

Retraction

Retracted: Artistic Expression in Visual Communication Design in Multimedia Background

Mobile Information Systems

Received 8 August 2023; Accepted 8 August 2023; Published 9 August 2023

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] Z. Yang and S. Yang, "Artistic Expression in Visual Communication Design in Multimedia Background," *Mobile Information Systems*, vol. 2022, Article ID 7954445, 10 pages, 2022.

Research Article

Artistic Expression in Visual Communication Design in Multimedia Background

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Received 30 May 2022; Revised 12 July 2022; Accepted 20 July 2022; Published 17 August 2022

Academic Editor: Imran Shafique Ansari

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The application of multimedia technology has realized the transformation of people's production and lifestyle, and also promoted the improvement of people's aesthetic ability. At present, the application of multimedia in the field of art is increasing, and traditional artistic expression has been unable to satisfy the people's appreciation of beauty. Using high-efficiency production and extensive communication technology, this paper aims to study the research on artistic expressions in visual communication design in the multimedia environment, which is helpful to analyze the role and influence of current artistic elements on visual communication design. It draws on the principles and laws of visual communication design to analyze and evaluate image processing techniques and to realize the ecology of visual communication design. The results show that the highest error rate for low iterations is only 0.014. In the comparison of the method in this paper with other methods, it is found that the method in this paper has the shortest iteration time and the least number of iterations. Among them, the iteration time is 2.945 s, the number of iterations is 10, and the error rate is 0.0016. It can be seen from the identified pictures that the iteration time of the method in this paper is 2.647 s, and the number of iterations is only 10. Therefore, it is crucial to analyze image-based artistic expressions.

1. Introduction

The politics, economy, and culture of today's society are developing rapidly. Art and design are changing today's life with a powerful force, and have had a wide and far-reaching impact. It is obvious that the visual communication design will soon have a broader space for development. The "world" of the art design is a relative concept without a unified standard for clear division. The center of today's design has changed from "things" to "people", emphasizing the people-oriented design concept. For crossover, it has become an economic way, a state of mind, and an attitude to life. Being people-oriented, it is necessary to design cross-border development and breakthrough other aspects of time, space, culture, religion, and reality. The design should maximize local and overall effects, allow different visual symbols to communicate with each other, and inherit and innovate different historical and cultural connotations, allowing different differences to be preserved and developed.

In the research process, this paper mainly uses the literature research method and case analysis method to analyze and study the literature related to contemporary art and visual communication design, and enrich the theoretical support with the help of a large number of literature materials, so as to find important theoretical basis and creative experience. It enumerates some typical cases of contemporary art and visual communication design works for analysis which serves as effective auxiliary evidence for theoretical viewpoints from the aspects of studying its artistic characteristics and visual elements. The characteristics of contemporary art visual elements are suitable for the design of visual communication. The integration of visual elements in contemporary art endows the visual communication design with a new image, because it needs contemporary ideas, contemporary forms, and contemporary communication media. Therefore, it is very important to incorporate modern visual elements.

The use of multimedia technology to analyze the current visual communication design is a very novel concept, and many scholars are now conducting research in this area. Liu [1] focused on how to apply visual communication to web design from the color requirements and color characteristics of corporate websites [1]. Cheng [2] mentioned that the emergence and promotion of computer technology can help designers better create artistic designs and enhance the attractiveness of products [2]. Huang et al. [3] highlighted the need for graphical propagation participants to be familiar with significant input and output variables [3]. Freitas et al. [4] mentioned that data collection included oral reports, visual materials, and emotional accounts. It shares feelings in a relational environment within the framework of moral commitment [4]. Lv [5] has analyzed Dunhuang Grotto art based on visual communication design. Dunhuang grotto mural art integrates a variety of cultural factors, and gradually formed its own unique artistic style in the process of development, with very rich artistic connotations [5]. However, the current research in the field of visual communication in the multimedia context is still not free from the definition based on traditional art-viewing technology and lacks in-depth analysis and discussion on the functionality of multimedia, which also hinders the high degree of integration and advantage of multimedia technology and artistic expression.

