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The Application of Visual Communication in Digital Animation Advertising Design Under the Background of Artificial Intelligence

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Abstract: **-** In order to solve the problem of poor smoothness of traditional advertising animation design, an optimization design of advertising animation design system based on visual communication is proposed. The virtual fusion technology makes the virtual object and the video scene maintain the consistency in geometric position and light chromaticity, and the virtual object is completely integrated into the video scene, giving the audience a strong sense of reality. Combined with artificial intelligence technology, this paper adopts image processing algorithm and related technology to automatically complete the process of transforming the original still image into a dynamic image for human images, avoiding a large number of manual operations, so that the conversion can be carried out quickly and efficiently. This paper first introduces human feature detection and feature point location technology, then introduces 3D modeling technology, and focuses on image-based modeling technology, and finally introduces animation technology. Using IE9-Chromel mainstream controller, image encoder and system AEMS870F1451 processing chip to optimize the hardware configuration of the advertising animation design system, and improve the advertising animation remote design processing port to ensure the stability of the system operation. At the same time, combined with the principle of visual communication, the design steps of advertising animation are simplified and the three-dimensional coordinates of advertising animation are calculated, so as to realize the effective design of advertising animation. Finally, it is confirmed by experiments that the smoothness of the advertising animation design system based on visual communication is relatively higher in the running process, which fully meets the research requirements.

Keywords: advertising animation; visual communication; color recognition; configuration optimization; artificial intelligence

1 INTRODUCTION

The 21st century is an era of rapid development of digital information, and the Internet has been rapidly accepted and used by the public as a new medium on a global scale[1]. Data from Xinhuanet in July 2011 shows that my country has become a big Internet country with 485 million netizens and the largest number of users in the world[2]. Web Advertising (Web Ad) developed together with the emergence and rise of the Internet[3]. It is an emerging information dissemination activity that persuades the public by means of payment and the use of Internet media[4]. At present, online advertising has become an important commercial means and artistic expression in digital media[5]. According to the data of the EnfoDesk think tank, the Internet advertising revenue in the first quarter of 2012 hit a new high[6]. After the end of last year, the scale of domestic Internet advertising exceeded newspaper advertising for the first time[7]. Immediately after TV commercials jumped to the second spot, more companies

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choose the Internet for advertising[8].

The traditional advertising animation design system is mainly designed according to the 3D animation operation technology[9]. This method is relatively complicated. It needs to use the Web network structure platform to input and design the background drawing structure data, and send the design results to the front-end browser for FLASH playback or the first page[10]. Three-party plug-in projection, this method is prone to data damage and loss in the process of data transportation and processing[11]. In addition, the operation of the design system operation module is complicated and cumbersome, resulting in waste of information resources and other problems, which adds a lot to the advertising animation design work. difficult [12]. Therefore, a design method of advertising animation design system based on visual communication is proposed[13]. In the process of advertising design, the reasonable layout of animation structure images is carried out in combination with the Web network platform, and the visual communication algorithm is introduced on the HTML5 advertising design platform to standardize the latest version of IE9-Chromel mainstream controller and Firefox 4.0 browser[14]. Further improve the advertising animation design platform, combine the Canvas recording device to collect the animation element features of the advertisement, realize the later operation of animation design and production, and further draw the network inner page setting script compiled by the computer[15]. In the Canvas recording device, Use JavaScript function software to set individual vector patterns, grid patterns, complex animation patterns and corresponding animation special effects to effectively realize the rationality of advertising animation design[16].

The increasing maturity of digital multimedia technology and the vigorous development of online advertising have provided designers with a new artistic expression space and brought infinite feasibility to the diversified development of visual design[17]. The design form of online advertising has developed from the initial static picture form to today's multi-level, multi-sensory, and multi-dimensional composite form integrating visual, auditory, and interactive participation[18]. The visual design of online advertising has also developed from a single processing of flat pictures to a complex of effects including sound effects, light effects, and animations[19]. However, due to the relatively short development time of Internet advertising in my country, the lack of corresponding market management supervision and technical specifications, the threshold for access is low, and a large number of shoddy online advertisements are flooding all corners of the Internet world[20]. This not only caused serious pollution to the vision of the majority of users, causing users to resist online advertisements, but also affected the normal browsing needs of users, which will inevitably affect the long-term development of online advertisements in the long run[21].

Online advertising urgently needs innovative design concepts, making full use of new media technology, combining the visual aesthetic characteristics of the vast era, and taking into account the new look of commerciality and artistry. With the development of TV broadcasting and computer-related technologies, a large amount of virtual information has appeared in the broadcast of TV programs, such as three-dimensional animation, virtual billboards, virtual information prompts, etc[22]. These virtual information can provide a large number of viewers with information that cannot or are difficult to obtain from the program itself, which not only enriches the content of the program, but also provides a new form of advertising, which can generate huge economic and social

benefits[23].

