

Research Article

Application and Analysis of Artificial Intelligence Graphic Element Algorithm in Digital Media Art Design

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With the development of information technology, digital media art came into being. Digital media art interface design, as a window for direct communication with users, has a direct impact on the user's experience, so it has attracted more and more people's attention. In the context of the continuous development of artificial intelligence, artificial intelligence algorithms have penetrated into all fields of social development. This article is based on the integration of graphic elements with artificial intelligence algorithms to build a digital media art interface design system. According to the analysis of system requirements, combined with the algorithm of artificial intelligence graphic elements, the system hierarchy is constructed from the user model, window model, and display model; software development and driver development are realized through the media library, and the window and common controls are realized. On this basis, the creation and display of windows and common controls are realized, and the design of the core functions of the system is completed to ensure the effect of system functions. The final conclusion shows that in actual design applications, the algorithm in this paper has a very high probability of finding the optimal solution, about 90%, when the number of iterations is small. Adjust parameters α and β , when $\alpha = 0.6$ and $\beta = 0.4$, are the best parameters; the image reaches the highest PSNR value, and the image restoration quality is the best; after system testing, the running time of this system is shortened by an average of 1-2 seconds, and the target detection task accuracy rate is 100%; the system is evaluated by questionnaires. The overall satisfaction of the design interface remains at about 80%, which is a great improvement compared to the previous one. Finally, it satisfies the requirements of the digital media art interface design better, and it is worthy of further exploration.

1. Introduction

With the development of computer and network technology, the digital age has arrived, which makes people more and more capable of transforming and understanding the world, and the application of digital media art is born. Digital media art is the current development trend of the media industry. Digital media art and traditional art are clearly different in concept definition. Digital media art focuses on the use of digital methods to display information based on the media field. In other words, digital media art emphasizes the realization of the innovative development of traditional art based on the introduction of information technology and promotes better development of art through the rational integration of art means and information technology means [1].

Technology has directly changed the medium, and the transmission of information is based on the change of the medium. Modern computer digital technology has transformed the media platform from a materialized form into a virtual carrier. Art has realized man-machine dialogue through interface and interaction. Digital media art refers to the human-computer interaction design through the user interface and from it to achieve a kind of artistic perception [2]. In this kind of dialogue, language is not only sound and text, but also images. In the design of digital media art interface, graphics are the main form of artistic expression. The graphics itself has rich information carrying capacity, which is intuitive, vivid, and rich. With the continuous deepening of human research on artificial intelligence, artificial intelligence algorithms have a wide range of applications today:

face recognition, speech recognition systems, and so on. Nowadays, the development of artificial intelligence has entered a new stage of development. With the help of artificial intelligence algorithms, the processing time can be reduced without changing the original accuracy of the image, and the required content can be obtained in a short time with the help of the intelligent concept. In recent years, some artificial intelligence algorithms have been applied in many aspects of image processing and achieved good results, which demonstrates the high efficiency and scientific value of artificial intelligence algorithms in image processing.

It is through the analysis of graphic elements and the analysis of digital art interface design; this paper studies the application of graphic elements in digital media art interface design. Using the advantages of artificial intelligence algorithms in image processing, the realization of digital media art interface design system integrating artificial intelligence graphic element algorithms is explored.

2. Related Discourse

The so-called digital media art is actually a brand new discipline that has emerged with the development of information technology [3]. Digital media art covers multiple disciplines, such as natural sciences, social sciences, and humanities. Digital media art is a comprehensive discipline that spans natural sciences, social sciences, and humanities. It currently belongs to the category of interdisciplinary fields, including plastic arts, art and design, interaction design, computer language, computer graphics, information, and communication technical knowledge [4]. The advent of the digital age has also brought a variety of digital products to people, and they are frequently used in people's lives, and with the continuous growth of technology, the applicability of electronic products has become better and better. People can operate and master the use of the product without reading the instructions, all of which benefit from the interface design [5]. In the context of the development of digital media art creation, interface design has become a key part of it. Graphics are an important form of interface design and an important way of information transmission. The use of graphic elements in the computer field can abstract complex mathematical models into easy-to-understand digital graphics [6]. Using graphic elements in the design of digital media art interface can visualize information and achieve rapid information dissemination [7]. In addition, graphic elements are the most acceptable form of people's visual perception, so graphics are more and more used in interface design.