The study of artistic expression can improve and optimize people's aesthetic ability, and the use of graphics processing in multimedia technology can make it better accepted by people. Many studies are based on such methods. Xue [6] studied the comfort, beauty, personality, health, and functionality of clothing brought by various disciplines by studying bionic elements and their artistic expressions in fashion design, such as shape design, color design, pattern texture design, and functional design [6]. Xiao and Miwa [7] studied the elements of traditional architecture, ink wash, and printing and dyeing techniques applied in modern clothing design and design principles, and came to the conclusion that traditional architecture, ink wash, and printing and dyeing techniques are closely related in layout, aesthetics, and historical evolution [7]. Underriner [8] understands Murakami's use of "parallel worlds" and "reality effects" by analyzing passages from Haruki Murakami's novel "Sputnik Sweetheart". This literary analysis aims to highlight the potential of mimetic techniques in the practice of sound and image art, especially in the author's Landscape series [8]. Li H showed that VR teaching design can help students understand the teaching content of Chinese folk art performances and improve students' visual aesthetic ability [9]. Shi [10] proposed that for the traditional visual communication design, the visual communication design based on the network environment has distinct characteristics in both content and form [10]. At this stage, the above research cannot be widely disseminated due to problems such as equipment and cost.

This paper has used the image coding algorithm in multimedia to research and analyze the graphic art expression in visual communication design, and conduct simulation experiments and analysis on such algorithms and methods. It has low number of iterations, short running time,

low error rate, and the highest error rate is only 0.014. The method in this paper is compared horizontally with the other classical methods, and the iteration time and the number of iterations of each method are compared. The method in this paper has the shortest iteration time and the least number of iterations. To sum up, the method in this paper is not only fast and accurate, and the performance is the best [11].

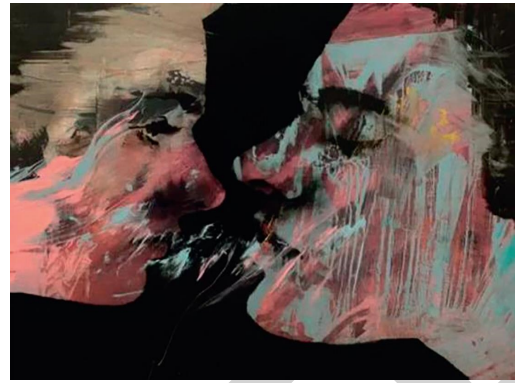
However, in the research of related academic papers, there are relatively more studies on artistic elements and visual design, and the vast majority of the papers are researched from small and specialized perspectives such as design work cases, traditional culture, or application methods. This paper believes that this is a mapping of the widely used artistic visual elements in the current design field at the design theory level. Generally speaking, there is still a lack of systematic macro-level comprehensive research. However, art design urgently needs to conduct an in-depth discussion on this issue at the theoretical and academic levels [12]. However, art design urgently needs to conduct an in-depth discussion on this issue at the theoretical and academic levels. This paper attempts to comprehensively and systematically sort out this issue from multiple perspectives, such as the basic theory of visual communication, cultural connotations, expressions, specific applications, and development trends, so as to provide a framework for the design basis and expression methods of visual art to make up for the current dilemma facing this issue. This is not only a demand at the theoretical level of the theoretical design, but also an urgent problem to be solved at the academic level. This paper tries to comprehensively and systematically organize this issue from multiple perspectives, such as the basic theory of visual communication, cultural connotation, expression, specific application, and development trend, to provide a framework for thinking about the basis and expression of visual art design in research, to remedy the dilemma faced by this issue at present [13].

2. Manifestations of Visual Art Design Based on Multimedia

2.1. Fusion of New Aesthetics and Philosophy. Contemporary art attaches great importance to the expression of ideas and concepts in works, and its function often lies in the reflection of cognition in works. In contemporary works of art, concept is the soul of the work, which is intuitive and a collection of various spiritual activities of human beings. Contemporary art gets rid of the traditional art's emphasis on technique to a certain extent, and it mainly brings spiritual excitement to the viewers. The concept of contemporary art may be a resonant experience or perception extracted from the real life that is closely related to people, or it may be a reasonable logic within the scope of people's cognition, such as breaking nature, breaking science, and breaking reality. The concept of contemporary art is embodied in a diverse and individualized language. Therefore, the concept of contemporary art is in line with the current public demand for art [14], as shown in Figure 1:



Oil painting art



Digital painting



Narrative painting

FIGURE 1: Expressions of contemporary art.