2 RELATED CONCEPTS AND THEORETICAL BASIS

2.1 Advertising animation design system

Optimize the hardware configuration of the advertising animation design system, combine modern virtual connection technology, simulate the three-dimensional spatial characteristics of advertising animation on the computer, collect the shape and structure attributes reflected in the animation pattern on the three-dimensional interface, and collect the results according to the collection results[24]. The function processing module of system visualization is optimized to be compatible with image features. Input interactive commands in the digital collector, so as to better transmit the design quality to the processor module, and realize the control of advertising animation motion information and characteristic data. In the process of setting the advertising animation system, it is necessary to combine the halftone technology and texture mapping method to optimize the image realistic rendering effect. In order to ensure the rendering effect, the digital processor is used to collect the image data features, compress the image features, generate and restore the relevant animation frames in the generator, and improve the controller to better realize the storage and storage of data images. replay[25]. In addition, the texture mapper is set to identify the color and texture of the image, and finally the image encoder, projector and memory are set reasonably to improve the operation effect of the design system and better generate the user interface system. Based on this, the system hardware is constructed. Configured coordination facilities, responsible for assembling and managing Web Internet technology; using low-function WeChat processing system AEMS870F1451 processing chip as the main body of the animation advertising design system controller, responsible for the organization and coordination of the entire animation design module. The hardware configuration of the system is shown in Figure 1.

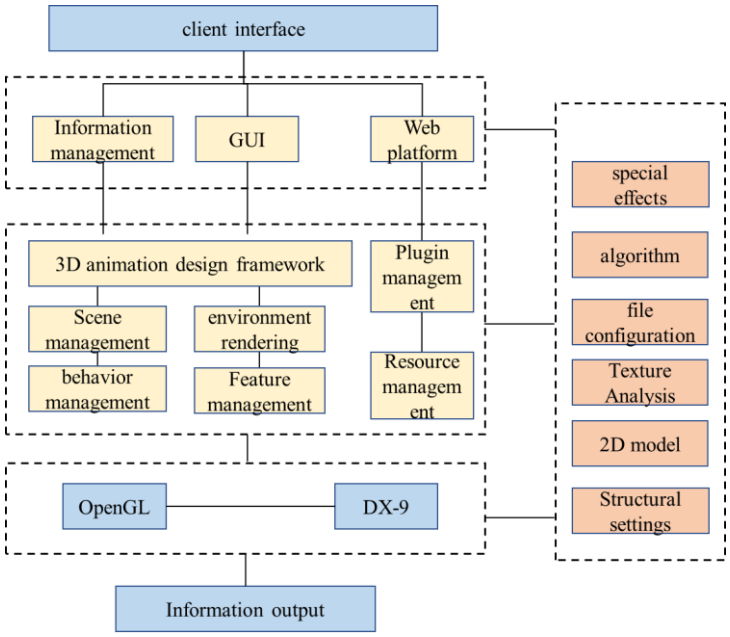

Figure 1. Structure framework of 3D advertising animation design system

Among them, the user port adopts the ANIMIQO.12 version, records and divides the relevant attribute features in the advertising animation, develops and applies the relevant knowledge of the 3D visual animation design system, and establishes the corresponding ASP NET WEB animation feature development framework according to the open structure. The structure, presentation and behavior of images are designed using HTML5 platform and C++ language. Combine the Kinect table for information tracking, convert the three-dimensional data coordinates, and then transmit the obtained feature information data to the computer port, and use the Internet wireless transmission equipment to receive and verify the remote operation of the animation. Therefore, it is necessary to configure the network connection port structure. optimize.

2.2 Overview of animation technology

(1) Interpolation animation

This animation technology is the earliest researched by people, and its implementation is also the simplest. This method is widely used in two-dimensional animation, and currently popular image processing software, such as Flash, PhotoShop, and 3DMAX, all support interpolation animation. During 3D modeling, construct the model of the object at two different times, and then use linear or nonlinear interpolation to generate a transition model between the two models, so as to obtain animation effect images at different times, and then play these image sequences continuously. Generate animation. This kind of animation is simple to implement and the time cost is very small, but the expression obtained by the simple over-animation is not natural enough, and the resulting animation does not have a good sense of reality. It will increase accordingly, and the fidelity of the animation effect is often proportional to the number of 3D models. On the other hand, the selection of key frames in the interpolation animation is also a difficulty. If the selection is too dense, the number of modeling will increase. If it is too sparse, the animation distortion will be very large. It can be said that the production of animation effects is actually the production process of 3D models.