The digital media interface design system is a kind of man-machine system engineering that combines computer science, aesthetics, psychology, linguistics, behavior, and demand analysis in various business fields. It emphasizes the three aspects of human, machine, and environment as the overall design of a system; makes full use of hardware resources; and provides a clear, intuitive, and friendly human-machine interface through reasonable screen layout and colour matching. It is a bridge connecting the computer and the operator [8]. With the continuous development of computer software and hardware technology, the design of man-machine interface has become the focus of software design. In the software develop-

ment process, the workload of the man-machine interface accounts for about 75% of the entire software development workload. The pros and cons of the man-machine interface are directly related to the success or failure of the software [9]. This customer-oriented system engineering design will better optimize the performance of the product, make the operation more humanized, reduce the cognitive burden of the user, make it more suitable for the user's operating needs, and directly enhance the market competitiveness of the product.

Artificial intelligence is a science and technology that has gradually emerged and developed in recent years. Many experts and scholars have put forward their own different opinions on the definition and understanding of artificial intelligence. Holzinger mentioned: "Artificial intelligence is a very important subject. It is a subject that studies intelligence. It can expand human consciousness infinitely" [10]. This statement is actually a good definition of artificial intelligence, but because of it, the definition is too theoretical and difficult to understand. We introduced Lu et al.'s definition of artificial intelligence. He said that "Artificial intelligence is another higher-end tool that allows machines to replace humans, do things that humans cannot do, or help humans live a more relaxed life" [11]. Gunning and Aha mentioned that artificial intelligence can be defined as the application of intelligent machines in science and engineering, a behavioural activity similar to human thinking [12]. Davenport and Ronanki said that the basis of artificial intelligence is philosophy, mathematics, economics, neuroscience, psychology, computer engineering, cybernetics, and linguistics [13]. Zhao, Xuejing mentioned that artificial intelligence is just a kind of ability developed by humans to simulate human thinking activities. The main purpose of artificial intelligence research and development is to integrate human intelligence into scientific research, so that human intelligence can better serve humans through external objects [14], so the biggest difference between artificial intelligence and humans is that it has no feelings; it does not like human beings; they have their own thinking and consciousness and will not have the ability to analyze and solve problems. The essence of artificial intelligence is to have similar human intelligence tools and equipment [15]. The development of artificial intelligence has gone through several stages such as gestation, birth, early enthusiasm, and practical difficulties. The purpose of artificial intelligence is to make machines think like humans and make machines intelligent [16]. Its main role is to devote itself to the development of more humane and intelligent technologies, to continuously serve mankind, to improve mankind's work efficiency and living standards, and to create a better future [17].

With the development of computer technology and the further deepening of human cognitive science, digital media art based on artificial intelligence will have a breakthrough in the next few years [18]. Kim et al. prophecy mentioned that high-quality display screens and computer-aided vision generation software in the future will make computer screens an excellent carrier of visual art. Most visual art works are the crystallization of the synthesis of human artists and intelligent art software, and virtual paintings, as well as wall-mounted high-definition displays, have become very common. These

virtual paintings do not always show the same theme works like regular paintings or posters but can change the displayed works of art under the user's voice command. The displayed works may be the works of human artists, or they may be original works of art created in real time by computer art software [19]. In the coming years, there will be virtual artists who are taken seriously by people in all art forms. These virtual painters, musicians, and writers usually have a very close relationship with humans or human organizations. People's interest in machine-created works has surpassed the use of machines to create visual, musical, literary, and artistic works created by human artists. It usually involves the cooperation of human and machine intelligence.

Nowadays, human research on artificial intelligence continues to deepen. Through research and analysis, we have a more in-depth and comprehensive understanding of artificial intelligence algorithms. People get inspiration from nature and further develop image processing suitable for people. Artificial intelligence algorithms are gradually applied to the field of digital media art interface design.

3. Realization of Digital Media Art Interface Design System

3.1. Artificial Intelligence Graphic Element Algorithm Model. Artificial intelligence algorithms refer to intelligent calculation methods formed by simulating the evolutionary laws, behaviour, thinking, structure and characteristics of humans, natural phenomena, and other biological populations [20]. By comparing with traditional image processing technologies, such as Laplacian algorithm and Canny operator, the image recognition technology under artificial intelligence algorithm presents the advantages of convenience and intelligence. Based on the important role of graphic elements in the interface design system, this paper establishes an artificial intelligence graphic element algorithm model. The artificial intelligence primitive algorithm uses a random search strategy to search for the optimal solution of the graph. In the calculation process of the algorithm, it is uncertain whether each individual appears. Individuals gain experience from themselves and the group, cooperate with each other, and share information in the process of finding the optimal solution, which improves the ability to adapt to the environment and improves the efficiency of optimization. When solving complex problems, the intelligent algorithm does not need to know the entire process of the problem but only needs to set the corresponding objective function as the fitness function, and then through the adaptive behaviour of the organism, cooperate under the information sharing and intercommunication mechanism, and correct in the solution. The optimal solution in the space is searched in parallel randomly to find the optimal solution quickly and accurately.

