Intelligent Film and Television Communication Optical Technology Based on Network New Media

Zhaoqi Wang(✉)

Department of Media Arts, Wuhan Qingchuan University, Wuhan, Hubei, China
zhaoqiwang2023@163.com

Abstract. New media, as an emerging means of communication, has become an indispensable part of people's lives. It plays an important role in the film and television industry, advertising industry, and cultural research. This article analyzed the internal aspects of online new media. Firstly, it elaborated on the current development status and future trends of new online movies. Secondly, this article also focused on the problems and solutions in the process of intelligent film and television dissemination using Internet Protocol (IP) as the carrier. Finally, a solution and specific implementation methods for building a new media platform using IP technology were proposed, including establishing a complete website system, optimizing website structure, and updating webpage interfaces. The performance of the model was tested. The test results showed that the anti-interference ability of the model ranged from 92% to 95% .

Keywords: Network New Media · Intelligent Film and Television · Film and Television Communication · Optical Technology

1 Introduction

The emergence of new media has brought tremendous changes to film and television communication. Traditional media such as movies and television can no longer meet people's information and cultural needs. Especially with the advent of network technology and the digital age, humanity has entered the stage of "digital earth" and has had a significant impact. With its unique and powerful vitality, new media has penetrated into all aspects of life, sparking a new revolution in the field of mass media. Social platforms represented by Weibo have opened up the era of all media and become a new mode of communication.

In the context of new media, the research on intelligent film and television communication technology mainly revolves around digital image imaging and transmission in the network new media environment. Scholars have used models to construct 3D animation scenes based on channel coding methods. They have established a multi view projection system to simulate various complex image phenomena that have appeared in the original movie, and based on these data results, they have analyzed various types of film and television visual effects that may occur in the future [1, 2]. Some scholars

have proposed a new method of virtual scene 3D photography. This model is built on the basis of digital optical flow, with 3D laser and computer image processing software as the main components [3, 4]. Therefore, this article conducted research on intelligent film and television communication optical technology based on network new media.

With the development of new media technology, online new media has gradually become an essential and indispensable link in film and television communication. This article took intelligent film and television communication based on online new media as the research object. After organizing and analyzing relevant literature on the digital film industry and IP process based production, it was found that there are currently some urgent problems that need to be solved in this field, and corresponding solutions and countermeasures were proposed.

2   Exploration of Intelligent Film and Television Communication Optical Technology Based on Network New Media

2.1   Intelligent Film and Television Communication

With the increasing application of digital imaging technology and multimedia service industry in film production, film production can also monitor the shooting scene environment in real-time through video live streaming and other methods. At the same time, high-definition image resources are used to obtain relevant film and television segment images and convert them into film and television works. The camera movement track can be simulated with software to form an image of a complete three-dimensional space environment. This technology not only allows the audience to intuitively experience the visual image, but also enables real-time processing and reproduction of the captured content [5, 6]. New media can provide various forms, contents, and rich and colorful information to meet the needs of different people for watching film and television works. Communication through online platforms can also improve work efficiency and reduce costs. Intelligent film and television dissemination can also achieve video resource sharing and interactive dialogue services between users, making it more convenient and efficient for people to browse web pages. Figure 1 shows the process of film and television dissemination.
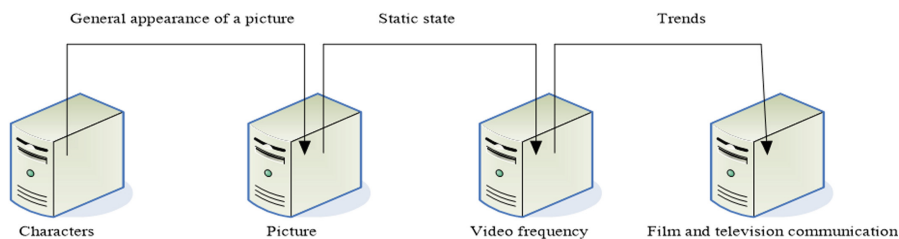

Fig. 1. Film and television communication process

Video websites can provide users with real-time updates and interactive communication functions. For example, uploading images or audio and other materials during

filming, and adding text and sound effects to attract audience attention during playback can bring different effects to the audience. It can meet the needs of different audience groups. With the advent of the Internet era, people are increasingly relying on intelligent devices such as computer terminals to watch movies and related entertainment and leisure activities [7, 8]. Audiences who watch movies or variety show on video websites would also receive service information and feedback anytime and anywhere through the network platform. It can also interact and communicate with relevant websites to achieve maximum dissemination effects, thereby promoting the development of new media technology and enhancing its application value and actual social benefits [9, 10].