(2) Parametric model animation

In the 1970s, Parke first proposed the classical method of this parameterized model, and realized the first parameterized face model. The model was first applied to the animation model of the face. The basic idea is to use a set of parameters to describe the shape features of the face and the changes of the human expression. By modifying these parameter values, the model can make various expressions. The face model includes two types of parameters: face shape parameters and face animation parameters. The face shape is used to describe the size of the face and the geometric features of the specific position and size of the facial features. By adjusting these parameters, the characteristics of a face can be changed and a personalized face shape can be generated. The facial animation parameters describe the changes of human facial organs and various expression changes. By adjusting these parameters, various facial expression animations can be generated.

(3) Image deformation animation

Morphing refers to an image processing method that transforms one image into another according to certain rules or methods. Image deformation animation refers to the use of image deformation technology to interpolate and

deform between different images to obtain animation effects. Morphing technology was first used in 2D animation effects. Common image deformation algorithms include four categories: mesh deformation algorithms, domain deformation algorithms, point deformation algorithms, and complex feature deformation algorithms. The mesh deformation algorithm is to first select a certain feature control point in the image, and establish the feature grid model of the image. By changing the feature control point in the model, changing the position of the control point only affects the image of a small area near the point. Under the condition of , the non-feature parts of the image are automatically adjusted according to certain rules. The domain deformation algorithm uses the representative line segment pair in the starting image and the ending image to define the feature coordinate mapping between the two images. The other points determine the alignment relationship by the distance to the line segment. Usually inverse mapping is used to estimate image deformation, scan each pixel of the target image in turn, and find the corresponding pixel in the original image, so that each pixel of the target image will have appropriate padding. This method is more expressive and easier to express the user's design ideas than the grid method. In the operation, it is only necessary to calibrate the pair of feature line segments at the key feature points in the starting image and the ending image, and it is not necessary to calibrate the non-feature points, and a fairly good smooth gradient effect can be produced.

2.3 Artistic expression methods of digital animation advertising in the context of visual communication

(1) Modeling of virtuality and reality In the production of animation advertisements, no matter what method is used for the role modeling of advertisements, it is necessary to draw sketches of the front, side and back of the object as much as possible, and depict the detailed performance that highlights the characteristics of the characters. Vivid performance full of personality to stimulate consumers' desire to buy. Such as: the righteous and awe-inspiring Astro Boy, the naive Chinchilla, etc. Each successful animated image has created countless business opportunities for businesses and brought huge business benefits. Therefore, before modeling the protagonist of an advertisement, it is necessary to focus on portraying the character of the character that is consistent with the advertising brand, and based on the characteristics of the target audience, give full play to the subjective initiative to scrutinize the animation image. For example: in DELL's classic ((THOMAS)) advertisement, the creators cleverly used the virtualization features of animation to better show the new virtualization features in addition to the ultrabook. First, the designer created the initial image of the character according to the sketching method of the front, side and back, and then depicted the grasshopper from the beginning of the advertisement to the mouse knight with rich details, and showed the external characteristics of the character three-dimensionally through digital modeling. The anthropomorphic personality is expressed from the subtle frown and the movement of the corner of the mouth. The ultra-high shaping ability of digital animation allows the audience to remember the new features of the product in the visual shock, so that the virtual characters are vividly displayed on the screen.

(2) The development of drawing digital technology for reproduction and improvement has changed the original production method of animation advertisements, so that the drawing method of single-line flat painting can be better integrated into various new media, and the colors and lines are simulated by digital technology. Put on a

technical coat. And while inheriting the unique symbolic language of animation, advertising has broadened its own communication channels, and single-line flat painting has been endowed with technical characteristics, which has set up a bridge of communication for the link between animation advertising and new media. In order to create a brand-new animated character to speak for the drink, the designer uses digital drawing, using pure two-dimensional animation performance, on the computer, draws the animation storybook through the digital tablet, and uses a certain editing technology to sequence these computer hand-painted manuscripts. After the link and playback of , in all aspects are correct, in order to make the picture play a better modification role, the picture has been further modified, making the picture a lot more delicate. In terms of advertising style performance, the single-line flat painting breaks the conventional performance of traditional animation production. The personalized style design in the advertisement enhances the audience's visual experience, and uses a stroke similar to wall painting to highlight the character's personality characteristics. Reproduces and enhances the visual experience of the drawing.

