Research Article

Innovation of Teaching Method of Digital Media Art Based on Convolutional Neural Network

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In order to improve the effect of digital media art teaching, this study combines the neural network algorithm to carry out the innovation of digital media art teaching resource management and teaching method innovation. The scheme proposed in this study divides the video frame into image blocks and then uses the BDCT transform to convert the video frame from the spatial domain to the frequency domain. Generally speaking, the DCT coefficient has the characteristic of energy concentration. In order to reduce the metadata needed to transmit the position of the discarded frequency-domain coefficients, the method proposed in this study divides the frequency-domain coefficients of different blocks into bands according to frequency and compresses the video in units of bands. Finally, this study constructs a digital media art teaching innovation system based on a convolutional neural network. The experimental research results show that the digital media art teaching system based on the convolutional neural network can effectively improve the teaching effect of digital media art.

1. Introduction

At present, China's educational development puts forward the goal of quality education to create learning elites and cultivate high-end talents in a relatively short period of time. However, a fast-food-style education culture will lead to failure to achieve the basic goal of education and education. In addition, teachers generally do not participate in the development of resources of educational institutions outside the school, and students urgently need a large amount of fragmented knowledge to complement the classroom content, resulting in failure to improve students' academic performance. Chinese schools are not accustomed to introducing teaching innovation into mainstream practice [1]. Innovation comes from students who reanalyze and combine what they have learned in a brand-new way, and finally communicate and integrate in a freer way. Colleges and universities generally allow teachers to impart knowledge and communicate with students in accordance with the school's rules and regulations. However, education according to normal standards seldom stimulates students'

ideological abilities. In most cases, teachers usually use teaching plans to set them in the classroom. Even if some colleges and universities are now promoting excellent cases, they still cannot be widely promoted. With the advancement of information technology in the "micro-era," students are allowed to use fragmented leisure time to acquire as much knowledge as possible so that they can meet their needs for knowledge with sufficient time. Therefore, the miniaturization of knowledge has become an inevitable trend [2]. The acquisition of knowledge and content on the internet has become one of the channels of dissemination of teaching resources, which has liberated the independent development of students' personalities and the promotion of their personalities to a large extent. Compared with traditional education, it is not too entangled with the dead knowledge in the book. "Micro-communication" drives student consumption. Through the mixed application of the educational model, it takes many young people's minds as development objects instead of instilling objects for education and cultivation and encourages the formation of students' innovative qualities [3]. There is no need for only one-sided

teaching, but the cultivation of innovative and compound talents, so that students can better integrate into it as part of a team, rather than fighting alone [4].

As many courses in domestic colleges and universities and digital media education classrooms continue to adapt to society, their own functions are constantly being modified. Under the guidance of people-oriented thinking, the development trend of digital media education has become intelligent. Combining the support of the times to educate students to adapt to the overall development of society at the school stage is in line with our country's long-term training of applied talents.

Based on the above analysis, this study combines the convolutional neural network algorithm to innovate the teaching method of digital media art, which provides a theoretical reference for the digital media art teaching innovation in the new media era.

2. Related Work

Digital color art education is a part of the category of digital media education. Summarizing the current research status of digital media art can give a glimpse of the current status of digital color art education [5]. Educational technology majors also began to set audiovisual art as a professional basic course. Although digital media art has been paid more and more attention in education and other fields, with the rapid development of digital media technology, the demand for media design talents in society is increasing and the requirements are getting higher and higher [6]. At present, many college graduates majoring in education technology, digital media, and animation are finding it increasingly difficult to adapt to the demands of society. The fundamental reason is that although colleges and universities have carried out the teaching of digital media art, it is difficult to achieve the educational goals of digital media art due to the constraints of objective conditions such as the teaching environment, teaching conditions, teaching resources, and subjective conditions such as teaching concepts and teaching methods. Some students only focus on technology and neglect the artistry, or it is difficult to achieve a balance between artistry and technicality [7]. Of course, there are some schools that attach great importance to art education, but they separate art education and media technology education. The direct result of the disconnection between the two is that students understand traditional art but do not understand digital media art, that is, they cannot understand the art they have learned. The knowledge is applied to the design and development of digital media works [8]. In the current domestic higher education system, many new technologies have been introduced into teaching and a large amount of human, material, and financial resources have been invested. However, the curriculum system, educational resources, teaching methods, and teaching concepts have not been adjusted and accordingly innovated. In the teaching of digital media art, although software technologies such as Photoshop, 3ds Max, and Flash are introduced, they always emphasize the use of technology and ignore the design of art in the specific learning process, so this has deviated from the

development of art in education technology, the original intention of education [9].

Literature [10]′s empirical investigation of visual form has greatly promoted the research process of visual form. Literature [11] believes that the esthetic value of art is paramount, and literature [12] believes that since the extensive development of photography, the "significant form" of painting has become the most important standard and characteristic of art. The imitation of nature has become a thing of the past. Bell provided the basis for the "self-discipline" of modernist art through his "significant form" exposition. Literature [13] defines art as "the creation of symbolic forms of human emotions." It is believed that artistic creation should consciously use artistic intuition to capture the "symbolic connection" between the art form and the logical form of life and create a "significant form" that is "consistent with the form of emotion and life."

