbing technology. Second, accurately grasp the multi-dimensional impact of AI dubbing technology on the live dubbing industry, which includes both obvious advantages such as improving work efficiency and reducing economic costs, as well as potential impacts on the industry's competitive landscape, employment situation, and artistic quality of works. Third, it aims to provide solid theoretical support and forward-looking decision-making guidance for the sustainable development of the live dubbing industry in the wave of the AI era. By deeply analyzing the relationship and development trend between AI dubbing technology and the live dubbing industry, it provides useful references for industry practitioners, enterprises, and policymakers, helping them to find their position, seize opportunities, and respond to challenges in technological changes, so as to achieve a smooth transition and long-term development of the industry. [1]

In order to achieve the above research objectives, this study will focus on the following key aspects: First, we will deeply explore the current status and future trends of AI dubbing technology, explore its outstanding performance in improving content production efficiency, optimizing production costs, and expanding application fields, while not avoiding the gap between it and real dubbing in terms of emotional expression depth and artistic expression, in order to outline a complete and objective panorama of AI dubbing technology. Secondly, we will analyze in detail the multi-level impact of AI dubbing technology on the real dubbing industry. On the one hand, we will focus on the positive role of AI dubbing technology in improving work efficiency and reducing production costs, and analyze how it can provide new creative ideas and inspiration for the real dubbing industry; on the other hand, we will deeply explore the impact of AI dubbing technology on employment opportunities in the real dubbing industry, the reshaping of the industry's competitive landscape, and the potential impact on the artistic quality of works, revealing the complex situation of opportunities and challenges it brings. Finally, combined with literature research and case analysis, a series of practical response strategies and suggestions are proposed to provide theoretical reference and practical guidance for the sustainable development of the real dubbing industry, helping it to find its position, seize opportunities, and respond to challenges in the wave of AI dubbing technology. [2]

The scope of this study is broad and in-depth, covering multiple key aspects and specific areas of AI dubbing technology and the live dubbing industry. On the technical level, this study will trace the development of AI dubbing technology from the early splicing synthesis technology, through the stages of parameter synthesis and statistical parameter synthesis, to the current end-to-end neural synthesis technology based on deep learning becoming the mainstream. In-depth analysis of the key role played by core technologies such as the Transformer architecture in improving the naturalness and similarity of speech synthesis, while detailed interpretation of core principles such as sound synthesis algorithms and sound cloning algorithms, and exploration of their innovative applications and practical results in cutting-edge fields such as multilingual dubbing and virtual IP voice generation. On the industry level, this study will systematically sort out the development of the live dubbing industry from the beginning of the radio drama era, through the rise and development of industries such as film and television, animation, advertising and games, and gradually grow stronger, and in-depth exploration of the characteristics and styles of different historical stages. At the same time, the current market size, competitive landscape, talent education and training model of the live dubbing industry are comprehensively analyzed, and the impact of AI dubbing technology on employment opportunities in the live dubbing industry, changes in the industry's competitive landscape, and the impact on the artistic quality of works are analyzed in depth with specific cases.

In terms of literature research, this study draws on Zhiyan Consulting's in-depth research and analysis of the Chinese dubbing industry market from 2025 to 2030, providing data support for grasping the market size and development trends of the dubbing industry, including a discussion on the irreplaceability of live dubbing in specific scenarios, and providing a theoretical basis for in-depth understanding of the unique value of live dubbing. In addition, technical reports on the current status of AI dubbing and analysis of the development trend of the dubbing industry are also referred to, providing a multi-dimensional perspective and rich information for the study.

Overall, this study attempts to present a clear, complete and objective development status and relationship between AI dubbing technology and the live dubbing industry through a comprehensive, in-depth, detailed and standardized analysis, providing a solid theoretical foundation and forward-looking decision-making guidance for the sustainable development of the live dubbing industry in the AI era. At the same time, it also provides a clear direction and useful ideas for future research, and promotes the dubbing industry to achieve a smooth transition and long-term development in technological change.