3 RELATED TECHNOLOGIES

3.1 System software process

Based on the above hardware configuration, the system software operation process is further optimized, and the dynamic advertising animation structure and layout are processed in combination with the principle of 3D visualization. In the case of multi-user port login, the web browser running vector in the advertising animation design process is detected, and the collected animation running vector data is displayed independently, and recorded in the visual animation table, according to the value of the coordinate center point The sorting order determines the value of the animation invisible feature. In the process of advertising animation design, the points, lines and surfaces linked by the two-dimensional coordinates of traditional animation entity elements are converted, so as to standardize the number of related items in the three-dimensional coordinates, and judge the movable three-dimensional coordinate conversion points. .

Based on the above steps, the three-dimensional image recognition and transmission algorithm is standardized. Let the initial three-dimensional coordinate value in the animation advertisement be (x, y, z), if the three-dimensional coordinate conversion algorithm is Conversion, the conversion value is R, and the converted three-dimensional coordinate is marked as (x', y', z'). Then the three-dimensional coordinate control function algorithm for:

$$f(n) = \sum\sum \text{Conversion}\, R(x+y+z) - t\left(x'+y'+z'\right) \quad (1)$$

After obtaining the predicted line parameters 1 ˆ □k□ and 1 ˆ □k□ in the next frame, in the image space x-y 1 ˆ □k□ and 1 ˆ □k□ , select an area of a certain size near the determined line WL, the subsequent line extraction operations are all performed in this area. The width of the prediction area WL, 1 2 □ k □ □ □ , the equation of the straight line where the upper and lower edges are located is:

$$\hat{\rho}_{k+1} = x\cos\hat{\theta}_{k+1} + y\sin\hat{\theta}_{k+1} - \varepsilon_{\rho,\,k+1} \quad (2)$$

The value of □k+1 is directly related to the amount of calculation and the accuracy of extracting the straight line. It should dynamically change the value according to the movement trend of the straight line:

$$\varepsilon_{\rho,\,k+1} = w + a\left|v_{\rho k}\right| \quad (3)$$

Here w is a constant set according to the video frame; where α is a coefficient, indicating the degree of influence of the speed in the □ direction on □, 1 k □ □.

Prediction through kalman filtering can reduce the area where the previous frame of the search is located, and reduce the search area opposite to the direction of motion. First, the feature point set of the Nth frame of the straight line is established, and then a two-dimensional Kalman model is established for each feature point to estimate the position of the feature point of the N+1th frame, that is,

$$\left(x_{i+1}, y_{i+1}\right) = \text{Kalpredict}\left(x_i, y_i\right) \quad (4)$$

Where Kalpara is the kalman state set, the function Kalpredict (xi , yi) predicts (xi+1 , yi+1) through the values of Kalpara and (xi , yi), and the function Kalupdate (xi+1 , yi+1) passes the detection The value (xi+1 , yi+1) updates the kalman state set Kalpara .

3.2 Feature point extraction and matching algorithm for animation advertisements

To implement the natural feature point matching algorithm, the first step is to detect natural feature points in the image. At present, the more successful natural feature point extraction algorithms include Harris corner detection, SUSAN algorithm, SIFT algorithm and feature block sprinkling algorithm. In this paper, the feature block splash point algorithm is used. The extraction algorithm randomly obtains N different natural feature points in the video image.

Feature block refers to a pixel block that is significantly different from several nearby pixel blocks in terms of brightness, color and other characteristics. In the feature block search area of 24 24 □, firstly take the upper left of the search area as the starting point, and add one pixel to the right each time to form a pixel block of 8 8□. When the right border of the search area is reached, one line of pixels is added downward, and the same progressive scan is performed from the left border to the right until the end of the search area. By calculating the color variance, the most characteristic pixel block in the search area is obtained. First calculate the average color of the search area:

$$\overline{RGB} = \frac{1}{n}\sum_{i=1}^{n} RGB_i \quad (5)$$

where n is the total number of pixels in the search area 24 □ 24 . Then calculate the variance value of the color in the scanned pixel block of each row:

$$D_k = \sum_{i=1}^{n} \left(RGB_i - \overline{RGB} \right)^2 \quad (6)$$

For image sequences, the KLT algorithm assumes a feature window W containing feature texture information, and the positions of two consecutive images I (x, y) and J (x, y) satisfy the following relationship:

$$J(x, y) = I(x - \Delta x, y - \Delta y) \quad (7)$$

That is, each pixel of W in J(x,y) can be obtained by translating the corresponding window pixel in I(x,y) d=[Ar 4y]. The purpose of the KLT algorithm is to solve two consecutive frames. The pixel point displacement between d.

Set the feature window W(X)=W,(x,y) in J(x,y), where X=[xy] is the center coordinate of the window and the pixel coordinates of the corresponding window. The corresponding window in I(x, y) is W(X-d)=W(x-Ax, y-4y).