3.2. Calculate Priority. Let p be any point on the boundary $\Omega\alpha$; the calculation formula of priority $M(p)$ is as follows:

$$M(p) = \frac{C(p)}{D(p)}. \quad (1)$$

Among them, $C(p)$ is the confidence item, which represents the number of known points in the block to be repaired; $D(p)$ is a data item, which represents structure information.

$$C(p) = \sum_{q \in \psi_p \cap \phi} C(p) \times |\psi_p|, \quad (2)$$

$$D(p) = |\nabla I_p^\wedge \bullet m(p)| \times \alpha. \quad (3)$$

Among them, $|\psi(p)|$ represents the area of $\psi(p)$, ∇I , represents the direction of iso-illumination, $m(p)$, is the normal vector of point p , and α represents the normalization factor, generally set $\alpha^\circ = 255$.

3.3. Search for the Best Matching Block. When the priority is calculated and the block to be repaired with the largest priority value ψ_q is calculated, we start to search for the best matching block ψ_p in the source area for filling, and the error square sum (SSD) as a similarity measure, the calculation formula is as follows:

$$\Psi \wedge_q = \arg \min_{q \in \psi_p \cap \phi} d\{\psi_p, \psi_q\}, \quad (4)$$

$$d\{\psi_p, \psi_q\} = \sum \sqrt{(R(a) + R(b))^2} + \sum \sqrt{(G(a) + G(b))^2} + \sum \sqrt{(B(a) + B(b))^2}. \quad (5)$$

Among them, $d\{\psi_p, \psi_q\}$ represents the sum of squared errors between the block to be repaired and the matched block, and $R(a)$, $R(b)$, $G(a)$, $G(b)$, $B(a)$, and $B(b)$, respectively, represent the corresponding pixels in the middle, the R , G , and B values of the point.

3.4. Update the Confidence Item. After searching for the best matching block, as the filling process progresses, the unknown pixels in the target block ψ_q are filled with the information of the corresponding known pixels in ψ_p . The value of the confidence term has also changed accordingly. Its formula is as follows:

$$C(p)_{m+1} = C(p). \quad (6)$$

Then, repeat the above three steps until the pixels on the repaired edge are empty, indicating that the repair is complete.

According to the above formula, the improved priority function is as follows:

$$M(p) = C(p)^\alpha - (\beta - \lambda) \times \frac{D(p) - 1}{K(p) - L(p)}. \quad (7)$$

The dynamic adjustment factor is defined as follows:

$$\lambda = m \times N - \lambda. \quad (8)$$

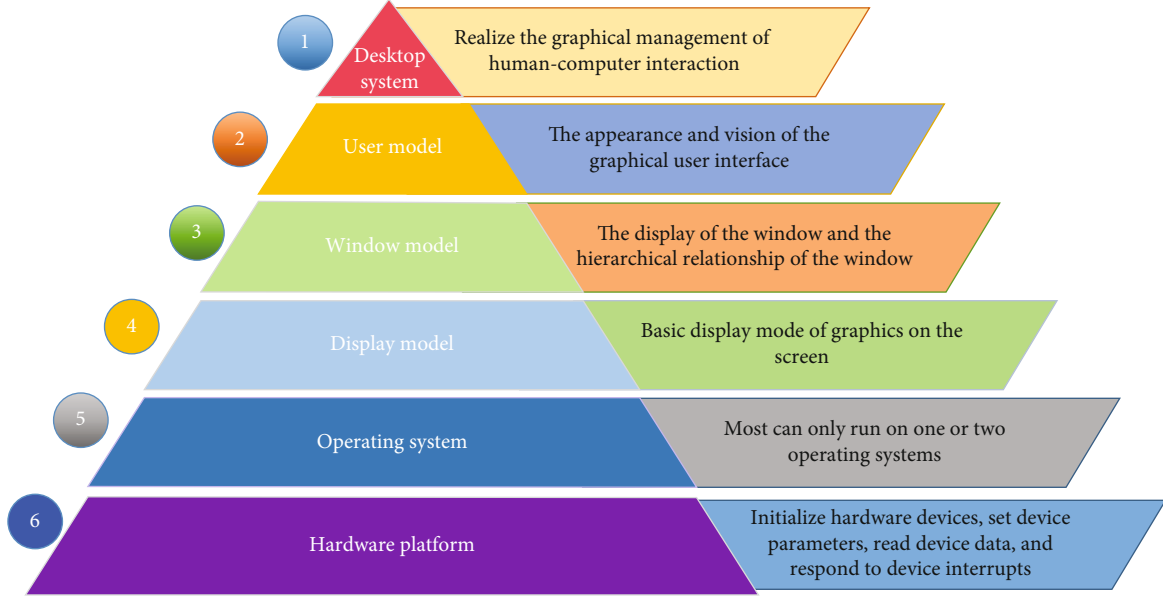


FIGURE 1: Interface system hierarchy diagram.