Digital media art is like a polygonal prism, which reflects different rays of light as the viewing angle changes. With the help of digital media, a large number of digital art practices and dissemination have broken through the traditional understanding framework, many unprecedented new landscapes and new trends have emerged, and many new questions have been raised for us [14]. Although interdisciplinary research has already begun, the focus of these studies is mostly from the perspectives of ideology, audience, technology, esthetics, and cultural studies. The literature [15] research and practice are between visual art and media art. A bridge is built; the literature [16] portrays virtual reality as a core relationship between human beings and images and demonstrates how this relationship is embodied in the old and new media. Regarding the virtual reality model as a core physical and psychological perception, a sensory experience of the audience has been proved. Literature [17] puts art dissemination in the context of the knowledge economy and first puts forward that the era of the knowledge economy in the postindustrial society is an objective condition that leads to great changes in cultural and artistic practice. Next, the macroscopic view of the times is focused on the factors that directly affect culture and art. This direct factor is the cultural industry under the background of the knowledge economy. Literature [18] proposes that postmodern art is a product of the information society. It is a kind of radical and comprehensive holography that transcends boundaries and coexists in the coexistence of pluralism under the general trend of economic globalization and human integration, civilization form. From the perspective of scientific and artistic development, the literature [19] provides an in-depth and systematic elaboration on the development history and status quo of digital media art, digital media art and creative industries, and the subject knowledge system of digital media art. Examples clarify the development law of digital media art, suggest the connection and difference between digital media art and other related fields, and help people deepen their understanding of the nature of digital art. Literature [20] discusses the construction of cyber subjectivity, the Turing test and dialogue procedures, the new media revolution and virtualization, the new media

revolution and the flow of art, virtual reality and its artistic applications, and the social applications of mixed reality.

3. Improvement of Digital Media Art Algorithm Based on Convolutional Neural Network

In order to reduce the metadata needed to transmit the position of the discarded frequency-domain coefficients, the method in this study divides the frequency-domain coefficients of different blocks into bands according to frequency and compresses the video in units of bands. In particular, the same position coefficients of different blocks can be put into a band. Then, according to the compression rate and bandwidth requirements, it is determined whether to discard the DCT coefficients in the unit of band. The high-frequency information of the transform coefficients of different image blocks is usually in a close or consistent area, so the discarding operation of the band and the discarding of the independent DCT coefficients have close compression performance, but the metadata size is greatly reduced.

The energy distribution is a protection method for DCT coefficients of different frequencies. We assume that the overall transmission energy is P, the DCT coefficient is R, and the DCT coefficient of frequency i is R. g represents the expansion coefficient of the corresponding frequency. According to the optimal linear coding theory, g can be obtained by the following formula:

$$g_{R_i} = \left(\frac{P}{\sqrt{\lambda_i} \ \sum_i^k \sqrt{\lambda_i}} \right)^{1/2}.$$

(1)

Among them, λ_i represents the variance of the DCT coefficient of frequency i, and K represents the total frequency number. The signal M of the diagonal matrix $G = \text{diag}|g_{R_1}, g_{R_2}, \ldots, g_{R_K}|.$, and after energy distribution can be expressed as $M = G \cdot R$. The energy λ_i of each frequency coefficient needs to be sent to the decoding end as metadata.

After energy distribution, in order to enhance the system's antipacket loss ability, the research uses the Hadamard transform to convert data into data packets of the same importance. The mathematical formula can be expressed as follows:

$$U = H \cdot M$$
$$= HG \cdot R$$
$$= C \cdot R.$$

(2)

Among them, H represents the Hadamard transformation matrix, and C = HG represents the coding matrix.

In the physical layer, metadata and DCT coefficients are sent to the decoder in different ways. Since metadata need to be transmitted to the decoding end without loss, the traditional digital encoding method is used to send metadata here. The encoding end performs 8 bit quantization on the metadata and compresses the quantized result through variable length coding (VLC). The compressed code stream is transmitted through the 802.11 physical layer containing

forward error correction coding and modulation. In order to properly protect the metadata, the study uses 1/2 convolutional code as the protection code and adopts the BPSK modulation type.

Unlike metadata, the DCT coefficient signal consists of real values. At the physical layer, these real values are directly mapped to complex symbols through the 64K-QAM constellation diagram. These analog signals constitute the final transmission signal.

N is the channel noise, and the signal received by the decoder can be expressed as follows:

$$\widehat{U} = U + N$$
$$= HG \cdot R + M.$$

(3)

The received signal can be recovered by linear least square estimation (LLSE), and the decoded frequency-domain coefficients can be expressed as follows:

$$\widehat{R} = \sum_R C^T \left(C \sum_R C^T + \sum_N \right)^{-1} \widehat{U}.$$

(4)

Among them, $\sum_R$ and $y = \arg\max \log(p(x \, l \, x)) + \log(p(x))$ represent the covariance matrix of the signal R and N.

When the CSNR is high, the elements in channel noise IV are close to or equal to zero. According to the nature of LLSE,

$$R_{LLSE} \approx C^{-1}U.$$

(5)

It can be seen that when the CSNR is high, the LLSE can obtain the decoded data through the inverse transformation of the encoding end. The main reason is that when the CSNR is high, the research can fully trust the received signal without its distribution and statistical characteristics, such as the variance of the DCT coefficient. Conversely, when the CSNR is low, the noise energy is larger, and the research cannot fully trust the received signal. Therefore, adjusting the estimation according to the statistical characteristics of the DCT coefficients in each band is a more effective decoding method.