Considering the general case, the following formula can be obtained:

$$W_2(X) = W_1(X - d) + n(X) \quad (8)$$

Among them, n (X) is the noise caused by changes in lighting conditions between the two frames before and after. By squaring n (X) and integrating over the entire window, the SSD of the window image can be obtained as follows:

$$\varepsilon = \iint_W n(X)^2 \omega(X) d_X = \iint_W \left[W_2(X) - W_1(X - d) \right]^2 \omega(X) d_X \quad (9)$$

where ω (X) is usually taken as 1. If the role of the texture in the center part is emphasized, ω (X) can use a Gaussian distribution function.

3.3 Implementation of dynamic background construction

The current background is constructed by using several frames of images adjacent to the current frame. However, when the motion of the object is slow, constructing the background directly with the adjacent frame images will easily cause ghost images in the constructed background, thereby affecting the accuracy of background elimination. , so this paper uses multi-frame difference to initially separate the foreground area from the background in each frame image, and then uses the background information in adjacent frames to construct the current background. Before calculating the multi-frame difference, it is necessary to estimate and compensate the global motion between adjacent frames to make them spatially aligned.

The scale space L(x, y, σ) of an image can be represented by the convolution of a Gaussian kernel function G(x, y, σ) with varying scales and the original image I(x, y).

$$G(x, y, \sigma) = \frac{1}{2\pi\sigma^2} e^{-\frac{(x - m/2)^2 + (y - n/2)^2}{2\sigma^2}} \quad (10)$$

$$L(x, y, \sigma) = G(x, y, \sigma) \otimes I(x, y) \quad (11)$$

In the formula, (x, y) is the position of a certain point of the image, σ is the representation factor of the scale space, the smaller its value is, the smaller the scale of the image is.

The smaller it is, the more detail will be represented in the image. The convolution operation is performed in the x and y directions, respectively.

The SIFT algorithm first builds a Gaussian pyramid image, the original image constitutes the bottom of the pyramid, and each time the gold is downsampled.

The pyramid adds one layer. Use different scale functions to do Gaussian blur on the image of each layer (Octave) of the pyramid, so that

Get multiple Gaussian blurred images. The Gaussian pyramid image is shown in Figure 2 below.

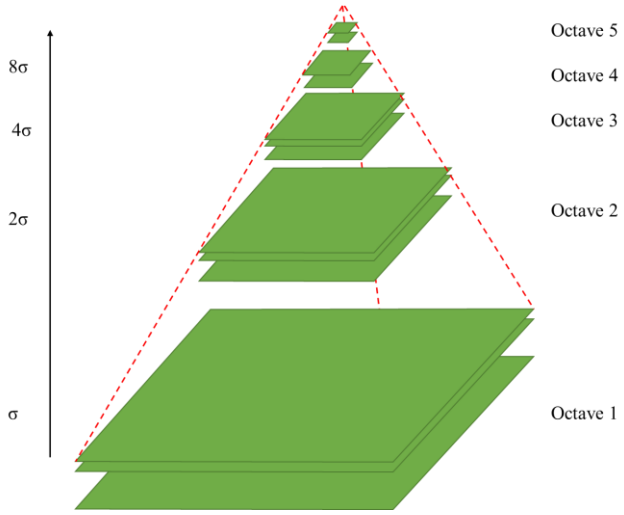

Figure 2 Gaussian Pyramid Image

To extract scale-invariant image features, Lowe uses the Difference of Gaussians (DOG) function to construct a DOG pyramid, as shown in Equation 12:

$$D(x, y, \sigma) = (G(x, y, k\sigma) - G(x, y, \sigma)) \otimes I(x, y) \quad (12)$$

Laplace of Gaussians (LOG) is a common method for image feature point detection, while

The DOG operator is very similar to the scale-normalized LOG operator, so the DOG operator can be used to approximate the LOG operator for calculation. Their derivation process is as follows:

$$\frac{\delta \mathrm{G}}{\delta \sigma} = \sigma \nabla^2 \mathrm{G} \quad (13)$$

It can be seen from the above formula (13) that since the LOG operator needs to calculate its second-order differential, the DOG operator can directly calculate the Gaussian convolution kernel, and when calculating the DOG, it can directly subtract the adjacent scale space images, so the calculation is more convenient. .