3. Literature Review

3.1 Research Status of AI Dubbing Technology

As an important branch in the field of artificial intelligence, AI dubbing technology has made significant progress in recent years. Its development history can be traced back to the early splicing synthesis technology, followed by the emergence of parameter synthesis, statistical parameter synthesis and other methods. At present, end-to-end neural synthesis technology based on deep learning has become the mainstream, and the Transformer architecture has played a key role in it, which has greatly improved the naturalness and similarity of speech synthesis. However, AI dubbing technology still has some shortcomings. In terms of emotional expression, although it has been improved through emotional perception algorithms, it is still inferior to real dubbing in the delicate expression of complex emotions. In addition, AI dubbing technology still needs to be improved in terms of accuracy and personalized customization of specific languages or dialects.

3.2 Research Status of Real Dubbing Industry

As an important part of content creation, the development history of the real dubbing industry can be traced back to the era of radio dramas. With the rise of industries such as film and television, animation, advertising and games, the real dubbing industry has gradually grown. At present, the global dubbing market size has exceeded 100 billion yuan and is showing a continuous growth trend. The scale of China's game industry exceeds 500 billion yuan, making it one of the largest game markets in the world. Character dubbing plays an important role in it, giving game characters unique personality and charm (Zhiyan Consulting, 2024).

In terms of industry competition, well-known dubbing studios such as Sony Pictures Animation and Warner Bros. Animation occupy the high-end market, while a large number of independent dubbing artists are active in the mid- and low-end market. The training of dubbing talents is mainly carried out through colleges and universities' film and television performance, broadcasting and hosting and other related majors and professional training institutions. However, with the increasing demand for digital transformation and the audience's demand for high-quality dubbing, the live dubbing industry is facing new challenges. Existing research has paid relatively little attention to the integration of the live dubbing industry with emerging technologies, which provides an opportunity for this study to deeply explore the development strategy of the live dubbing industry under the impact of AI technology [2].

3.3 Research status of the relationship between AI dubbing technology and the live dubbing industry

Regarding the impact of AI dubbing technology on the live dubbing industry, previous studies have explored it from the perspectives of substitution effect and synergy effect. On the one hand, AI dubbing poses a greater substitution threat to live dubbing in basic and highly repetitive dubbing tasks. For example, in the fields of advertising and news broadcasting, AI dubbing has gradually occupied the market share with its advantages of high efficiency and low cost. On the other hand, some scholars pointed out that in the field of high-end and artistic dubbing, real-person dubbing still has irreplaceable advantages due to its unique emotional expression and artistic appeal. In addition, some studies have proposed that the two can complement each other's advantages through cooperation. For example, the startup Coqui provides unique product advantages through technological innovation, allowing customers to choose or create unique voice styles, providing new solutions for the film, game and advertising industries. However, existing research still has limitations in depth and breadth, lacks detailed analysis of specific impact mechanisms, and insufficient consideration of differentiated impacts in different segments. This provides theoretical support and comparative basis for this study to further explore the impact of AI dubbing technology on the real-person dubbing industry.[3]

3.4 Development status of AI dubbing technology

3.4.1 Definition and principle of AI dubbing technology

AI dubbing technology refers to the use of artificial intelligence algorithms and models to simulate human voices to achieve text-to-speech conversion. Its core lies in text-to-speech (TTS) technology, which uses deep learning algorithms and large-scale voice data to train neural network models, allowing machines to imitate the characteristics and rhythm of human voices. Specific steps include voice data collection and processing, model training, and voice synthesis.[4] AI dubbing technology mainly relies on two core algorithms: voice synthesis algorithm and voice cloning algorithm, which are used to directly convert text into voice and copy the voice style of a specific person, respectively, to achieve personalized voice services.

3.4.2 Development history of AI dubbing technology

The development history of AI dubbing technology can be traced back to the 1950s, when Bell Labs in the United States developed the world's first electronic speech synthesizer "Audrey". In the 1970s and 1980s, speech synthesis technology made significant progress, and technologies such as "Talkomatic" and "IBM ViaVoice" emerged. Entering the 21st century, with the development of deep learning and neural network technology, AI dubbing technology ushered in a period of rapid development, and companies such as Google and Apple have launched related technologies. In recent years, end-to-end neural synthesis technology has become mainstream, and the Transformer architecture has played a key role, greatly improving the naturalness and similarity of speech synthesis.[5]