3.5. *Algorithm Steps of Artificial Intelligence Graphic Elements.* ① Determine the boundary of the area to be repaired and the repaired area

② Using the formula, calculate the priority of all the blocks to be repaired, and select the block to be repaired with the largest priority value for repair; $a = 0.6$, $\beta = 0.4$; $a = 0.7$, $\beta = 0.3$

$$M(p_1) = C(p_1)^{0.6} - 0.2 \times \frac{D(p_1) - 1}{K(p_1) - L(p_1)}, \quad (9)$$

$$N(p_2) = C(p_2)^{0.7} - 0.4 \times \frac{D(p_2) - 1}{K(p_2) - L(p_2)}. \quad (10)$$

③ Using artificial intelligence graphic element algorithm to search for the best matching block in the source area, and copy the information of the best matching block to the target block with the highest priority

④ Use the formula to update the confidence item

$$D(p)_{m+1} = D(p). \quad (11)$$

⑤ Repeat steps 2 to 4 until the result of formula (12) appears

$$\partial\Omega^n = \emptyset. \quad (12)$$

3.6. *The Hierarchical Structure of Digital Media Interface Design System.* The digital media art interface design system is a dialogue interface between a computer and its users. It is a heavy component of the computer system [21]. It is based on hardware and operating systems and provides users with a rich graphical programming interface to make it convenient. Quickly compile user-friendly applications. Generally, it can be logically divided into three basic levels: user model, window model, and display model, as shown in Figure 1.

In the frame structure of the figure, at the bottom is the computer hardware platform. Closely related to this hardware is the driver program, which completes such as initializing the hardware device, setting the device operating parameters, reading the data of the external device, and responding to the device interrupt. Above the hardware platform is the computer's operating system. Most of them can only run on one or two operating systems, with a few exceptions. Above the operating system is the display model, which determines the basic display mode of graphics on the screen, that is, the way to display various graphic objects with bit-mapped graphics. Different graphic user interface systems use different display models. Above the display model is the window model, which determines how the window is displayed on the screen and the hierarchical relationship of the window, such as menus and dialog boxes. It usually includes two parts: one is a programming tool, such as a function set; the other is an explanation of how to move, output, and read the information displayed on the screen. Above the window model is the user model, which mainly contains display and interactive features, so the term graphical user interface sometimes refers specifically to the user model. In addition, the user model is also defined as the appearance and vision of the graphical user interface. It mainly includes two parts: one is to construct the tools of user interface, such as toolbox and frame set, including the definition and description of the data structure of high-level interface component objects; the other is to define the organization of various graphical user interface development based on the screen. Graphical objects and the behavioural specifications and agreements between these objects, that is, each user model should explain what kind of window and what kind of display mode it supports, because the definition of the specification and the establishment of the tool set must be specific to the specific display model and window model. The top layer is the desktop management system, which is an application

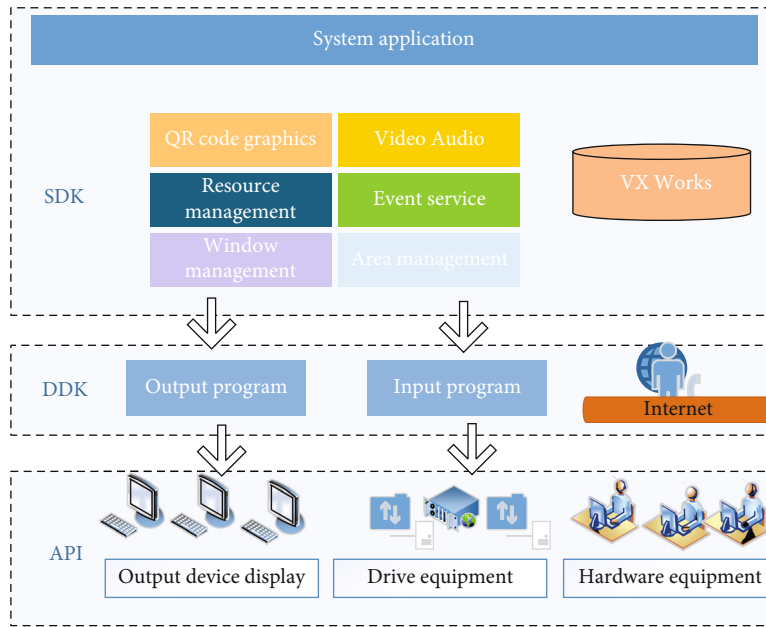


FIGURE 2: Interface design system driver framework.