The traditional 802.11 system is very sensitive to packet loss, which will cause increased distortion and even decoding failure. However, when the method in this study faces the problem of packet loss, due to the Hadamard transformation, all data packets are of equal importance, and it will not happen that some special data packets appearing in the MPEG system are lost and the decoding fails. When a packet loss occurs, it is equivalent to a missing row in the signal U. The corresponding rows or columns of the matrices C and N and the covariance matrix $\sum_R$ and $\sum_N$ are removed, and the decoding can be completed in the case of packet loss.

Affected by BDCT and energy distribution, the video decoded in this study usually contains serious blocking effects. As mentioned in the previous article, sparse representation has an excellent performance in removing blocking problems and provides good visual effects for BDCT-encoded videos. In the method of this study, the

group-based sparse representation (CSR) deblocking algorithm is transformed into the maximum posterior probability (MAP) problem.

We assume that the input frame is x, and the reconstructed frame at the decoding end is $\hat{x}$. Then, the optimized reframe can be obtained as follows:

$$y = \arg\max\log\left(p\left(\hat{x}|x\right)\right) + \log\left(p\left(x\right)\right). \tag{6}$$

Among them, the first term represents the data fidelity constraint, and the second term represents the prior knowledge of the video frame. Inspired by the achievements of image group-based sparse representation in image processing problems, the MAP optimization problem in formula (6) can be expressed as follows:

$$\begin{aligned} y \quad &= \arg\min\log\left(p\left(\hat{x}|x\right)\right) + \log\left(P_{GSR}\left(x\right)\right) \\ &\quad + \log\left(P_{CC}\left(x\right)\right). \end{aligned} \tag{7}$$

Among them, $P_{GSR}(x)$ and $P_{CC}(x)$ represent the prior probability of GSR and the prior probability of compression constraint.

The decoded video contains transmission noise and compression noise. GSR mainly targets compression noise that causes blocking effects. Using the Gaussian compressed noise model and the compressed noise variance σ_{com}^2, the data fidelity constraint term can be expressed as follows:

$$\log\left(p\left(\hat{x}|x\right)\right) = -\frac{1}{2\sigma_{com}^2}\|x - \hat{x}\|_2^2. \tag{8}$$

The sparse representation model based on image groups proves that a group of image blocks can be represented by linear combinations of sparse coefficients and dictionary elements. For the sparse coding of each image group, in order to find a sparse vector $x_{G_k} \approx D_{G_k}\alpha_{G_k}$, D_{G_k} represents the image group set, D_{G_k} represents the dictionary, and D_{G_k} represents the sparse coefficient of the image group. Then, the video frame can be sparsely expressed as a set of sparse coefficients $|\alpha_{G_k}|$ with image group as a unit. Therefore, the second term in formula (7) can be expressed as follows:

$$\log\left(p_{CSR}\left(x\right)\right) = -\eta\|\alpha_G\|_0. \tag{9}$$

Among them, α_G represents the concatenation of all sparse coefficients α_{G_k}, and the code α_G is required to have sparseness.

In order to describe the CC prior probability, the threshold Ω is defined in the article as follows:

$$\psi(x) = \begin{cases} 0, & \text{if} \quad x \in \Omega \\ +\infty, & \text{if} \quad x \notin \Omega. \end{cases} \tag{10}$$

The third term in formula (7) can be expressed as follows:

$$\log\left(p_{CC}\left(x\right)\right) = -\psi(x). \tag{11}$$

Using the above prior knowledge, the deblocking optimization problem can be written in the following mathematical form:
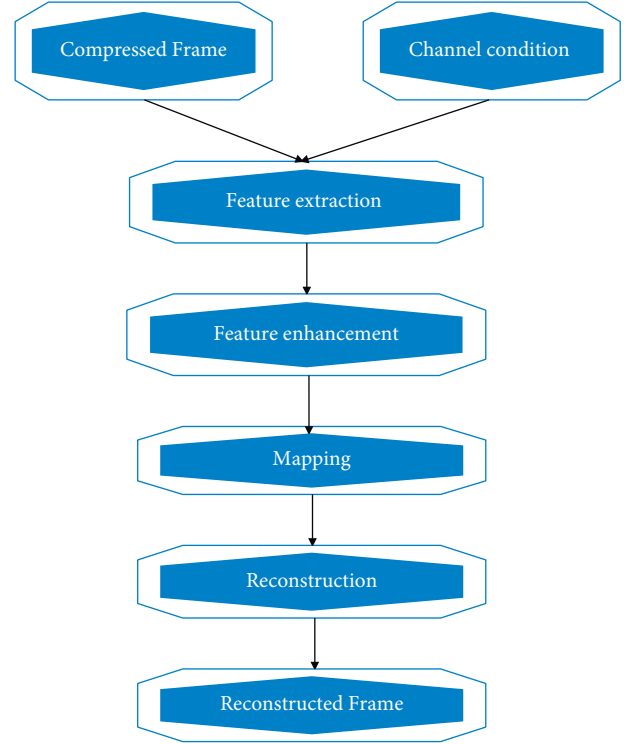

FIGURE 1: Convolutional neural network structure.

$$\begin{aligned} \left(\hat{\alpha}_G, \hat{D}_G\right) &= \arg\min_{\hat{\alpha}_G, \hat{D}_G} \frac{1}{2\sigma_{noise}^2}\left\|D_G \circ \alpha_G - \hat{x}\right\|_2^2 + \\ &\quad \theta\|\alpha_G\|_0 + \psi\left(D_G \circ \alpha_G\right). \end{aligned} \tag{12}$$