3.4.3 Current application of AI dubbing technology

AI dubbing technology has been widely used in many fields. In the field of news broadcasting, some media organizations use AI dubbing to achieve 24-hour uninterrupted news voice broadcasting, improving content production efficiency. In the production of audiobooks, AI dubbing can quickly convert massive text content into voice, reducing production costs. In the intelligent customer service industry, AI dubbing provides customer service robots with natural and friendly voice interaction capabilities, improving user experience. In film and television post-production, AI dubbing is used to assist in generating temporary dubbing materials for some scenes to speed up production progress. In addition, AI dubbing technology also provides a convenient communication tool for people with language barriers, reflecting the social value of technology. However, there are also some problems and limitations in the application of AI dubbing technology. Despite the continuous advancement of technology, there is still a gap with real-life dubbing in terms of delicate expression of emotions and naturalness of voice. How to further improve the realism and expressiveness of AI dubbing in the future will be the key direction of technological breakthroughs.[6]

3.5 Current Status of the Live-Action Dubbing Industry

3.5.1 History and Development of the Live-Action Dubbing Industry

The live-action dubbing industry has a history of more than 70 years in China. Its origins are closely related to early dubbed films. In 1949, the dubbing of the Soviet film "An Ordinary Soldier" was completed, marking the birth of the first generation of Chinese dubbing actors, who mainly came from the translation team of the Northeast Film Studio (the predecessor of Changchun Film Studio). In 1950, the translation team of Shanghai Film Studio was established, which translated many excellent foreign films. In 1957, the translation team of Shanghai Film Studio was officially upgraded to Shanghai Film Dubbing Studio Co., Ltd., becoming the industry benchmark in the dubbing industry. After the reform and opening up, China's film and television industry has developed rapidly, and the dubbing industry has also risen rapidly, forming its own characteristics and style, and a group of excellent dubbing actors and teams have emerged. Since the 21st century, with the vigorous development of cultural industries such as movies, TV series, animation, and games, the live-action dubbing industry has also continued to grow and gradually become an indispensable force in cultural communication and artistic creation, giving voice to characters and making works more vital and appealing.

3.5.2 Analysis of the current status of the live-action dubbing industry

In recent years, the market size of China's dubbing industry has shown a steady growth trend. In 2022, the market size of China's dubbing industry reached 6.48 billion yuan, of which film and television dubbing accounted for the largest proportion, up to 37.6%; animation dubbing and game dubbing accounted for 21.9% and 12.0% of the market respectively. In 2023, China produced and distributed a total of 156 TV series. The development of the animation industry and the game market has also greatly promoted the demand for the dubbing industry. In addition, there is a large demand for dubbing in emerging markets such as audiobooks and short videos. However, the intensification of industry competition has also led to price changes, which has had a certain impact on the income of dubbing actors. The dubbing education industry upstream of the dubbing industry plays a key role in the overall level. Professional dubbing education can provide the industry with talents with solid language skills, rich emotional expression ability and good voice control skills. At the same time, technical factors such as dubbing equipment and audio software also directly affect the efficiency and quality of dubbing work. In the field of AI dubbing, the development status of the AIGC industry partially determines the technical level and commercialization degree of AI dubbing. With the continuous increase of media content such as film, television, animation, and games, the dubbing industry has ushered in opportunities for rapid development, but it also faces many challenges.

3.5.3 Opportunities and challenges facing the live-action dubbing industry

At present, the live-action dubbing industry faces many opportunities. Under the background of cultural consumption upgrading, the audience's demand for high-quality dubbing works continues to increase, providing a broader market space for excellent dubbing talents and teams. The integration of emerging technologies such as virtual reality (VR) and augmented reality (AR) with industries such as film, television, and games has created more innovative dubbing application scenarios.

ios, bringing new growth points for the development of the industry. International exchanges and cooperation are becoming more frequent, and excellent domestic film, television, and animation works are going overseas, requiring a large number of high-quality multilingual dubbing services, which has expanded the business scope of the industry. However, the industry also faces many challenges. The impact of AI dubbing technology has led to a reduction in some low-end and repetitive dubbing business orders, affecting the income of some small dubbing studios and part-time dubbing artists. The industry is highly competitive, and low-price competition occurs from time to time, resulting in uneven dubbing quality and damaging the overall image of the industry. As the audience's aesthetic level improves, the requirements for emotional expression and voice shaping in dubbing are also constantly increasing, posing higher challenges to the professional quality and professional ability of dubbing practitioners. In addition, the rapid development of AI dubbing technology has also brought new challenges and opportunities to the traditional dubbing industry. In terms of challenges, the efficiency and cost advantages of AI dubbing technology may pose competitive pressure on traditional dubbing actors. In terms of opportunities, AI dubbing technology provides new production methods and innovation possibilities for the traditional dubbing industry. For example, AI technology can realize functions such as automatic tracking and sound effect synthesis, improving the efficiency and quality of dubbing post-production. At the same time, AI dubbing technology can also provide more cooperation opportunities and creative space for traditional dubbing actors.