2.2. Changes in the Concept of Visual Communication Design. From the evolution of graphic design to visual communication design, the concept of today's visual communication design has undergone new changes. With the expansion of the scope of visual communication design, collaboration has become a new feature of today's visual communication design. After many stages of people's research on aesthetics in visual communication design, contemporary people have carried out a lot of philosophical thinking on visual communication design [15]. Designers should adapt to the environment in which today's design is located with a new concept, and maximize the satisfaction of today people's expectations of visual communication design, as shown in Figure 2:

To a large extent, the concepts of contemporary art influence today's visual communication design. The integration of contemporary art visual elements into visual communication and their inclusion and acceptance by visual communication design is the result of a shift in perception [16], the integration of contemporary art and visual communication design concepts, the mutual adoption and absorption, and a new understanding and interpretation of beauty.

2.3. Integration of Visual Elements in Contemporary Art Expressions. Storytelling was once one of the most important features of traditional art, and narrative was an

important function of art. In the primitive society, the cave paintings were the first descriptions. In the Italian Renaissance, the classic stories reached their peak, and the storytelling of the Dunhuang murals in China also reached a very high level [17]. With modernism and postmodernism, various abstract and minimalist forms continue to emerge, avoiding the single-story nature of artworks to a certain extent. When it comes to contemporary art, there is a story that is different from the past. Artists use the language of contemporary to tell the thinking of all aspects of today's life. In many cases, the viewer will actively or passively participate in the story, become a part of the story, and complete the recreation of the work. The information elements with contemporary art stories are integrated into the visual communication design, so that the design is more in line with the aesthetic needs of contemporary people in terms of the personality and richness of the visual elements, as shown in Figure 3:

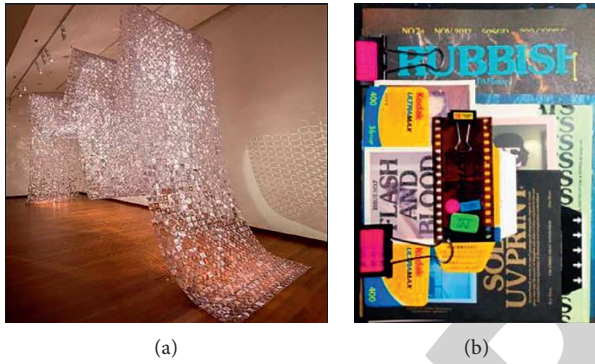
From Figure 3(a), it can be seen that a certain artist's work is a lot of shiny glass pieces from a distance, which is very grand and shocking. A further look will bring viewers that each glass bottle contains a real blood sample, which gives the viewer a visual effect. The double shock and spiritual shock lead the viewer to think about the price of human peace, and the narrative expression makes the work have a strong tension [18, 19]. Figure 3(b) is an independent publishing studio composed of four members in Singapore.



War epidemic poster

Postgraduate poster

FIGURE 2: Poster design in visual communication design.



(a)

(b)

FIGURE 3: Convergence of Contemporary Art Expressions. (a) Glass art. (b) Graphic publishing.

The four family members are responsible for a series of work such as creative planning, photo photography, text editing, and visual design. Parents take their children to collect common precious life memories and teach their children to be attentive and patient. The pictures in the book content themselves are the presentation of the story. In the book design, the elements of the contemporary art story such as folders, films, and film packaging are used. The works are interesting, warm, and touching.

2.4. Virtual Visual Information. In contemporary art, art is no longer just a reflection of reality, but art itself constitutes reality, and reality becomes a virtual, constructed reality. In some contemporary works of art, the rational order in life is disintegrated, time, space, or other natural laws are reconstructed virtually, and virtual visual information opens people to explore and imagine the spiritual world. Incorporating virtual visual information into the visual communication design, the design works show better imagination, as shown in Figure 4:

2.5. Image Processing Methods in Multimedia Background

2.5.1. Level Set Method. The level set method is a numerical technique for interface tracking and shape modeling. The

advantage of the level set method is that it allows numerical computation of evolving curved surfaces on a Cartesian grid without having to parameterize the curved surfaces. The main idea of level set is to upgrade low-dimensional computation to high-dimensional computation, and deepen the introduction of N -dimensional content to $N+1$ dimension [20]. For example, a circle $x^2 + y^2 = 1$ in a two-dimensional plane can be thought of as the 1-level plane of a binary function $f(x, y) = x^2 + y^2$. First, it finds the change of the binary function $f(x, y)$, and then finds its 1 level set, so as to calculate and discuss the change of this two-dimensional plane circle. The level set method is shown in Figure 5:

The level set method can describe the closed curve $p(x, y, t)$ in the plane as the same value curve, which contains the same function value as the continuous function surface. The zero-level set function usually expresses the target curve implicitly, and when time is t , it can be expressed as:

$$\begin{aligned} C(p, 0) &= \{(x, y) | \phi(x, y, 0) = 0\}, \\ C(p, t) &= \{(x, y) | \phi(x, y, t) = 0\}. \end{aligned} \quad (1)$$

If the following plane closed curve is taken:

$$C(p, t) = (x(p, t), y(p, t)). \quad (2)$$

It is easily expressed by partial differential equations as:

$$\frac{\partial C}{\partial t} = V(t) \vec{N}. \quad (3)$$

From $\phi(C(t), t) = 0$, calculating the total differential with respect to t can be obtained:

$$\nabla \phi * \frac{\partial C}{\partial t} + \frac{\partial \phi}{\partial t} = 0. \quad (4)$$

And the inward normal vector:

$$\vec{N} = \frac{\nabla \phi}{|\nabla \phi|}. \quad (5)$$

It is sorted to get:

$$\frac{\partial \phi}{\partial t} = -\nabla \phi V(k) \vec{N}. \quad (6)$$

The above is the evolution process of the level set. The advantage of using the level set method to implement the active contour line model is that the topology can be changed at will as the evolution process progresses, and it will remain in the fully functional state. In the process of high-dimensional surface evolution, the level set method also plays a huge role, which simplifies the complexity of three-dimensional segmentation theory and applications to a certain extent [21]. The commonly used level set method generally refers to the original description function as the signed distance function, and generates it through the initial curve:

$$\begin{aligned} \phi &= -d((x, y), C) \text{inside}(C), \\ \phi &= d((x, y), C) \text{outside}(C). \end{aligned} \quad (7)$$

The Hamilton–Jacobi equation is solved to achieve the purpose of reinitialization:



Spring

Clothing and culture

FIGURE 4: Visual communication design of virtual art.

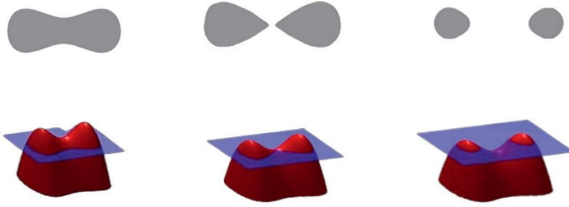


FIGURE 5: Example of level set method.

$$\frac{\partial \phi}{\partial t} = \text{sign}(\phi_0)(1 - |\nabla \phi|). \quad (8)$$

With the continuous evolution of the function, the level set function must be corrected according to the specified time to achieve the purpose of initializing it into a signed distance function. However, the huge amount of calculation will reduce the processing speed [2, 22]. In order to solve such problems and push the level set function to approximate the state of the signed distance function, the running time of the method is greatly reduced.

$$g = \frac{1}{1 + |\nabla(G(x, y) * \mu(x, y))|^2}. \quad (9)$$

Then,

$$E(\phi) = \mu p(\phi) + E_m(\phi). \quad (10)$$

In the above formula, p represents the internal energy function term of ϕ , which is the key term to promote the conversion of the level set function into the signed distance function. μ represents that the weight in the internal energy term is greater than zero; $E_m(\phi)$ can control the level set function ϕ zero level set, which is the external energy term.

$$p(\phi) = \int_{\Omega} \frac{1}{2} (|\phi| - 1)^2 dx dy. \quad (11)$$

The external energy term is defined as follows:

$$\epsilon_{g,h,v} = \lambda L_g(\phi) + \nu A_g(\phi). \quad (12)$$

Length of zero level set curve is

$$L_g(\phi) = \int_{\Omega} g \delta(\phi) |\nabla \phi| dx dy. \quad (13)$$

Weighted area value is

$$A_g(\phi) = \int_{\Omega} g H(-\phi) dx dy. \quad (14)$$

The corresponding level set transformation is as follows:

$$\frac{\partial \phi_1}{\partial t_2} = \mu \left(\Delta \phi - \nabla \left(\frac{\nabla \phi}{|\nabla \phi|} \right) \right), \quad (15)$$

$$\frac{\partial \phi_2}{\partial t_2} = \lambda \delta(\phi) g \nabla \left(\frac{\nabla \phi}{|\nabla \phi|} \right) + \nu g \delta(\phi).$$

This model will be limited by its own internal energy term, with no need to be initialized again, and simplified in the process of calculation, thus promoting the evolution process.