2.2 Optical Technology

Optical technology combines the principles of optical systems with computer simulation systems to achieve the calculation, storage, and processing of three-dimensional spatial light information. By using laser beams as focal objects, polycrystalline materials with advantages such as high brightness and narrow broadening are manufactured. In the production process, it is necessary to consider the distribution of refractive index under different intensities and frequencies generated by the interaction between light and atoms, as well as the variation of reflected light intensity. Therefore, the required three-dimensional spatial information can be obtained by using lasers of different wavelengths to cause diffraction distortion or extinction. By utilizing the computing power of the computer, the image can be analyzed. Figure 2 is the operational framework diagram of optical technology.
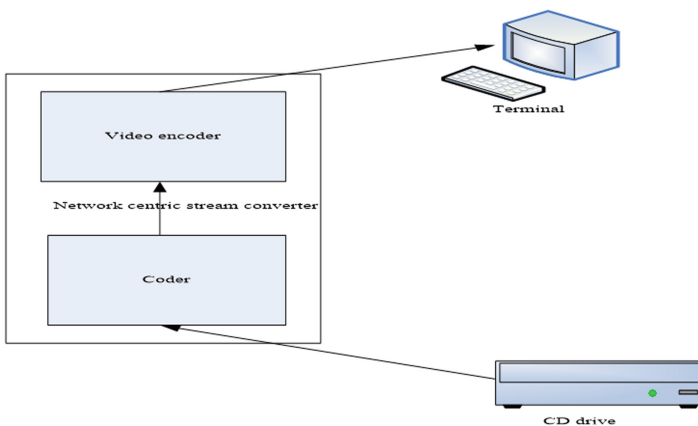
Fig. 2. Framework diagram of the application of optical technology

     In film and television dramas, due to the huge amount of data that cameras need to process and the high requirements, in order to improve shooting efficiency and quality, it is necessary to fully utilize the camera lens to complete this task. After obtaining the required video stream information through a high-speed camera, the computer software analyzes and generates image images, and converts them into corresponding formats and

stores them in the computer for later analysis and research, thus achieving the evaluation and detection of image quality. If the luminous intensity of an extended light source is B, that is, its brightness is independent of direction, it is called a cosine emitter. The above law of emitting luminous flux according to the cos law is known as Lambert cosine law, and its emission law satisfies Lambert cosine law. The formula for calculating light intensity is:

$$I = I_{\max} \cos\theta (-\pi/2) \leq \delta \leq (\pi/2) \tag{1}$$

Among them, the unit of I is cd. New media has achieved rapid development based on its high-speed data transmission and information processing capabilities. When implementing basic operations such as image compression and projection, digital signal encoding methods and large screen technology are used. By using a computer network communication system, images of different types and performance requirements are converted into images with a certain resolution and visual display, in order to achieve the best visual effect. The higher the surface temperature of a substance, the lower the temperature.

2.3   Network New Media

Network new media is an emerging medium that utilizes digital and information technology for information dissemination. In this new environment, the traditional film and television industry has merged with the internet, forming a new type of multimedia interactive media. Network new media is based on computer technology and transmits traditional dissemination information to the audience through means such as the Internet, mobile communication networks, digital television, and multimedia terminals. With the support of new media technology, online new media, due to its unique advantages, has become an essential tool for people to obtain information, exchange and interact, and engage in cultural dissemination activities. Two independent coded signals X and Y of the network are respectively set as H(X) and H(Y), and the corresponding code rates are Rx and Ry. If the joint entropy of the two signals is set as H(X, Y), the total code rate is:

$$R = Rx + Ry\ H(X) + H(Y)\ \ H(X,Y) \tag{2}$$

If only the reference information is obtained at the decoding end, this proves that the compression limit of X is the same as the encoding efficiency of obtaining the reference information at the encoding end, that is, encoding two signals X and Y independently of each other, and the total bit rate $R = Rx + Ry$ can still reach the joint entropy H(X, Y) of the two signals, namely:

$$\begin{aligned} R_X &\geq H(X|Y) \\ R_Y &\geq H(Y|X) \\ R_X + R_Y &\geq H(X,Y) \end{aligned} \tag{3}$$

The traditional film and television production process usually requires multiple departments to work together to complete the content shooting and post editing work of the entire project. Internet film and television can achieve synchronous transmission and playback across the entire network. By receiving uploads to servers or terminal devices anytime and anywhere through mobile clients, there is no time limit, greatly saving costs for online new media advertising and operation.