3.6 Impact of AI dubbing technology on the live dubbing industry

3.6.1 Positive impact

AI dubbing technology significantly improves work efficiency by quickly generating dubbing materials. In basic and process-based tasks such as news broadcasting and advertising dubbing, AI can provide a preliminary dubbing version in a short time, and the live dubbing artist only needs to modify and improve it on this basis, thereby greatly shortening the project cycle. For example, an e-commerce platform needs to generate multi-language dubbing for 200 SKUs during a big promotion. Using the AI dubbing solution only takes 40 minutes, while the traditional model takes 72 hours. At the same time, AI dubbing also shows high efficiency in version iteration. After modifying the dubbing parameters, it takes less than 5 seconds to generate new audio, which is 240 times faster than the 2-hour cycle of manual re-recording.

In terms of reducing costs, AI dubbing technology effectively reduces labor cost expenditure by replacing some manual dubbing business. Especially in large-scale and long-length dubbing projects, such as the production of large-scale online novel audiobooks, the use of AI dubbing can control costs, so that projects that were originally unable to be carried out due to cost constraints can be implemented, thereby expanding the industry's business coverage and promoting market demand growth. Taking the production of 100 hours of historical audiobooks as an example, the traditional model requires 450,000 yuan for 3 professional dubbing actors and 80,000 yuan for post-modification costs, totaling 530,000 yuan; while the enterprise-level API (0.8 yuan/minute) using AI dubbing has a total cost of only 48,000 yuan, and supports 20 free modifications, with a cost reduction of 90.9%.

In addition, AI dubbing technology, with its unique sound effects and creative dubbing style, provides new creative ideas and inspiration for real dubbing artists. It can generate sounds with fantasy, science fiction or special sound effects, inspiring live dubbing artists to try new sound shaping methods and performance forms. For example, AI can break through the limitations of physical voice lines and generate virtual IP sounds, such as cute pets and mecha sounds, and even integrate multi-language styles, providing immersive sound solutions for the metaverse, games and other fields, thereby improving the artistic quality and innovation of dubbing works.

3.6.2 Negative impact

The widespread application of AI dubbing technology has had a significant impact on the live dubbing industry, especially in terms of employment opportunities. In some fields with relatively low requirements for dubbing quality, such as online short video dubbing and simple courseware production dubbing, AI dubbing has gradually occupied the market share, resulting in a decrease in the demand for live dubbing in these fields. This puts live dubbing practitioners with low skill levels and insufficient experience at risk of unemployment, which in turn affects the employment structure and talent stability of the industry. For example, a large number of movie commentaries and advertising dubbing on short video platforms have adopted AI dubbing technology, which is low-cost and high-efficiency, and has had an impact on the job opportunities of live dubbing artists. [7]

At the same time, the development of AI dubbing technology has also changed the competitive landscape of the industry. Traditional live dubbing studios not only have to compete with their peers, but also face the competitive pressure of AI dubbing products or technology companies that provide AI dubbing services. Some small dubbing studios that lack core competitiveness may be eliminated in the market competition, the industry concentration may increase, and the market competition pattern will change, which will have a profound impact on the industry ecology. For example, some large technol-

ogy companies can provide high-quality, low-cost dubbing services with advanced AI technology and powerful computing power, which poses a huge threat to traditional dubbing studios.

In addition, AI dubbing is currently difficult to fully match excellent real dubbing in terms of the depth of emotional expression and the artistry of voice performance. Over-reliance on AI dubbing may cause some works to lack emotional transmission and artistic appeal, affecting the overall quality of dubbing works, posing a challenge to the artistic creation standards and aesthetic concepts accumulated by the live dubbing industry over the years, and triggering people's thinking about the balanced development of technology and art. For example, some film and television works that require deep emotional expression, animation character dubbing, etc., AI dubbing may not be able to fully meet the requirements, while real dubbing artists have unique advantages in shaping characters, conveying emotions, and understanding context.