2.5.2. Nonindependent Synchronous Step Method. The comparison between independent distribution and non-IID distribution is shown in Figure 6:

Given two samples y_m and y_n , where h_m and h_n are neighbors $y_{m,p}$ ($p = 1, \dots, h_m$) and $y_{n,p}$ ($p = 1, \dots, h_n$), the direct product kernel is defined as follows:

$$K_{DP}(m, n) = f(y_m, y_n) + \frac{1}{h_m * h_n} \sum_{p=1}^{h_m} f(y_{m,p}, y_{n,q}), \quad (16)$$

$$f(y_m, y_n) = \exp(-a \|y_m - y_n\|^2),$$

f is the positive semidefinite kernel. This paper takes the Gaussian radial basis function as an example, where is a parameter. It preprocesses the image through the superpixel segmentation technique, then using the idea of non-independent identical distribution for feature extraction, modifying the level set energy to function, and absorbing the feature matrix into it, which improves the image segmentation accuracy, especially the segmentation effect of weak edge images is improved.

The above method can be seen in the multimedia field for the study of artistic expression is very novel, where the level set method for the parametric design of art can provide creative inspiration to the creator, and image segmentation technology allows people to improve their aesthetic ability, for the accuracy of the appreciation of paintings.

3. Parametric Investigation on Artistic Expressions in Visual Communication Design

3.1. Design Ideas of Parametric Design. In order to integrate and unify parametric design and visual communication design, this paper conducts design practice research. The first step is to find relevant design vectors that can be deformed into "X". It determines the roughly useable design carriers by analyzing and positioning the design

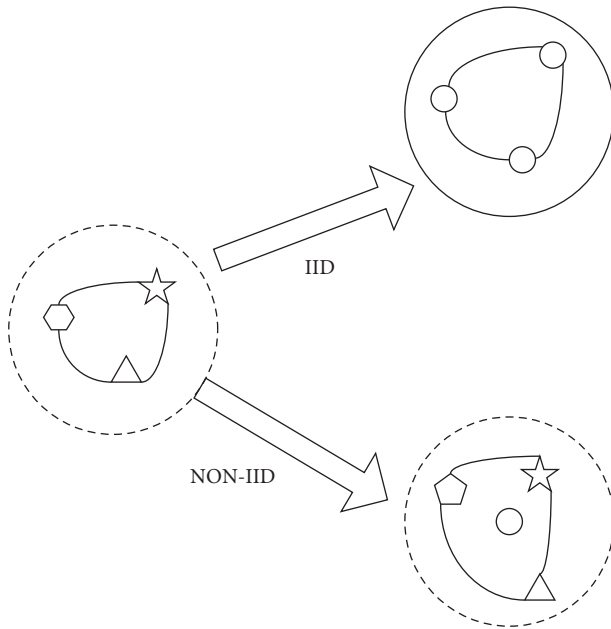


FIGURE 6: IID vs. non-IID.

requirements. The second step is to think about the logical relationship between the design parameters and predict the logical relationship between the parameters and associate them [5]. The third step is to set parameters. It means predicting the changing law of graphics with a parametric thinking mode, and then extracting the setting law of parameters. The fourth step is the experimental parameterized design scheme by obtaining several sets of different protocols and corresponding parameter data by adjusting the numerical range of the parameters in the software. The fifth step is to optimize the design scheme. The generated schemes are compared and studied to select the most effective design scheme and optimize the visual effect, and finally transform it into the design output through the extension design of the visual image design of the conference brand. The specific steps are shown in Figure 7:

As can be seen from Figure 7, the design idea and design logic of this design experiment is to make three-dimensional modeling of the elements and adjust the smoothness of the edges to make the visual effect of the main object smoother. Then, the main body is separated by a random effector and the parameter value is adjusted to form the split graphic effect of the three-dimensional characters, and then the dynamic effect of the random split graphic is made. After that, it assigns material effects to the design subject and adjusts lighting effects. Finally, it renders and exports the design results for the design application.

3.2. Influence of Parametric Design on Visual Communication Design

3.2.1. Innovative Visual Communication Design Methods. Changes in communication media have made audiences have new requirements for visual communication design.

The form of new media design has changed from 2D flat graphics to 3D graphic images and even 4D images, and the change of communication media has promoted the innovation and improvement of visual communication design [2]. Visual communication design is a form of visual language that uses traditional graphic design software to design and process complex graphics, text, and other information.