After obtaining the updated dictionary and sparse coefficient, the updated video frame can be reconstructed by $y = \hat{D}_G \circ \hat{\alpha}_G$. In the article, the research uses split Bergman algorithm to solve formula (12). If we define $f(x) = 1/2\sigma_{noise}^2\|x - \hat{x}\|_2^2$, $g(\alpha_G) = \theta\|\alpha_G\| + \psi\left(D_G \circ \alpha_G\right)$., then the optimization problem of formula (12) can be equivalently transformed into a three-step iteration, namely,

$$\begin{aligned} y^{(t+1)} &= \arg\min_y \frac{1}{2\sigma_{noise}^2}\|x - \hat{x}\|_2^2 \\ &\quad + \frac{1}{2\beta^{(t)}}\left\|x - D_G^{(t)} \circ \hat{\alpha}^{(t)}{}_G - b^t\right\|_2^2, \end{aligned}$$

$$\begin{aligned} \left(\hat{\alpha}_G^{(t+1)}, \hat{D}_G^{(t+1)}\right) &= \arg\min_{\hat{\alpha}_G, \hat{D}_G} \frac{1}{2\beta^{(t+1)}}\left\|x^{(t+1)} - D_G \circ \alpha_G - b^{(t+1)}\right\|_2^2 \\ &\quad + \theta\|\alpha_G\|_0 + \psi\left(D_C \circ \alpha_G\right), \end{aligned}$$

$$b^{(t+1)} = b^{(t)} - \left(x^{(t+1)} - D_G^{(t+1)} \circ \alpha_G^{(t+1)}\right). \tag{13}$$

The above-separated subproblems can be effectively solved. Through further research, the following mathematical formulas will be derived as follows:
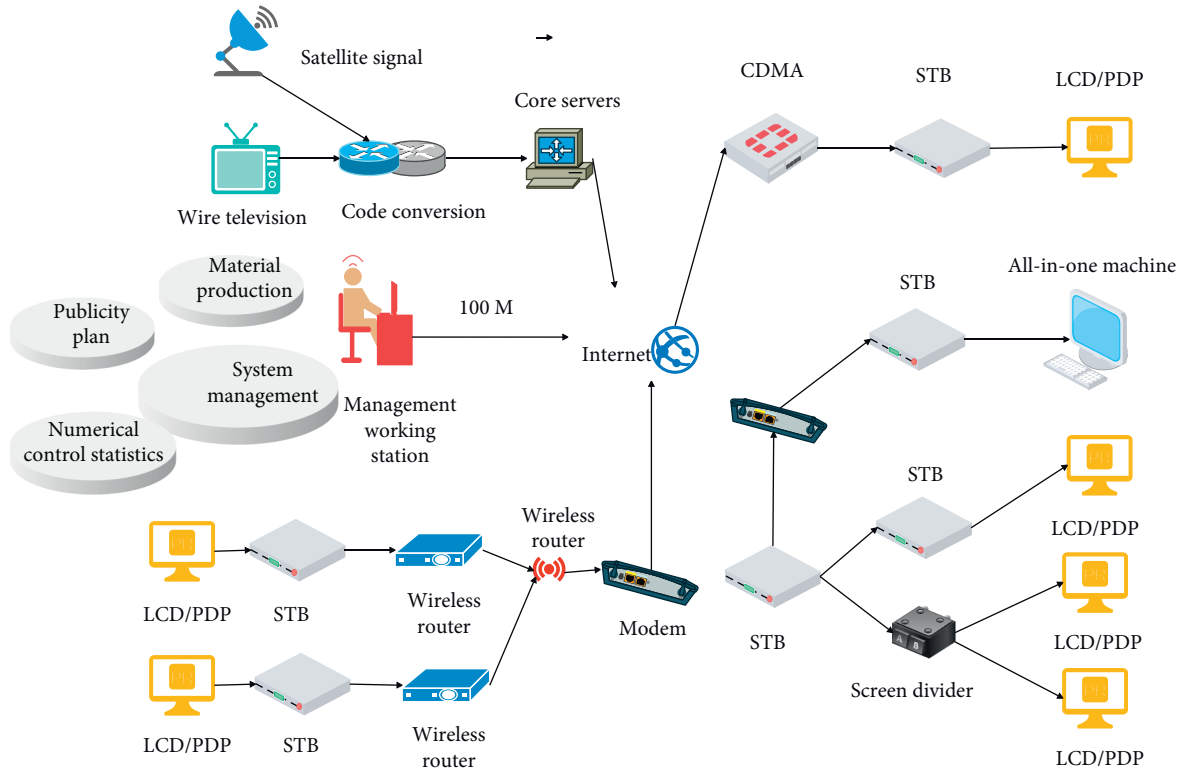
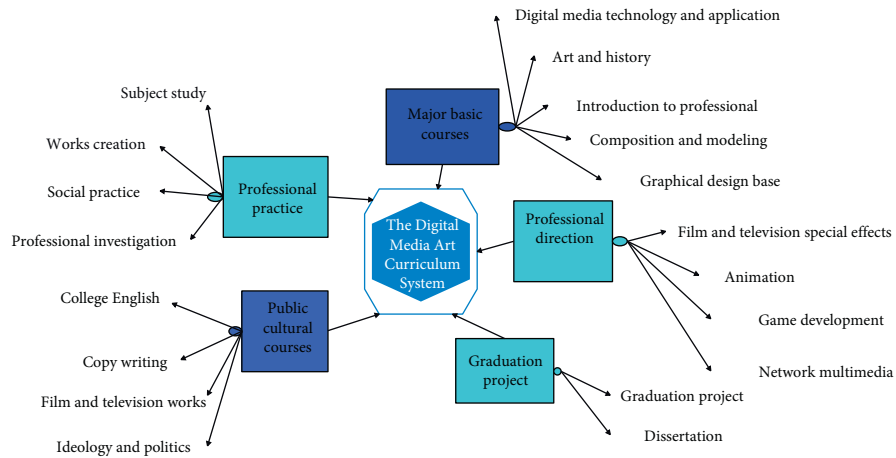FIGURE 2: Internet and digital media topology diagram.