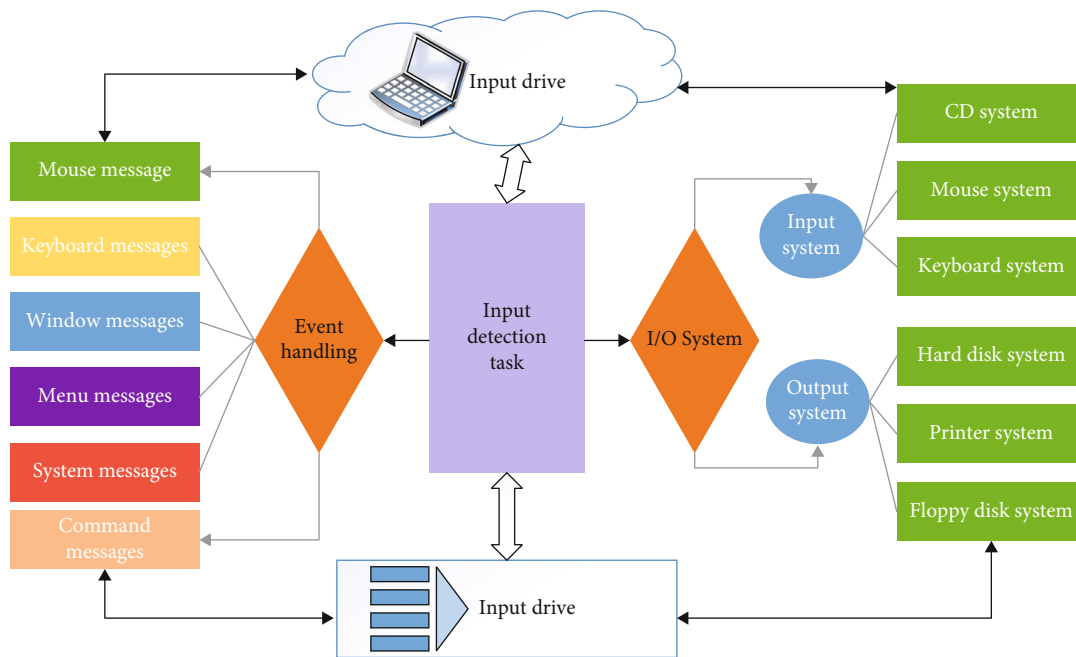


FIGURE 3: The message-driven mechanism diagram of the system.

developed on the basis of a graphical user interface to realize the graphical management of human-computer interaction. It includes four parts: graphical file management system, icon library for users, desktop management organization, icon library management organization, and so on.

3.7. *Interface Design System Driver Framework.* The media library is the basis of the interface design and development system. It is mainly used to provide basic graphics, video,

and audio technologies and to provide users with a framework for developing standard user equipment drivers [22]. Its main functions include two-dimensional graphics, event services, area and window management, multimedia, and resource management. Two-dimensional graphics are the most commonly used parts, including basic drawing operations, drawing lines, rectangles, ellipses, polygons, points, selecting fonts to output text, bitmaps, cursor management, batch drawing operations, graphics context, colour