The parametric innovative visual communication design method can complete complex dynamic visual effects of images, and when applied to visual communication design, it can break the one-way static visual output in the past and realize the two-way expression of design. In addition to meeting the audience's needs for graphic visual effects, parametric design works ensure the normal output of creative solutions, and to a large extent ensure the interaction and communication between the audience and the graphics. The graphic images generated by parametric design have strong agility in visual expression, which can convey a dynamic beauty to the audience, and can quickly catch the audience's attention through its unique parametric personality among many graphic images. This innovative design can improve the communication ability of the design work itself.

3.2.2. To Improve the Design Efficiency of Visual Communication. Parametric design has played a great advantage in solving the problems of cumbersome design operations and low efficiency in traditional visual communication design. In traditional visual communication design, the production and modification of complex graphics is very cumbersome. The adjustment of the picture effect requires multiple design layers or even discard the results of the previous design and redesign a new design scheme. But parametric design is very different. It is to associate the logic rules of each design element, the attributes of each element are included in these relational systems, and they each have their own correlation and logic to form a large parametric model. If changing the result of the design scheme, it only need to adjust the parameter values to quickly generate the design scheme, which greatly reduces the repeated mechanical operations of the previous step in the design process and improves the work efficiency of visual communication design.

3.2.3. Impact of Parametric Technology on Aesthetics, Design Methodology. Similar to the use of computer-aided design computing functions and algorithms in parametric architectural design to generate architectural appearances of different shapes, the generation of parametric visual communication graphics through logical thinking and algorithms has a great change in aesthetic sense, and can broaden and innovate. The professional perspective of visual communication design can provide it with a new aesthetic vision and thinking mode, and it can also provide an aesthetic basis for the realization of parametric visual communication design.

In the digital age, most visual art works will be created and disseminated in a digital way, becoming a valuable

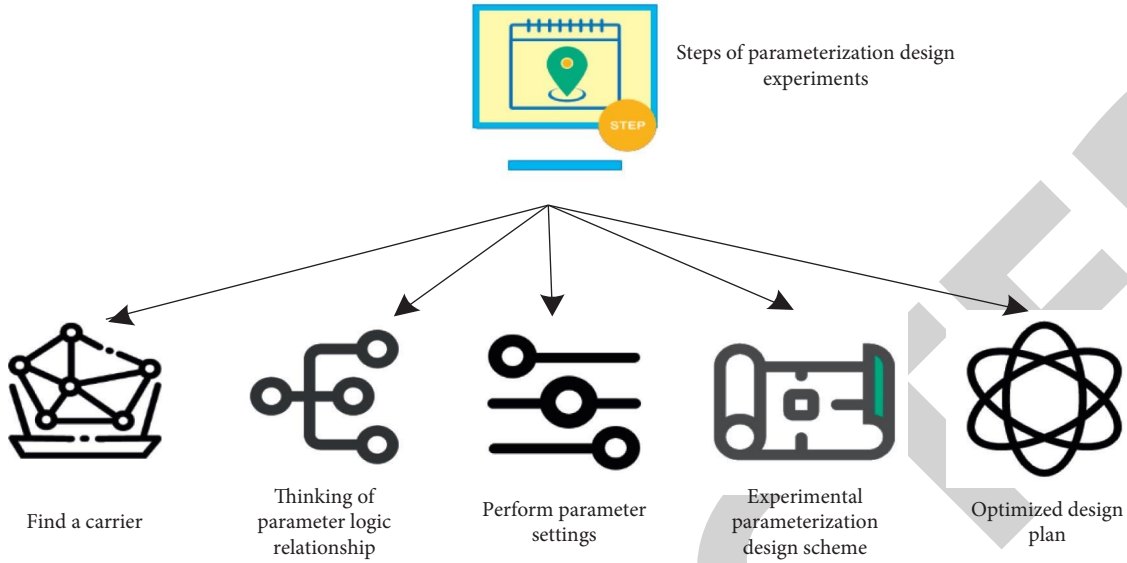


FIGURE 7: Design idea of the experiment.



FIGURE 8: Image segmentation results.

TABLE 1: Comparison of different image processing performance.