FIGURE 3: Diagram of digital media art course system.

$$\beta^{(t)} = \rho \cdot \left(\sigma_s^{(t)}\right)^2,$$

$$\sigma_s^{(t)} = \delta \sqrt{\sigma_{noise}^2 - \left\| D_G^{(t)} \circ \alpha_G^{(t)} + b^{(t)} - \hat{x} \right\|_2^2}. \tag{14}$$

Among them, ρ represents the expansion coefficient, and δ represents the expansion coefficient of the control variance estimation.

The traditional soft transmission scheme directly sends the signal through the raw OFDM channel, which can achieve good scalability and provide different users with reconstructed video consistent with the channel quality.

However, there is a noise blur effect in the visual frame. With the help of deep neural networks, different levels of abstract information are extracted from the original data. The research uses a convolutional neural network to extract the features formed by different channel noises and restores the reconstructed video at the decoding end. The structure of the convolutional neural network is shown in Figure 1.

There are 4 layers in the restoration network, which are as follows: feature extraction layer, feature enhancement layer, mapping layer, and reconstruction layer. Each layer has an independent target. Among them, the feature extraction layer extracts overlapping blocks from the
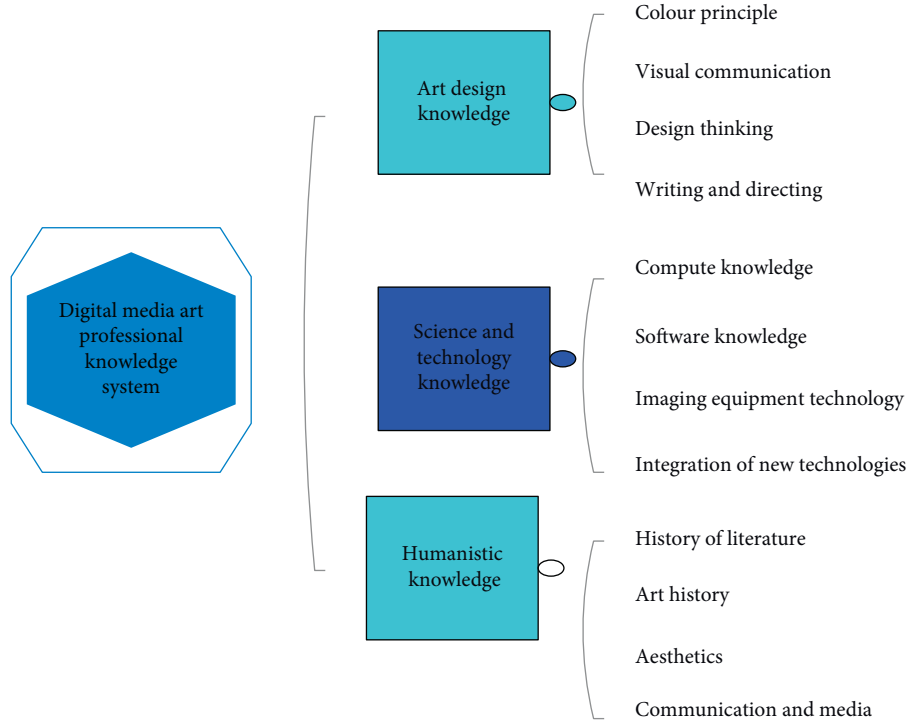
FIGURE 4: Diagram of the professional knowledge system of digital media art.

reconstructed frame and uses high-dimensional vectors to represent each block. The feature enhancement layer further extracts features from the n_1 feature maps obtained by the feature extraction layer and forms a new feature map set. After the feature enhancement layer, the nonlinear mapping layer uses high-dimensional vectors to restore the local quality of the input frame.

The convolutional network can be described as follows:

$$F_i(y) = \max(0, W_i * y + B_i), \ i \in \{1, 2, 3\},$$
$$\hat{y} = W_4{}^* F_3(y) + B_4. \tag{15}$$

Among them, W_i and B_i represent the filter and offset at the i-th frequency, F_i represents the feature map of the output, and $*$ represents the convolution operation. W_i contains ni filters, the size of the filter is $n_{i-1} \times f_i \times f_i$, and n_0 represents the number of channels of the input frame. The linear rectification function (ReLU) is used, and max (0, x) is used as the activation function.