In this paper, the temporal median value is constrained by referring to the foreground template obtained by foreground separation, and the pixels located on the moving object are excluded from these 2L□1 pixels, so as to eliminate the phantom caused by the slow motion of the object in the construction background:

$$D_k = D_{K,K-1} \square D_{K \cdot K+1} \quad (14)$$

By eliminating the constructed background from the current frame, we rapidly segment the region of moving objects, while effectively removing the revealing background in the segmented structure. Let d" (p)=F×I,(p)-F×B,(p)| be the frame difference after subtracting the background, where F is the smoothing filter function. Let the position p be the background (that is, the null hypothesis H.) , then the frame difference d"(p) on p follows an N(O,o') Gaussian distribution (o2 is the variance of the background noise, which is estimated in this paper using the frame difference on the background obtained by foreground separation). A, (p) are statistical test quantities.

$$\Delta_k(p) = \sum_{u \in w(p)} \left(d_k^B(u) / \sigma \right)^2 \quad (15)$$

4 EXPERIMENTAL RESULTS AND ANALYSIS

4.1 Simulation experiment

In order to verify the validity and rationality of the design of the advertising animation system based on visual communication, a comparative test experiment was carried out. The experimental testing platform is a Web platform, combined with HTML5 design software and Matlab module for animation settings, 5 000 GB memory, the experimental operating platform is Windows 2007 system, the hardware selects Intel Core3-246 GB memory, 14 200 Mb/s network card.

Based on the above experimental environment, a comparative test was carried out, and the test results were recorded. In the process of animation design detection, smoothness is an important parameter to detect the operating effect of the system, and the specific detection results are shown in Figure 3.

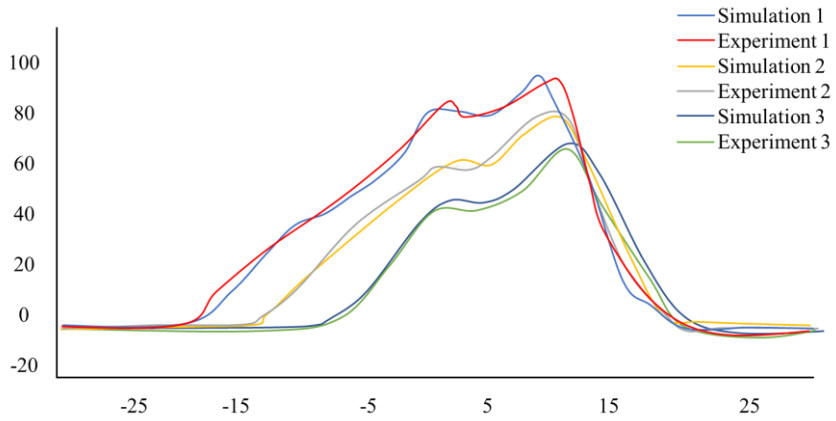

Figure 3 Comparison of experimental test results

Based on the test results in Figure 3, it can be seen that compared with the traditional advertising animation design system, the advertising design system based on visual communication proposed in this paper has a relatively higher smoothness in the actual operation process, which confirms that the advertising design system based on visual communication is relatively smooth. Compared with the traditional system, it has higher effectiveness and practicability, and fully meets the research requirements.

In order to test the application advantages of the system in this article, we use the system in this article, the animation advertisement production system based on 3DS aided design, the production and intelligent delivery system of FLASH animation advertisements to carry out a comparative test, and test the three systems for the clear texture in the advertising animation designed by different subjects. degrees, and the results are shown in Figure 4.

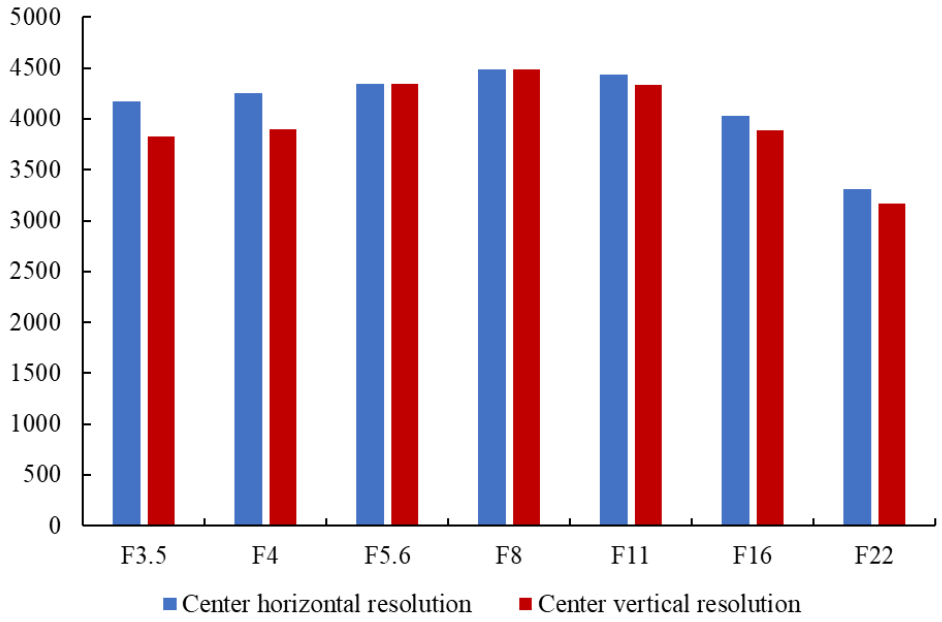

Figure 4. Comparison results of texture clarity in advertising animations with different body designs