Image	Iteration time	The number of iterations	Error rate
A	4.834984	30	0.0021
B	8.479845	20	0.0045
C	3.784561	50	0.0085
D	6.754124	10	0.0078
E	2.841351	20	0.0036
F	2.843524	30	0.0042
G	6.754561	10	0.0014
H	2.845221	20	0.0025

wealth of knowledge in this era. However, the aesthetic performance of traditional visual art works can only be described by the artist to describe the design language, and the result has great subjective uncertainty due to different aesthetic concepts, while the graphics generated by parametric design technology have repetitive aesthetics. The characteristics of nature, continuity, mathematical rationality, and dynamics make it highly rational [22]. Therefore, parametric design uses computer-aided design to produce visual communication design works with high aesthetic appreciation. In addition, there are many artistic graphic designs that are similar. Whether it is a simple icon design or a complex pattern design, their composition must follow the aesthetic criteria. Using computer-aided design to generate

TABLE 2: Performance comparison of different image A processing methods.

Method	Iteration time (s)	The number of iterations
Chan-VESE	3.465123	86
DRLSE	7.894534	115
GAC	23.72857	1085
Grab cut	114.53025	15
BIAS CORRECTIO	15.548423	10
RSF	19.711322	258
Method of this article	2.7623142	41

TABLE 3: Performance comparison of different processing methods for image B.

Method	Iteration time (s)	The number of iterations
Chan-VESE	3.198465	86
DRLSE	7.365415	114
GAC	23.894654	1058
Grab cut	114.68794	16
BIAS CORRECTIO	15.789454	25
RSF	19.079845	347
Method of this article	2.7984654	10

their aesthetic features and efficiently generate artistic patterns can show the aesthetic logic and aesthetic value of artistic patterns, which is of great significance to modern visual communication design.

3.3. Image Algorithm Detection. In order to test the effectiveness of the level set method proposed in this paper for image segmentation, an algorithm detection experiment is carried out in this paper. In order to verify the effectiveness of the non-IID-based level set method for image

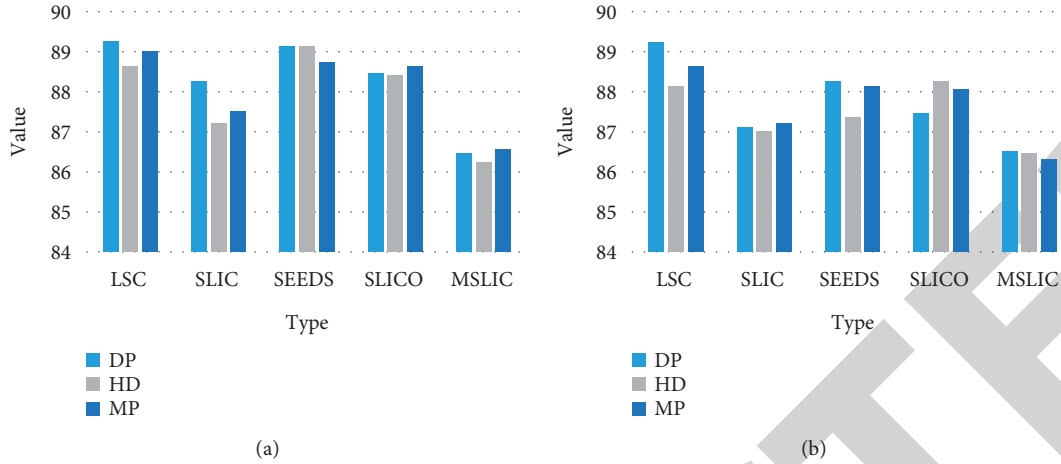


FIGURE 9: Accuracy of different superpixel Segmentation, (a) Type A scene detection result. (b) Type B scene detection result.