During the training process, the study defined the original video frame set as $\{x_i\}$, the video frame set with distortion at the decoding end as $\{y_i\}$, and each original frame x_i has a corresponding y_i. Using MSE as the loss function, the model trained by the network can be expressed as follows:

$$L(\Omega) = \frac{1}{n} \sum_{i=1}^{n} \left\| F\left(y_i^{(e)}; \Omega\right) - x_i^c \right\|^2. \tag{16}$$

Among them, $\Omega = \{W_1, W_2, W_3, W_4, B_1, B_2, B_3, B_4\}$, and n is the number of training samples. The stochastic gradient descent method and the standard backpropagation method minimize the distortion of the network.
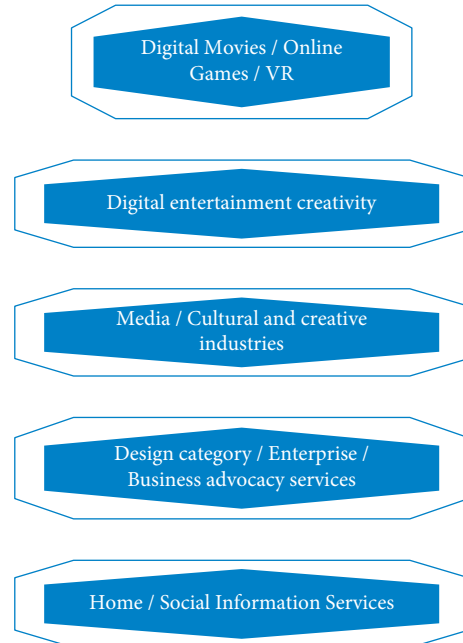

FIGURE 5: The "pyramid" of the market for digital media art.

4. Digital Media Art Teaching System Based on Convolutional Neural Network

Digital media, which uses the internet as the carrier of interactive information dissemination, has become the latest information carrier after language, text, and electronic technology. The topological relationship between the internet and digital media is described in detail in Figure 2:

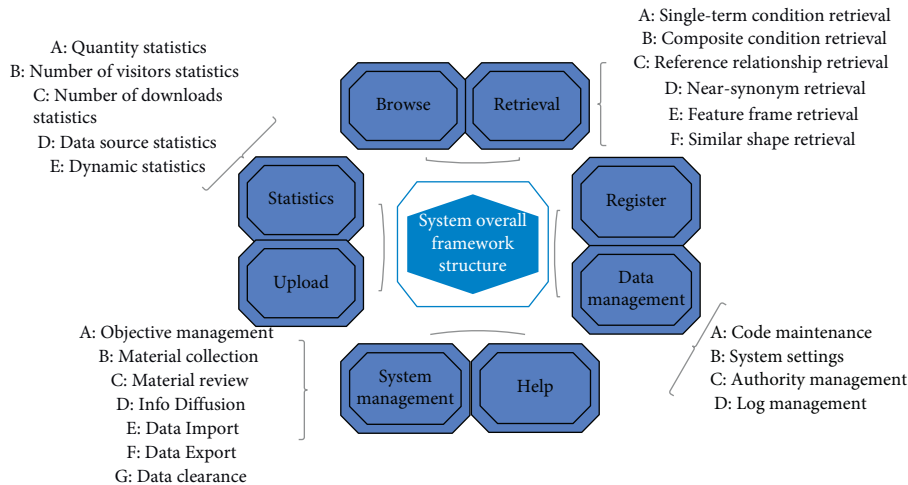FIGURE 6: Functional requirements of media resource management system.

FIGURE 7: Structure diagram of each module.

In the cultivation of digital media art talents, various schools prefer to cultivate compound talents and work hard for this goal. Therefore, many colleges and universities have learned from each other and set up many courses, forming a chaotic and unsystematic situation. There is a serious tendency for isomorphism and perfection in the setting of courses. The major schools place equal emphasis on technology and art, and as a result, the curriculum has a tendency to combine technology and art in a structured structure. They completely ignore their own advantages, ignore the position of the school and the characteristics of the students of the school, blindly follow the trend, and believe that this can cultivate all-round talents who are proficient in technology and art. Moreover, they did not master their strengths in practice. The curriculum system is one of the core contents in professional construction, and it is formulated according to the school's training goals and the development law of training objects. The setting of the

curriculum system must be contemporary, scientific, and pertinent, so that students can learn and use, and have a foothold in society in the future. Therefore, we must improve and construct the digital media art major curriculum system. The digital media art professional courses can be specifically classified into five categories, as shown in Figure 3.

From the above curriculum, we can see that digital media involves literature, art, science, engineering, etc. It is a comprehensive and marginal interdisciplinary subject with a complete knowledge system. The knowledge system of the digital media art major is divided into several aspects as shown in Figure 4 below.

