

Research on the Application of Non-linear Editing Software Technology in Television Program Production (Postprint)

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Abstract

Technological advancement has driven the rapid development of computer information technology, propelling progress in the television industry, with digital technology being effectively utilized across various sectors. Non-linear editing technology has also achieved widespread adoption and is extensively employed in television program production. This method, characterized by its efficiency and expediency, evolved from film editing. Compared with traditional linear video editing, the primary advantage of non-linear editing technology resides in its utilization of computer technology. By employing various software applications to edit videos and incorporating sound effects or special effects, videos become more vivid with enhanced visual impact. Moreover, the application of this technology can substantially improve work efficiency, enable long-term preservation of videos, and significantly reduce production costs. These advantages have promoted the adoption of the technology, resulting in breakthrough developments in the field and establishing a milestone in television and film production, thereby exerting important influence on video production.

Full Text

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Abstract

The rapid development of computer information technology, driven by scientific and technological progress, has propelled significant breakthroughs in the television industry. Digital technology has been effectively utilized across various sectors, with non-linear editing technology emerging as a widely adopted method in television program production. Evolved from film editing techniques, non-linear editing offers high efficiency and speed, with its primary advantage lying in the utilization of computer technology. By employing various software tools to edit video content, editors can incorporate sound effects and special effects to create more vivid and visually compelling productions. This technology substantially improves work efficiency, enables long-term video preservation, and significantly reduces production costs. These advantages have accelerated the technology's adoption, marking a milestone in television and film production and exerting a profound influence on video production.

1. Concept of Non-linear Editing Technology

The proliferation and development of television have driven the advancement of non-linear editing technology, which has gradually replaced traditional editing methods. Under the condition of professional hardware equipment and editing systems, computers can be used to perform unified video editing work, enabling non-linear editing according to time sequence. Compared with previous tape-based production methods, this approach offers high efficiency and convenient operation, substantially improving editing productivity. Additionally, with computer assistance, editors can quickly select and call up video materials, simplifying the editing process, saving time, and reducing the misuse of footage.

2. Working Principle of Non-linear Editing Technology

Non-linear editing technology utilizes video cards and computers, supplemented by various related editing software, to process video content and achieve video input and output through video cards. The fundamental working principle involves inputting signal sources from devices such as cameras and recorders, then using video cards to convert analog signals into digital signals. These digital signals are compressed into data files for storage in computers. Editing personnel then use editing software to process the video—for instance, adding special effects and subtitles—before using video cards to convert the finished video back into analog signals, thereby achieving mutual conversion.

Non-linear editing relies not only on hardware but also on software support; only through coordination between hardware and software can complete system construction be realized. Therefore, non-linear editing technology represents a product combining digital and computer technologies. Hardware primarily includes computers, network storage devices, and video cards, while software encompasses non-linear editing software and various image and audio processing tools. Continuous utilization and improvement of non-linear editing systems

can enhance film and television production levels, making operations more convenient and gradually democratizing the technology. With its superior capabilities, non-linear editing systems have developed rapidly and gained widespread acclaim.

3. Working Characteristics of Non-linear Editing Technology

When using non-linear editing technology for program production, the work is primarily completed by the system. Compared with traditional editing technology, it possesses several distinct characteristics.

3.1 Higher Efficiency

When processing video using non-linear editing technology, the media primarily employed are optical discs and hard disks. Data is stored on magnetic tracks in encoded form. The read head can rapidly scan the disk surface to access original data and information, offering simple and convenient operation. Unlike traditional editing technology that uses continuous scanning heads on cameras, non-linear editing enables non-continuous, simultaneous access to multiple video files. This not only reduces read time but also significantly improves editing efficiency.

3.2 Long-term Video Preservation

Long-term preservation of video information has always been a major concern. As is well known, camera tapes cannot store information for extended periods. Non-linear editing technology compensates for this limitation and has developed rapidly. It can store video on optical discs or hard disks, enabling long-term preservation. During data reading, the read head does not need to directly contact the disk surface, thereby avoiding physical damage and enabling long-term video information storage.

3.3 Flexible and Concise Video Processing

Non-linear editing technology differs significantly from traditional methods, particularly in video processing. It utilizes timelines to reorder sequences displayed on computer screens, allowing editors to rearrange footage freely. Therefore, when processing video, non-linear editing enables various operations with simplicity and convenience, substantially improving editing efficiency. This technology also facilitates the insertion of different effects such as music and virtual backgrounds, greatly enhancing video authenticity and impact.

3.4 Ensuring Realistic Visual Effects

The application of non-linear editing systems requires digital technology for video processing rather than simply rearranging information and data. This

enables data reorganization during post-production operations, ensuring video quality and effectiveness to a large extent. Therefore, this technology enables complete video preservation and enhances video signal quality. Using editing software, editors can freely adjust video images, modifying color and brightness parameters to create more realistic and vivid visuals, thereby improving overall picture quality and maintaining fidelity.

4. Application of Non-linear Editing Technology

4.1 Material Storage and Retrieval

When editing with non-linear technology, video editors must select appropriate storage paths for efficient material access, influenced by input and output requirements. However, in actual editing work, staff often edit large amounts of material, leaving many unnecessary files on computers that occupy hard disk space. Additionally, during editing, multiple small video windows may occupy the entire display, hindering precise material location. Therefore, material management must improve storage and retrieval efficiency. This requires adding notes and classifications to different materials in the computer, identifying material types to make retrieval more effective and practical. Furthermore, when storing and retrieving materials, editors must consider program duration and select appropriate materials according to hard disk capacity for compression and storage.

4.2 Shot Assembly

Input, editing, and output constitute the three fundamental steps of non-linear editing. Video and audio editing has become important work for television producers. When producing programs, editors must effectively control and comprehend content, maintaining overall cognitive control and thorough understanding of program material to operate flexibly. According to different program requirements, editors should enhance their editing awareness. For editing professionals, technical skills are crucial—only by continuously improving these skills can they calmly handle disorganized shots, maintain clear production thinking, and ensure selected footage is valuable. In non-linear editing, shot assembly and combination play a vital role. Even when dealing with fragmented shots, experience and thought are required to achieve effective arrangement of visual elements. Through practical research, editors develop a sense of rhythm and incorporate excellent editing thinking to achieve effective shot combinations. Additionally, proper shot selection facilitates the use of long shots, close-ups, and medium shots at different levels, enabling effective shot mastery.

4.3 Subtitle Addition

In television programs, subtitles play an important role as a supplement to video, extending audio-visual functions. During viewing, subtitles offer more

direct expression. If simultaneous narration can be achieved in television programs, themes can be effectively highlighted and audio-visual synchronization enhanced. When using the Sobey editing system, the subtitle editing window can be integrated into the menu. By dragging the mouse, editors can adjust subtitle length and position to ensure appropriate placement and timing that aligns with video and audio.

4.4 Special Effects Application

When using non-linear editing systems, editors must consider both creative characteristics and program requirements, strengthening special effects application to enhance impact and make television production more convenient and effective. To delete a selected effect, simply left-click and delete—the operation is extremely simple. Copying and pasting can also be accomplished with mouse operations, allowing interesting effects to be added through pasting.

Conclusion

In summary, the rapid development of computer and information technology has made traditional television program editing unable to meet growing demands. Therefore, introducing non-linear editing systems enables data operations on computer platforms, greatly reducing editing costs and time while achieving flexible video transitions, which is also significant for improving image quality. Currently, with the in-depth development of information technology, non-linear editing software technology will inevitably advance, driving the development of digitization and promoting continuous improvement in television program quality.

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