

Analysis of Multimedia Computer Technology Applications in Radio and Television Engineering: Postprint

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Abstract

Since the advent of ENIAC, the world's first true electronic computer, computer technology has embarked on a path of continuous transformation and innovation. By the mid-20th century, computer technology had gradually become prevalent worldwide, and in today's society, it has evolved into an indispensable technology for most professions. This paper primarily investigates the significance of computer technology in the field of broadcasting and television. The integration of computer technology into broadcasting and television has transformed its former monolithic nature, contributed significantly to the development of broadcasting and television engineering, diversified transmission methodologies, and introduced advanced technologies. The author will examine the specific methods through which computer technology is integrated into broadcasting and television, and further explore the achievements attained through this integration in broadcasting and television engineering.

Full Text

A Brief Analysis of Multimedia Computer Technology Applications in Radio and Television Engineering

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Abstract

Since the advent of ENIAC, the world's first true electronic computer, computer technology has undergone continuous transformation and innovation. By the

mid-20th century, computer technology had gradually become widespread globally, and today it has become an indispensable technology for most work. This paper primarily explores the importance of computer technology in the radio and television domain. The integration of computer technology into radio and television has transformed previous monolithic practices, supported the development of radio and television engineering, enriched transmission methods, and introduced advanced technologies. The author investigates specific methods for integrating computer technology into radio and television and further explores the achievements realized through this integration.

Keywords: multimedia; computer; radio and television; transmission methods; application methods

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1. The Necessity of Integrating Computer Technology with Radio and Television Engineering

1.1 An Inevitable Choice for Improving Radio and Television Transmission Quality

Traditional radio and television broadcasting can no longer meet modern information demands. In this fast-paced era, broadcasting media must innovate their working methods to keep pace with the times and provide better user experiences. After observing market developments, it becomes clear that computer technology offers distinct advantages. Following their integration, information transmission speed has increased significantly while quality is guaranteed. Thus, computer technology represents an inevitable choice for improving both transmission quality and speed in radio and television broadcasting [2].

1.2 A Necessary Means to Solve Radio and Television Transmission Challenges

Before computer technology integration, radio and television transmission quality lagged behind. Computer technology, leveraging its advantages in high-speed and accurate data propagation, has solved broadcasting transmission challenges. Currently, radio and television media in China remain leading projects among various media, a success largely attributable to computer technology integration. This has transformed traditional working conditions and reinforced broadcasting's media position using the most advanced technologies. Continuous verifica-

tion has demonstrated that computer technology effectively addresses existing problems in radio and television engineering.

1.3 A Necessary Measure to Meet User Demands

Since the 21st century, as computers, mobile phones, handheld gaming devices, and other electronic equipment have entered social life, people have become increasingly dissatisfied with the speed and quality of information dissemination through radio and television. With the emergence of these new technologies, traditional broadcasting has lost its favored status among users [3]. As devices continue to evolve, radio and television engineering must adapt to the times and integrate computer technology to better satisfy user demands. Therefore, incorporating computer technology into radio and television engineering represents an effective operational strategy for current development trends and meets modern users' expectations for television.

Computer technology has become the primary means of advancing work in current radio and television platform development. Its ability to process and optimize big data not only reduces internal staff workload but also improves work efficiency, making significant contributions to media work. It enhances broadcasting station efficiency, promotes sustainable development of television media, and extends technology applications to mobile network electronic devices, providing convenience for all segments of society [1].

2. Specific Applications of Multimedia Computer Technology in Radio and Television Engineering

2.1 Applications in Media Content

Beyond the aforementioned necessity for integration, the author now examines specific manifestations of computer technology applications in media content, which are primarily reflected in three aspects:

First, multimedia computer technology has extensive applications in content transmission. Traditional radio and television engineering primarily used analog signals during operation, simulating signal sources before transmission to users (i.e., television viewers) through a series of internal operations [3]. This method had both advantages and disadvantages, but the disadvantages outweighed the advantages because, during signal transmission, there were no advanced devices to eliminate interference, reducing information quality and transmission speed [4]. The development and application of radio and television engineering construction technology enabled scientific and effective encryption of transmission frequencies, resisting information propagation interference within a certain range—a workflow inextricably linked to computer technology applications in radio and television engineering. Multimedia computer technology significantly

improves transmission efficiency and quality, primarily through big data collection and optimization for content transmission, thereby enhancing visual presentation.

Second, multimedia computer technology enables post-production restoration of films. Visual quality is crucial for news and movie output; unclear segments reduce user viewing experience and raise doubts about film production quality, decreasing attention to radio and television broadcasting. In news reporting, certain frames requiring post-production blurring must be completed through computer technology, or details unsuitable for minors can be processed to create appropriate ambiguity, avoiding negative influences on young audiences. Whether adjusting clarity or blurriness, these are relatively simple tasks for computer technology, reducing manpower and material resources while offering cost-saving advantages. Through post-processing and editing, the best possible visuals are presented to audiences, and distorted images can be edited to connect relevant content through data processing, further meeting modern viewers' television requirements.

Third, multimedia computer technology assists in post-production audio editing and production [5]. This aspect is familiar to most—many current films undergo post-dubbing, either by actors themselves or professional voice actors. This process relies on computer technology applications, combining large-screen visuals with linguistic logic to enhance audio amplitude while improving visual presentation. Flexible post-editing also guarantees television program quality. For example, animated characters rely entirely on computer technology for image integration plus post-production voice actors to create beloved children's animation. As demands for animation increase, some radio and television projects adopt real-person simulation effects to present the most authentic images through animation, a sophisticated technology with high requirements for image editing and film production. Audio serves as an important resource in computer technology post-production; technicians strive to avoid data loss during production to prevent reduced overall quality and video effectiveness. Although China's current computer technology is relatively advanced, some processing software still requires improvement. In the development of computer technology and radio and television integration, continuous innovation in working methods and learning more advanced technologies are necessary to optimize multimedia computer technology applications in radio and television media.