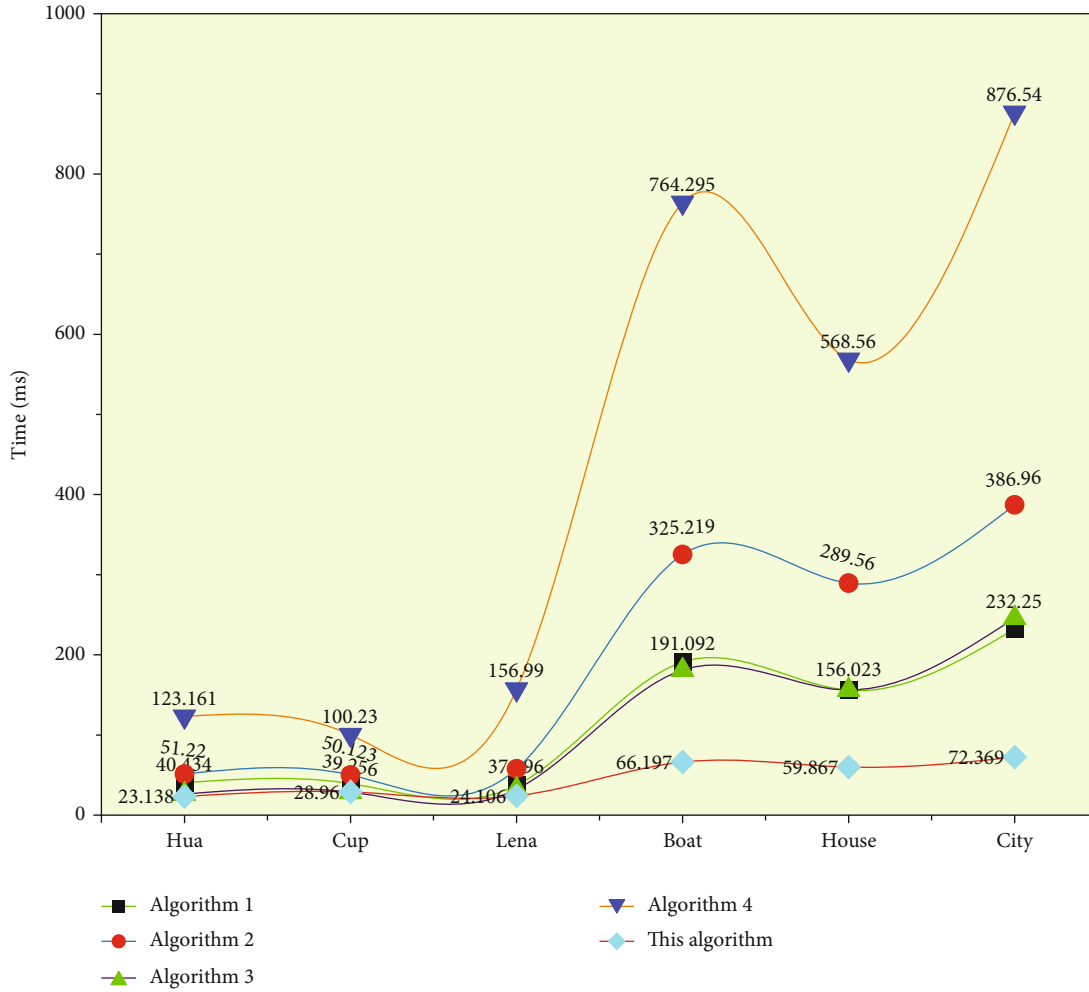


FIGURE 4: Image restoration time comparison chart.

management, and double buffering. The event service program is used to process input requests from input devices. Area and window management can define an area or a window shared between multiple threads on the interface for drawing operations, multimedia support, and other video formats and audio output of mixer devices. Resource management refers to the creation, control, and deletion of resources and provides a series of tools to handle input devices and process events. It is precisely because of the provision of such a basic graphical interface that a good study of it is an indispensable step for complex interface development.

As shown in Figure 2, the media library includes two components: a software development kit and a driver development kit. The SDK component is used to develop hardware-independent applications for various platforms. It provides a complete API in graphics, output processing, multimedia, font, and memory management. DDK is used to develop drivers. It provides a complete set of reference drivers that can be used for general hardware configurations and software frameworks, as well as APIs that support developers to quickly create new drivers from the provided “generic” code.

3.8. Realization of Key Technologies of Interface Design System. The technologies involved in an independent interface design system usually include message-driven mechanism, screen management technology, resource management technology, and display device management. The message-driven and window management technology is the most important part of the software, and it is an important embodiment of the front-end of the system. This section focuses on the analysis of the key technologies of message-driven and window management.

3.8.1. Message-Driven Implementation. This interface design uses message-driven as the framework for creating applications. Messages generally include mouse messages, keyboard messages, window messages, menu messages, system messages, and command messages. As shown in Figure 3, the message-driven mechanism of this system is designed and implemented according to the principle of event-driven mechanism, that is, the client-server mode. The client is responsible for window drawing, window update, and response to other user messages. Each window object establishes a message queue to receive server-side events for processing. The server side is mainly processed by the message