Analysis of the data in Figure 4 shows that the system in this paper is compared with the animation advertisement production system based on 3DS aided design, and the production and intelligent delivery system based on FLASH animation advertisement. All are greater than 99%; although the definition of advertising animation based on 3DS-aided design animation advertising production system, FLASH animation advertising production and intelligent delivery system is higher than 90%, compared with this system, the definition is lower than this system.

4.2 Cascade system identification performance verification

Figure 5 shows the time required for the processing of three different motion camera tracking algorithms, where the blue line represents the time required for the motion tracking algorithm based on natural feature point matching, and the red line represents the time required for the motion tracking algorithm based on Hough space , the yellow line represents the time required by the GPU-based motion tracking algorithm. As can be clearly seen in Figure 3.16, the GPU-based motion tracking algorithm is significantly faster than the former two, and the processing speed is basically maintained at about 20ms. The average processing time of a frame is about 810ms

for the motion tracking algorithm based on natural feature point matching, and the average processing time for one frame is about 198ms for the motion tracking algorithm based on Hough space. Therefore, the GPU-based motion tracking algorithm consumes 40 times more time than the motion tracking algorithm based on natural feature point matching, and 10 times faster than the motion tracking algorithm based on Hough space. It is certain that the GPU-based motion tracking algorithm is greatly improved. The ability of the camera tracking algorithm to process high-definition video.

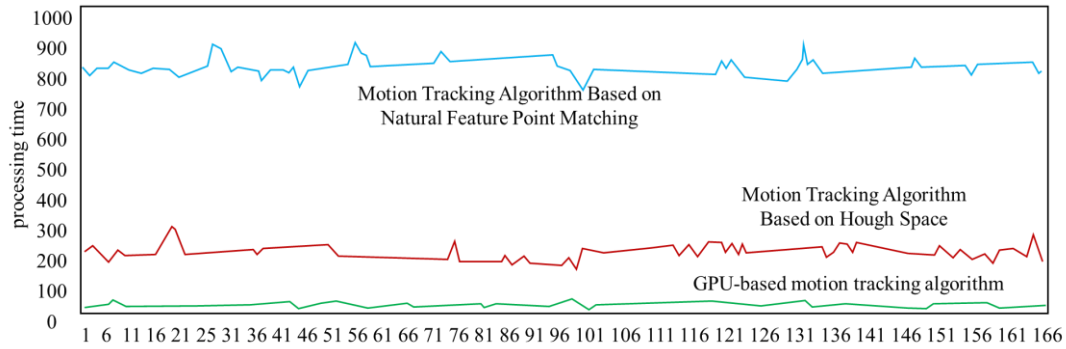

Figure 5. Time consumption comparison of three motion camera tracking algorithms proposed in this paper

The CMC curve of the recognition method based on the contour line and SIFT feature cascade is shown in Fig. 6. It can be seen from the figure that the recognition performance based on the two feature fusion algorithms is better than that of a single three-dimensional feature, and the recognition rate can reach 100% when the Rank is 10. The recognition performance of the method based on the circular neighborhood SIFT feature is generally much higher than that of the recognition method based on the median contour and the horizontal contour.