4. Research Results

4.1 Improving the comprehensive quality of real-life dubbing talents

4.1.1 Strengthening professional skills training

Drawing on the experience of excellent dubbing talent training at home and abroad, colleges and training institutions should optimize the dubbing professional curriculum setting and increase the training proportion of core skills such as voice shaping, emotional expression, and role understanding. For example, introduce simulated real dubbing project scene teaching to allow students to improve their professional skills in practice; at the same time, invite industry experts to comment on and guide cases to help students better cope with the challenges of AI dubbing and maintain their competitive advantage in the high-end and artistic dubbing field. [8]

4.1.2 Cultivating innovation ability and artistic accomplishment

Dubbing talents should focus on cultivating their own innovative ability, explore new dubbing performance forms and sound expression methods, and break through the traditional dubbing model. At the same time, strengthen the accumulation of artistic accomplishment, including the study of literature, drama, music and other aspects of knowledge, and improve the understanding and artistic appreciation of works. In this way, the characters can be given a more unique and charming voice image in dubbing creation, meet the audience's demand for high-quality dubbing works, and make up for the shortcomings of AI dubbing in artistic creation.

4.2 Explore the collaborative development model of real-person dubbing and AI dubbing

4.2.1 Cooperation with complementary advantages

Dubbing studios or individual dubbing artists can establish cooperative relationships with AI dubbing technology providers to achieve complementary advantages in actual projects. For example, in some projects, AI dubbing is first used to quickly generate a preliminary dubbing framework, and then the real-person dubbing artist performs fine processing such as emotional polishing, sentence rereading adjustment, and special sound effects. This not only takes advantage of AI's efficiency, but also takes advantage of real-person dubbing's strengths in artistic expression to jointly create high-quality dubbing works and improve the industry's overall creative level and production efficiency.

4.2.2 Customized service expansion

According to the needs of different customers, real-person dubbing and AI dubbing are combined to provide customized dubbing solutions. For customers who are cost-sensitive but have certain requirements for dubbing quality, a hybrid method of real-person dubbing and AI dubbing can be used to ensure the quality of dubbing for core characters while using AI dubbing to handle dubbing for background characters or simple scenes to achieve a balance between cost and quality. This not only expands the industry's business scope and market share, but also helps to alleviate the impact of AI dubbing on employment and create more new business opportunities for real-person dubbing.

4.3 Promote industry innovation and policy support

4.3.1 Encourage technological innovation and business expansion

The live dubbing industry should actively explore the introduction of emerging technologies, such as the integration of virtual reality, augmented reality, motion capture and other technologies with dubbing, and develop innovative dubbing business forms, such as immersive dubbing experience, interactive dubbing games, etc., to enhance the audience's sense of participation and experience and create new market demand. At the same time, dubbing companies are encouraged to carry out cross-field cooperation, and work closely with upstream and downstream companies such as film and television production, game development, and animation creation to jointly create influential IPs, expand business areas and profit margins, and enhance the industry's ability to resist the impact of AI dubbing.

4.3.2 Formulation of industry policies and regulations

Relevant government departments should introduce support policies for the dubbing industry, such as setting up special development funds to support dubbing technology research and development, talent training and innovative project incubation. Strengthen supervision of the dubbing market, formulate industry standards and regulations, ensure the quality and copyright of dubbing works, prevent unfair competition, create a good industry development environment, and promote the healthy and sustainable development of the live dubbing industry in the AI era.

5. Conclusion

Overall, this study deeply and comprehensively analyzes the impact of AI dubbing technology on the live dubbing industry, covering multiple key dimensions such as technology development, industry status, positive and negative impacts. Through rigorous literature review and in-depth case analysis, this study not only reveals the advantages and limitations of AI dubbing technology, but also proposes practical and forward-looking coping strategies such as improving talent quality, coordinated development, innovation and policy support. These strategies are highly operational and are expected to effectively help the live dubbing industry adapt to the new requirements of the AI era and achieve transformation, upgrading and sustainable development. However, this study has certain limitations in data coverage and segmented field analysis. Future research should focus on the continuous development of AI technology, deeply explore its differentiated impact on dubbing of specific types of works, and its competitive relationship in the international market, and provide more forward-looking and guiding theoretical frameworks and practical suggestions for the continuous and steady development of the live dubbing industry, so as to promote the live dubbing industry to achieve a higher level of prosperity and progress in the ever-changing technological wave.

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