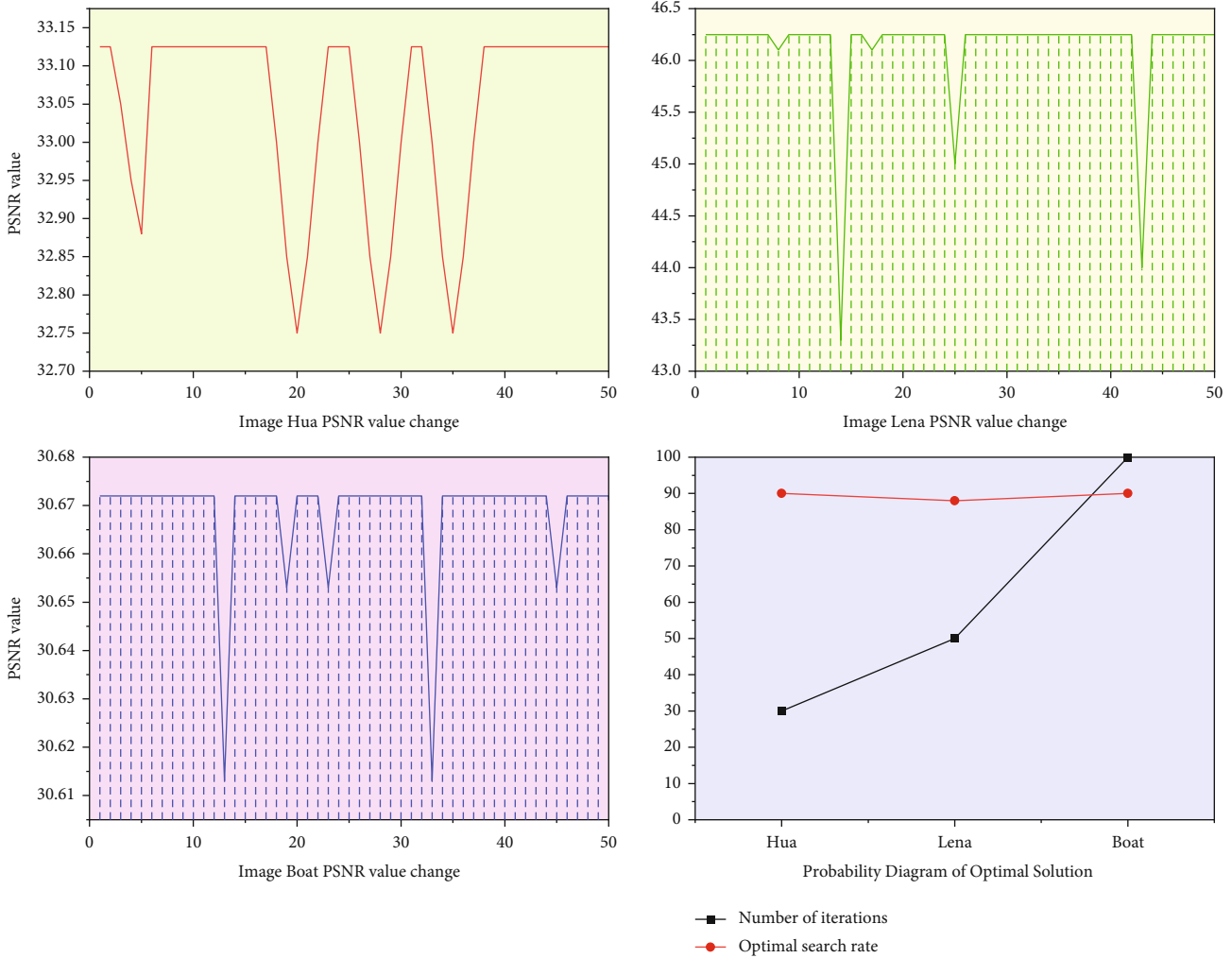


FIGURE 5: Comparison of the optimal success rate of algorithms.

monitoring task. The message monitoring task relies on the system and mechanism to collect the real-time events of the equipment and then pack or compress it into the event information of the standard structure. The packaged information is sent to the event processing module through a function. In this module, all the message queues of all windows of the application are searched, and the current event should be received by the message queue of which window and sent to this message in the queue. In this way, the client application can take out the message information from the message queue and process it accordingly. Moreover, this layered modular mechanism also provides convenience for users to directly communicate between windows in the form of events, as long as the function is called, without passing through other underlying modules.

3.8.2. Window Management. The window is the most important part of the system. Windows can generally be divided into four categories: main window, dialog box, control, and subwindow. The main window is the most important part of the window system and the most commonly used part in interface design. Each main window creates a

thread at the same time during the creation process, and each thread has a message queue. The main window gets the message from the message queue and distributes it to the corresponding window procedure for processing. Dialog is a special kind of window, usually used with controls. The dialog box can also have its own message queue, and the control class can only be used as a child window of other windows, so there is no independent message queue to be created. The control class has a unified window procedure during the creation process, but it can also be overloaded, and the control operation messages are generally completed by the main window.

Based on the important role of graphic elements in the design of digital media art interface, this part uses artificial intelligence algorithms to find the optimal solution of graphics, and further improves and constructs the algorithm model of artificial intelligence graphic elements, from the hierarchical structure of the system and the drive of the system. The key technology realization of the framework and the system completes the digital media art interface design system in three aspects. Next, we will further apply and analyze the digital media art interface design system.

4. Application and Analysis of Digital Media Art Interface Design System

4.1. Interface Design Image Optimal Restoration Analysis. This experiment is designed to use the same computer equipment in the same experimental environment to conduct experimental tests on 6 kinds of image in painting under the influence of excluding other factors.