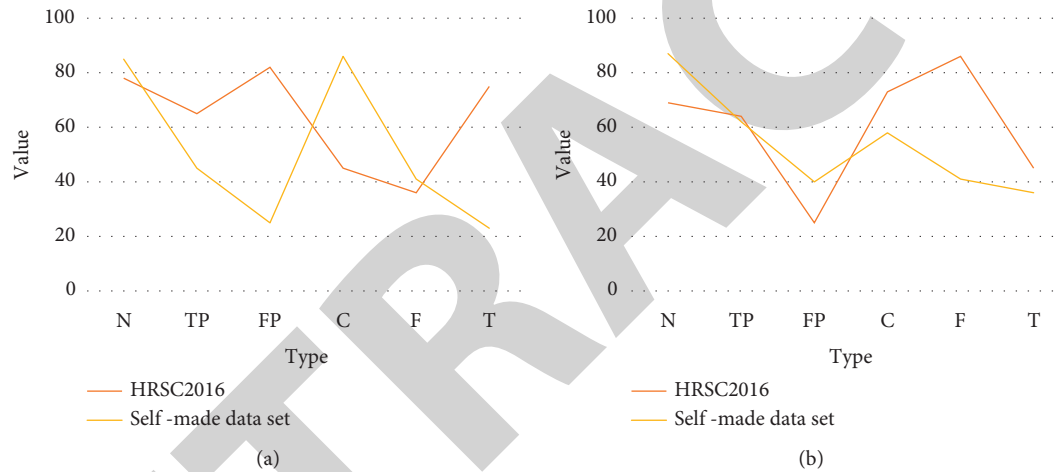


FIGURE 10: Accuracy of segmentation by different methods. (a) A-type scene. (b) B-type scene.

segmentation, an image segmentation experiment was carried out in this paper, and the algorithm of the model was implemented on a 2.70-GHz PC with MATLAB R2016b. The specific image segmentation results are shown in Figure 8:

Figure 8 shows that the segmentation performance of this method outperforms the traditional methods in the case of complex images. To evaluate the quantitative implementation of the proposed method, Table 1 shows the comparison of the process efficiency for different numbers.

As can be seen from Table 1, our method for different images shows a good method with few iterations, short running time, and low error rate, with a maximum error of only 0.014. The data in Table 2 were obtained using our method for comparison with other classical methods.

The data in Table 3 were obtained by processing the pictures. As shown in the table, the iteration time is 2.798 s, and the number of iterations is only 10. On this picture, the error rate of our method is 0.0018. To sum up, the method in this paper is not only fast and accurate, but also has the best performance. This chapter studies image segmentation

methods based on non-IID methods [21]. The classical classifier is used to classify the image, and good results are obtained. Then, in order to improve the segmentation accuracy, the level set method is introduced to segment the image accurately.

3.4. Results. This article uses the level set method and the nonindependent simultaneous distribution method to conduct a comparative analysis of different superpixel segmentation methods to study their efficiency in different images. In the experiment, firstly, the superpixel segmentation method is used to segment the image, and the comparison of the segmentation results obtained by different superpixel segmentation methods is shown in Figure 9, followed by the SLIC, SEEDS, LSC, MSLIC, and SLICO methods. The classifier is used to classify after extracting the features.

As can be seen from Figure 9, the classification accuracy of LSC and SEEDS superpixel segmentation methods is higher, and the segmentation effect of MSLIC method is

poor. The accuracy of the scene classification results in this paper basically meets the requirements, and effective pre-processing is performed for the subsequent target detection. In the future work, it is hoped to find a better classification method and improve the accuracy of scene classification. Some scene detection results are shown in Figure 10:

It can be seen from Figure 10 that for the coastal area, the detection result of the self-made dataset is slightly higher than the HRSC2016 dataset. The overall accuracy for both datasets is 94.91%. For the seawater area, the same trend is shown, the detection results of the self-made dataset have a higher accuracy rate, and the comprehensive comparison shows that the detection results of the self-made dataset are better. The overall accuracy for both datasets is 95.96%.

4. Conclusions

The development concept of art has always adhered to the principle of being “people-oriented”, and the unchanging values of the public in art have always been the pursuit of beauty. In this process, the public’s cognition of culture and understanding of art is constantly improving. This paper has analyzed the artistic expression forms in visual communication design under the multimedia background, clarifies the changes in visual communication design, and expounds and tests the image-based art phenotyping algorithm. This paper has examined the new aesthetics and philosophy in the analysis of visual communication design, and understands the changing concept of visual communication design and understand the incorporation of visual elements in contemporary art expressions and the generation of virtual visual information. Then, the process of level set methods and image segmentation algorithms in multimedia algorithms are described and the algorithms are evaluated, thus helping to improve the aesthetic skills of modern people. The boundaries of contemporary art and design will be blurred to a certain extent in the future, but within the discipline of visual communication design, it will be like a sponge with unlimited potential, constantly growing in absorption.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

This work was supported by the Heilongjiang Province Art Science Planning Project: Exploring the Effective Ways of the Application of Traditional Patterns in Modern Design (item no. 2022B067) and the Heilongjiang Province Art Science Planning Project: Application and Discussion of the Promotion Platform Mechanism of Minority Cultural Handicrafts in Heilongjiang River Basin Based on Blockchain Technology (item no. 2022D045).

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