2.2 Applications in Media Networks

Multimedia computer technology is inseparable from network platforms—they are interdependent in development. Without network platforms as a carrier, computer technology would be an empty shell. With continuous technological development and changing times, network platforms have gradually occupied most people's lives, offering broad coverage, extensive reach, and rich content suited to modern life [7]. Against the backdrop of the internet era, radio and television engineering has also turned its attention to network platforms.

To adapt to social development and continuous transformation, leveraging advanced carriers is essential—like standing on the shoulders of giants to see the world, appropriately utilizing external forces represents an advantage for self-development. Network information technology enriches people' s lives, offering radio and television functions with faster propagation speeds, and its chat and social software has gained popularity among teenagers, significantly impacting people' s lives and work.

Network platforms can not only collect information in real-time but also achieve information sharing through the platform to better optimize resources and realize resource allocation. The application of multimedia computer technology in network platforms is primarily manifested in digital television, whose rise has caused quite a stir by meeting modern users' all requirements for television through clear images and intelligent multi-directional remote control. For example, wireless networks have now entered millions of households, including rural areas, enabling televisions to perform functions available on mobile phones but with super-sized screens, providing excellent experiences for gaming and video viewing. The emergence of digital television has once again pushed radio and television to the peak of the era. The combination of wireless networks and digital television brings convenience to users, allowing them to freely search for television programs and load content such as dance performances and sports events, considering user needs from multiple perspectives and granting users greater freedom of choice.

2.3 Applications in Operational Computing

The primary advantage of multimedia computer technology lies in its ability to complete a series of operational processes through data calculation, analysis, and integration, offering extremely strong computing performance with precise, standardized, and scientific data control. Its large capacity advantages suit radio and television engineering' s data storage needs, operating without vulnerabilities while maintaining both speed and quality in high-performance data computing. Through continuous development, computer technology has continuously explored new technologies in programming, focusing on system energy consumption, reliability, programmability, and practicality when considering modern information technology. While exploring individual technologies, it also examines user needs to further satisfy them. For example, radio and television engineering has high requirements for information storage, so computer system applications have expanded storage capacity to meet broadcasting needs. Network platforms offer broad scope and internet flexibility; inspired by network platforms, multimedia computer technology has further invented digital television—a beneficial technology not only for radio and television engineering but also a perfect integration with network platforms. In technical operations, multimedia computer technology deeply understands user and client needs, accurately calculates big data values, and deduces technologies that suit the times.

3. Effects Achieved Through Computer Technology Applications in Radio and Television Engineering

Since integrating computer technology, radio and television engineering has improved audience ratings and restored the glory of radio and television from the 1980s and 1990s. The application of computer technology has achieved remarkable results in content transmission, transmission methods, basic media content, network platforms, and practical operational applications. Additionally, in terms of refined data processing, it has surpassed traditional manual operation modes, representing significant progress in both quality and speed. Advanced technology has increased transmission efficiency and enhanced the effectiveness of radio and television work.

3.2 Enhanced Integration Capability

The combination of computer technology and radio and television is not limited to itself. Beyond the efficiency computer technology brings to radio and television, it has also better integrated with network platforms, enabling radio and television to continuously acquire new forms during development. For example, current mobile videos, various video software, and mobile apps for enterprise public accounts by local and central stations have perfectly fused with the internet, entering network platforms and quickly occupying a significant position [9]. Computer technology has enabled radio and television engineering to incorporate more related technologies, enhanced its propagation capability, and enriched radio and television content during information collection, eliminating traditional monolithic transmission and increasing integration capability.

3.3 Improved Transmission Effects

The combination of computer technology and radio and television media has improved both the speed of broadcasting signal propagation and the effectiveness of radio and television signal transmission. In transmission, it has moved from traditional analog signal propagation to digital signal propagation. Improvements have been made in transmission visuals and post-production dubbing effects, giving users new definitions of television programs and changing traditional television signal output effects. Computer technology applications in post-production can not only process distorted images but also save costs in video sourcing by optimizing unshootable scenes through post-processing. This rational application of technology improves radio and television transmission effects while enhancing radio and television's contemporary status.

4. Development Trends of Computer Technology Applications in Radio and Television Engineering

Based on the practical application of computer technology in radio and television engineering, traditional radio and television technology in China often experienced content delivery issues due to signal problems, such as various faults during transmission. This was primarily because these technologies used ordinary audio and video signals and analog signal transmission, making them susceptible to numerous interference conditions. Consequently, content could not be updated promptly. However, current developments show that the conversion from analog to digital signals has become widespread, effectively overcoming some drawbacks of traditional media content delivery and substantially improving signal quality. In future development, effective maintenance of radio and television equipment will be essential, and daily upkeep will be critical to ensuring stable transmission signals and smooth operation of radio and television engineering [10].

Additionally, combining radio and television with animation software production represents an important development trend. This approach can fully realize intelligent development and effectively improve television image clarity. In the future, computer technology must play an even more important role in radio and television engineering, such as enhancing the industry's image processing capabilities. Through practical learning, relevant personnel can flexibly apply computer technology to improve their image processing skills. From another perspective, fully leveraging computer technology's capabilities enables corresponding production and processing of content information in post-production. Increased information capacity broadens content scope, more effectively attracting audience attention and expanding the influence of radio and television engineering.

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