The Department of Digital Media Art makes good use of school resources and has long-term cooperation with various majors on a series of topics, and students and students also collaborate with each other to learn from each other's strengths. The Department of Digital Media Art will offer some thought-expanding courses such as spatial modeling
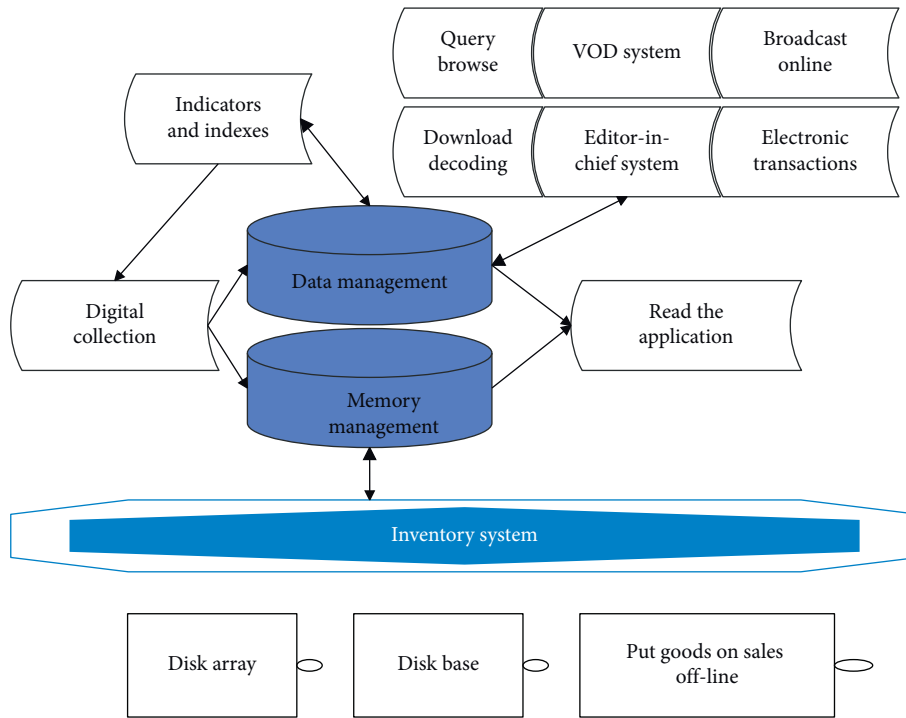
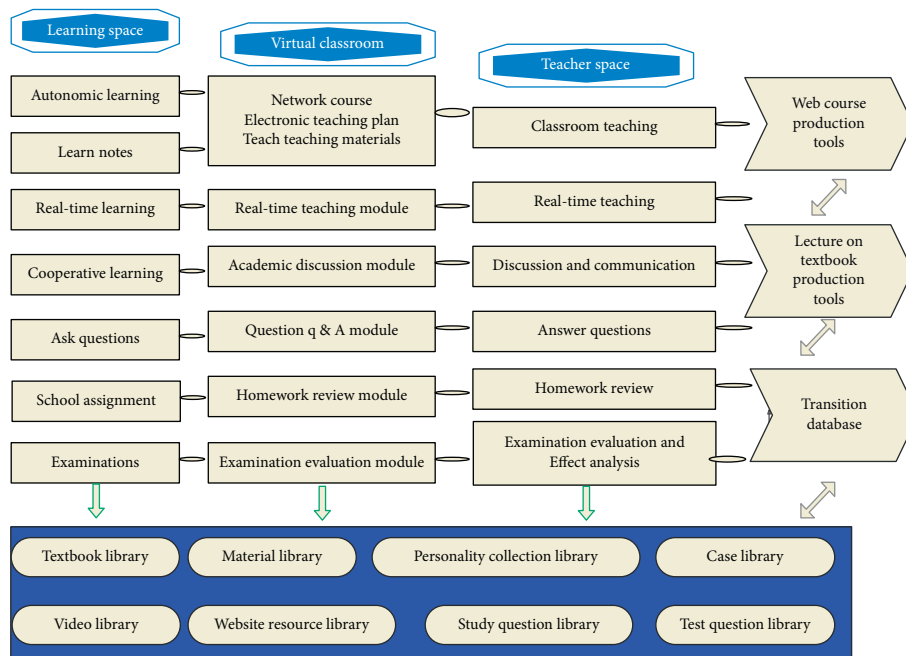FIGURE 8: Schematic diagram of subsystem management mode.

FIGURE 9: The functional structure of the media asset management system.

and performance, digital media art creativity, spatial performance, and other hands-on courses. Figure 5 shows the "pyramid" of the market for digital media art.

The opening of a new system is not to adapt to new social needs. For any college that has a very large demand for resource management, teaching media resource management needs to be strengthened more than human resources and equipment management. Combined with the actual situation of teaching media resource management in the School of Radio, Film and Television of Chengdu University of Technology, the new system should have the functions shown in Figure 6 below when it has traditional functions.

In order to improve the use efficiency of the entire system, the teaching media resource management system is divided into different functional modules according to the school's use needs. The main functional modules on the
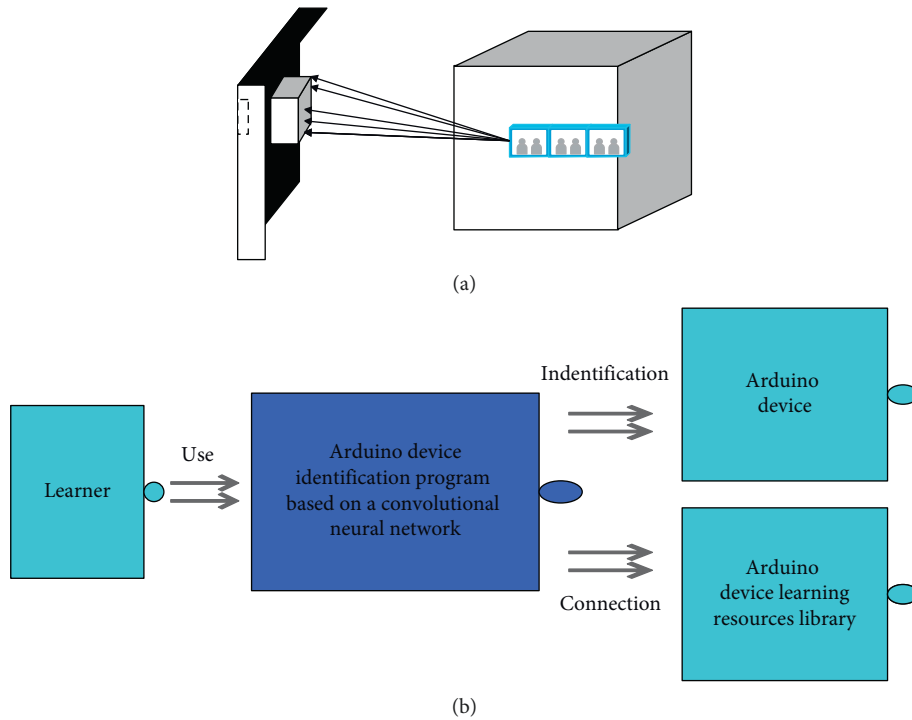
(a)