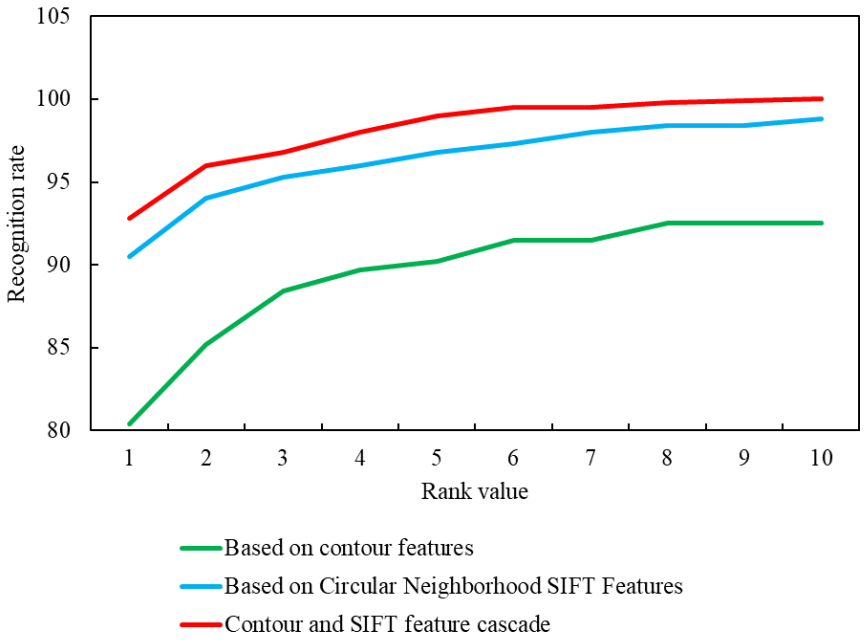

Figure 6. Feature-level fusion based on contour lines and SIFT is obtained by the method CMC curve

Here we use instead of cudaMemcpy(), cudaMemcpyAsync() can achieve asynchronous copying of memory, which can be returned to the CPU thread before the GPU side completes the request task, and cudaMemcy() is a synchronous version of the GPU function, which completes the request on the GPU side Before the task, it will not return to the CPU thread. At this time, the thread on the CPU side will enter the yield or wait state. In order to ensure the comparability of the processing speed of moving object segmentation before and after GPU optimization, we use the same experimental equipment and experimental data and parameters as in the above experiments, for the same three test cases. The time-consuming situation of each stage of processing an image in the experimental algorithm is shown in Figure 7:

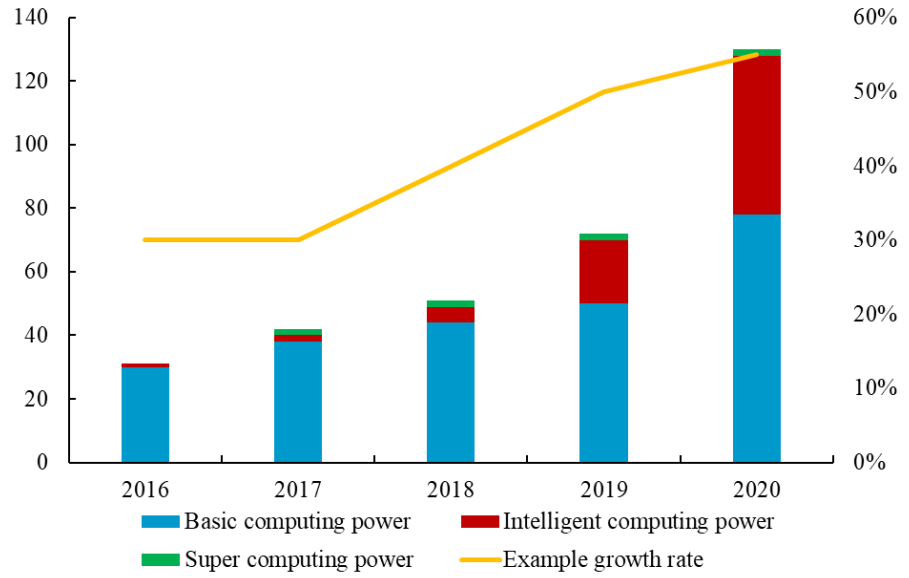

Figure 7 The time consumption of the optimized dynamic background moving target segmentation algorithm on GPU

As can be seen from the above figure, the optimized GPU algorithm is 3-4 times that of the CPU algorithm, and the data transmission speed between the CPU side and the GPU side has been significantly improved, almost 10 times. But this is not the main reason for the speed improvement. After all, the base of data transmission time consumption is relatively small, and the asynchronous parallel execution between CPU threads and GPU threads is the main reason for improving the speed of the algorithm. It can also be seen that the calculation speed of feature metric and editing parameter solution has dropped, which is mainly caused by the simultaneous work of multiple GPU streams, which spreads the GPU resources.

5 CONCLUSION

This paper proposes the design of advertising animation system based on visual communication through a lot of investigation and analysis, improves the hardware configuration and software process of the system respectively, realizes the optimization and improvement of the advertising animation system based on visual communication, and conducts comparative testing experiments to verify the effect of the system. Experiments have confirmed that the advertising animation system based on visual communication is more effective and practical than the

traditional system. In the actual operation process of the system in this paper, the smoothness is relatively higher, the definition of the designed advertising animation is higher, and the application satisfaction is as high as 0.99. This paper mainly involves the research and implementation of high-definition audio and video synchronous acquisition system, GPU-based camera motion tracking algorithm, and GPU-based virtual advertising area moving target segmentation algorithm. The high-definition audio and video synchronization acquisition system part mainly involves the use of DirectShow technology combined with hardware environment to develop audio and video synchronization acquisition module.

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