3 Experimental Process of Intelligent Film and Television Communication Optical Technology Based on Network New Media

3.1 Model of Intelligent Film and Television Communication Optical Technology Based on Network New Media

The intelligent film and television communication optical technology model based on network new media (as shown in Fig. 3) utilizes new digital communication transmission media such as computers and the internet to exchange and interact data in the traditional film and television production process. In this model, optical technology is mainly applied in the transmission process, including fiber optic transmission technology, optical wireless communication, etc., aiming to improve transmission speed, bandwidth, and quality. At the same time, optical technology can also be applied to film and television production processes, such as using optical imaging technology, spectral imaging technology, etc.
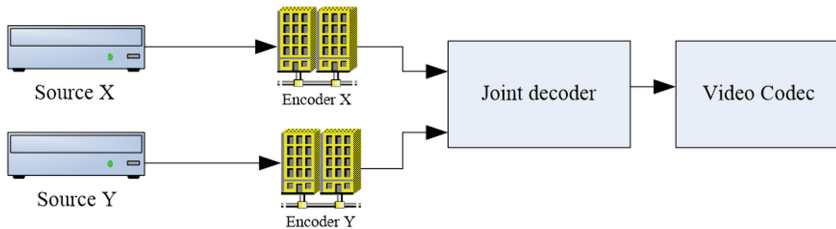
Fig. 3. Model of intelligent film and television communication optical technology based on network new media

3.2 Model Performance Testing of Intelligent Film and Television Communication Optical Technology Based on Network New Media

With the support of new media technology, the development and progress of the film and television industry require the support of advanced equipment and technology. Intelligent film and television communication optics is a digital and multimedia operation mode based on network new media platforms. Therefore, in practical applications, it is necessary to strictly control its performance.

4 Experiment on Intelligent Film and Television Communication Optical Technology Based on New Network Media

Table 1 shows the testing parameters of intelligent film and television communication optical technology. Intelligent film and television communication optical technology based on network new media can achieve 3D spatial scene generation using advanced methods such as modern computers, digital images, video compression and storage. The whole 3D scene image processing and kinematics analysis can be realized by using projector, camera, video and other equipment.

Table 1. Performance test parameters of intelligent film and television propagation optical technology

Test node	Resolution ratio(px)	Sensitivity(ISO)	Correction ability(%)
1	1280*720	200	86
2	1280*720	100	85
3	1280*720	200	89
4	1280*720	200	84
5	1280*720	400	87
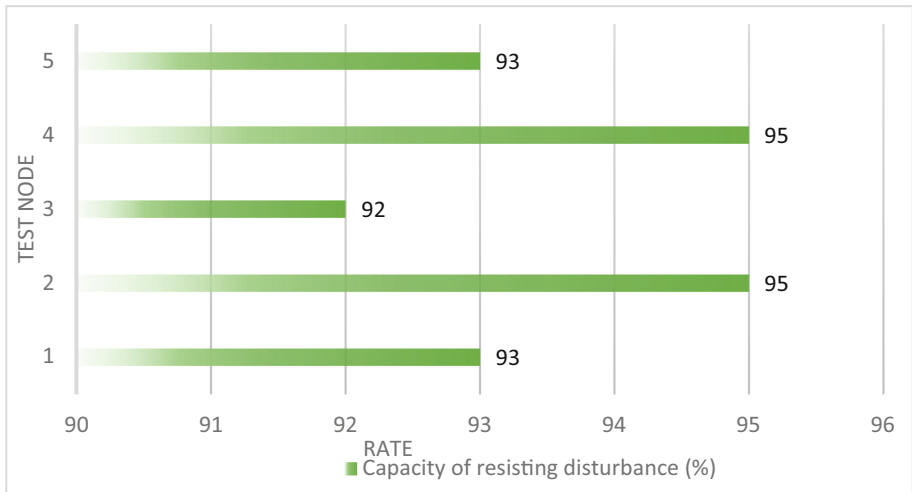
Fig. 4. Capacity of resisting disturbance

The process simulation simulation of film and television production can be realized through network software. Virtual reality was used to verify that the model met the requirements, and the virtual reality system was used to study the effect of image processing and the variation of various performance parameters in different scenarios. In the new media environment, combining existing algorithms with traditional optical methods, the optimization design goal was achieved. Therefore, this article optimized and redesigned the network data collection equipment to meet the above requirements and achieve high-speed real-time transmission. In Fig. 4, the anti-interference ability of this model ranged from 92% to 95%.

5   Conclusions

In the era of new media, as a new type of communication medium, the film and television industry is developing at an astonishing speed, and is widely used in digitization, network technology, and multimedia. This article studied intelligent film and television

communication optical materials based on network new media systems, and analyzed the existing research achievements and application status in this field. After that, the basic principles and commonly used methods were elaborated.

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