(b)

FIGURE 10: Resource management of digital media art teaching system based on convolutional neural network. (a) Schematic diagram of convolutional layer convolution kernel structure. (b) The overall process of the resource integration method based on the convolutional neural network.

TABLE 1: Resource management effect of digital media art teaching system based on convolutional neural network.

Number	Resource management	Number	Resource management	Number	Resource management
1	88.76	15	95.36	29	92.40
2	90.61	16	91.45	30	92.59
3	93.59	17	91.32	31	92.41
4	86.51	18	87.27	32	86.67
5	92.88	19	89.63	33	95.94
6	91.68	20	90.44	34	95.29
7	95.37	21	88.60	35	91.97
8	87.00	22	88.97	36	87.77
9	93.04	23	92.51	37	86.41
10	95.16	24	87.79	38	92.82
11	91.11	25	95.98	39	92.95
12	92.55	26	90.39	40	95.22
13	92.43	27	92.23	41	96.75
14	88.27	28	91.45	42	91.12

student side include 5 modules including the online test module, forum module, score query, and resource storage. The teacher side includes six modules including the student status management module, class management module, course management module, grade management module, and resource storage and calling. The senior system administrator also has a database management module, authority design module, system maintenance, and other modules. Moreover, different users need to go through different verification methods. The structure of each main module is shown in Figure 7.

The schematic diagram of the subsystem management mode is shown in Figure 8:

The centralized storage of a large amount of data in the database directly shares the system, but for many users, it is a valuable resource, the effectiveness of the security protection measures of the information system, and the performance of the database system. In a computer system, the security issues are set up at all levels as shown in Figure 9.

The value of the convolution kernel template in the convolution layer is randomly set at the beginning. One of the goals of convolutional neural networks is to train a suitable convolution kernel so that the training image can pass through this convolution kernel to get the desired output. In computer vision, convolution kernels are often used to identify important attributes in digital images. In a

TABLE 2: Teaching effect of digital media art teaching system based on convolutional neural network.

Number	Teaching improvement	Number	Teaching improvement	Number	Teaching improvement
1	70.57	15	91.92	29	73.92
2	75.96	16	81.68	30	69.93
3	81.03	17	77.64	31	85.21
4	72.73	18	69.03	32	75.33
5	73.54	19	89.41	33	91.38
6	87.16	20	91.48	34	78.22
7	76.31	21	85.56	35	91.11
8	72.62	22	74.39	36	73.31
9	84.49	23	87.46	37	84.93
10	83.94	24	82.51	38	72.00
11	70.13	25	83.76	39	75.99
12	88.74	26	86.50	40	80.54
13	70.18	27	72.17	41	88.46
14	87.41	28	70.05	42	81.71

convolutional neural network, multiple layers of convolution are required. The main purpose is that after the first convolution, the learned features are local features, and the second convolution is to convolve again on the basis of the first layer of convolution. In this way, it develops toward a global trend. After many such convolutions, the learned features become more and more global. Figure 10(a) is a schematic diagram of the convolution kernel structure of the convolutional layer. The overall process of the resource integration method based on the convolutional neural network is shown in Figure 10(b).

After the above system is constructed, the performance of the system is verified. This study uses a neural network to manage digital media art teaching resources, and the statistical teaching resource processing effect is shown in Table 1.

From the statistical results in Table 1 above, it can be seen that the resource management effect of the digital media art teaching system based on a convolutional neural network is better. Subsequently, this study conducts the detection of the teaching effect of the digital media art teaching system based on the convolutional neural network and obtains the results shown in Table 2 below.

From the results shown in Table 2, it can be seen that the digital media art teaching system based on the convolutional neural network can effectively improve the teaching effect of digital media art.

5. Conclusions

Due to the long-term emphasis on computer technology teaching in the field of digital media art education, there has been a single learning form and a complicated expression of artistic design. In the current environment, the emphasis is on the development of teaching theory, and the teachers are careful to teach step by step in class, so it seems a little pale and weak. The lack of legal content on the internet has a huge impact on itself. In addition, the schools own "brand" effect chain of famous teachers and famous classrooms, and the scale and content of its classrooms are also worthy of learning and reference. For a rational and perfect learning and training mechanism, a personalized thinking maker

space is also the primary choice for higher education. Based on the above analysis, this study combines the convolutional neural network algorithm to innovate the teaching method of digital media art to provide a theoretical reference for the digital media art teaching innovation in the new media era. From the experimental research results, it can be known that the digital media art teaching system based on the convolutional neural network can effectively improve the teaching effect of digital media art.

Data Availability

The labeled dataset used to support the findings of this study is available from the corresponding author upon request.

Conflicts of Interest

The author declares no conflicts of interest.

Acknowledgments

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