It can be seen from Figure 4 that when repairing images with simple texture structure such as Hua images and small damaged areas such as Lena images, the algorithm in this paper has obtained the shortest repair time, but compared with other comparison algorithms, there are advantages but not outstanding. When repairing large-area damaged images such as boat image and house image, the repair time of this algorithm is greatly shortened compared with other comparison algorithms, which fully reflects the efficiency advantage of this algorithm in repairing large-area damaged images. This is because several other algorithms use a global search strategy, and their computational complexity increases greatly with the increase in the complexity of the image texture structure and the damaged area. The algorithm in this paper uses an artificial intelligence graphic element optimization algorithm, and its search time is relatively less affected by the increase in image texture structure and damaged area. Therefore, when the image texture structure is complex or the damaged area is large, the repair efficiency can still maintain a high level. In actual engineering applications, because the texture of the image to be repaired is usually complex and the damaged area is large, the algorithm in this paper can better meet the requirements for image matching and repair efficiency in actual design applications.

4.2. Analysis of the Optimal Success Rate of Interface Design Images. Since the search strategy adopted by the algorithm in this paper is a random intelligent optimization algorithm, it cannot guarantee that the optimal solution will be searched every time when the number of iterations is small. However, because the intelligent graphic element optimization algorithm has efficient and parallel optimization capabilities, it can greatly shorten the repair time. In the context of pursuing benefits in actual design and application, the algorithm in this paper has very good practicability. The algorithm in this paper sets the population size to 100 when repairing the three images, and the number of iterations are, respectively, 30, 50, and 100. Independent repeated experiments are carried out on the three images, respectively, and the PSNR value of the algorithm in this paper is statistically analyzed, and the optimal solution is found.

It can be seen in Figure 5 that when independent repeated experiments are performed on three different images, the algorithm in this paper can still maintain the probability of finding the optimal solution at about 90% when the number of iterations is low, and the repair time is greatly shortened compared with other several algorithms. Therefore, the algorithm in this paper improves the repair efficiency while maintaining high accuracy and satisfies the

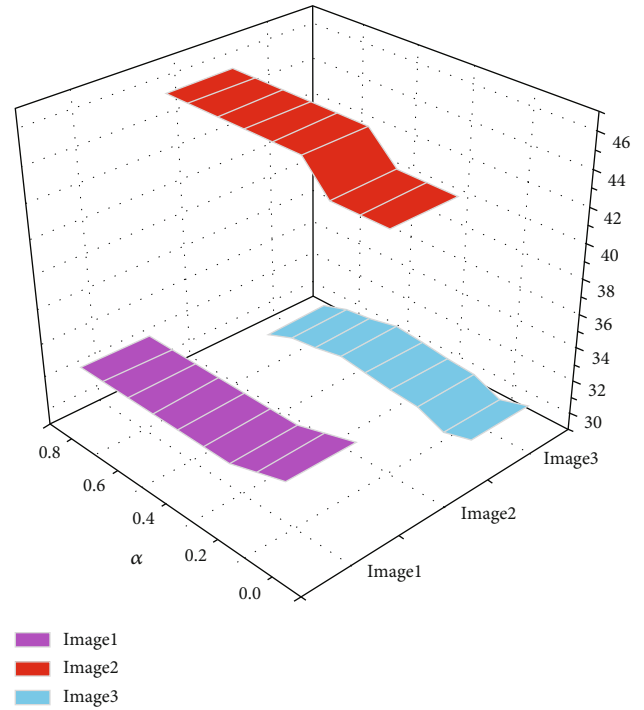


FIGURE 6: The relationship between parameters α and β and image restoration.

requirements for repair quality and efficiency in engineering applications.

4.3. Analysis of the Influence of Dynamically Adjusting Parameters on Image Quality. This section discusses the impact of dynamic adjustment of parameters and different weight values of α and β on the quality of image restoration. The results are shown in Figure 6.

In Figure 6, the parameter α represents the weight of the confidence item, and the parameter β represents the weight of the data item. From $\alpha + \beta = 1$, β will change accordingly with the change of α . For images with complex texture structure, increasing the value of α can make the repair process more sensitive to detailed textures, while for images with simple texture structure, increasing the value of β can improve the accuracy of priority calculation, thereby improving the repair effect. When $\alpha = 0.6$ and $\beta = 0.4$, the three experimental images have achieved the highest PSNR values, so $\alpha = 0.6$ and $\beta = 0.4$ are the best parameters selected in the experiments in this paper.

4.4. Time-Consuming Analysis of Interface Design System Operation. In order to make the experiment descriptive, a numerical comparison method is used to compare the computational time-consuming of the traditional system and this system. In the experiment, a variety of measuring instruments were used to obtain a wealth of experimental data, which provided a reference for the follow-up work. The core of the digital media art design system based on virtual reality technology is the processor. The processor is mainly responsible for receiving image data and summarizing the calculation results. After the DSP controller receives the picture, it

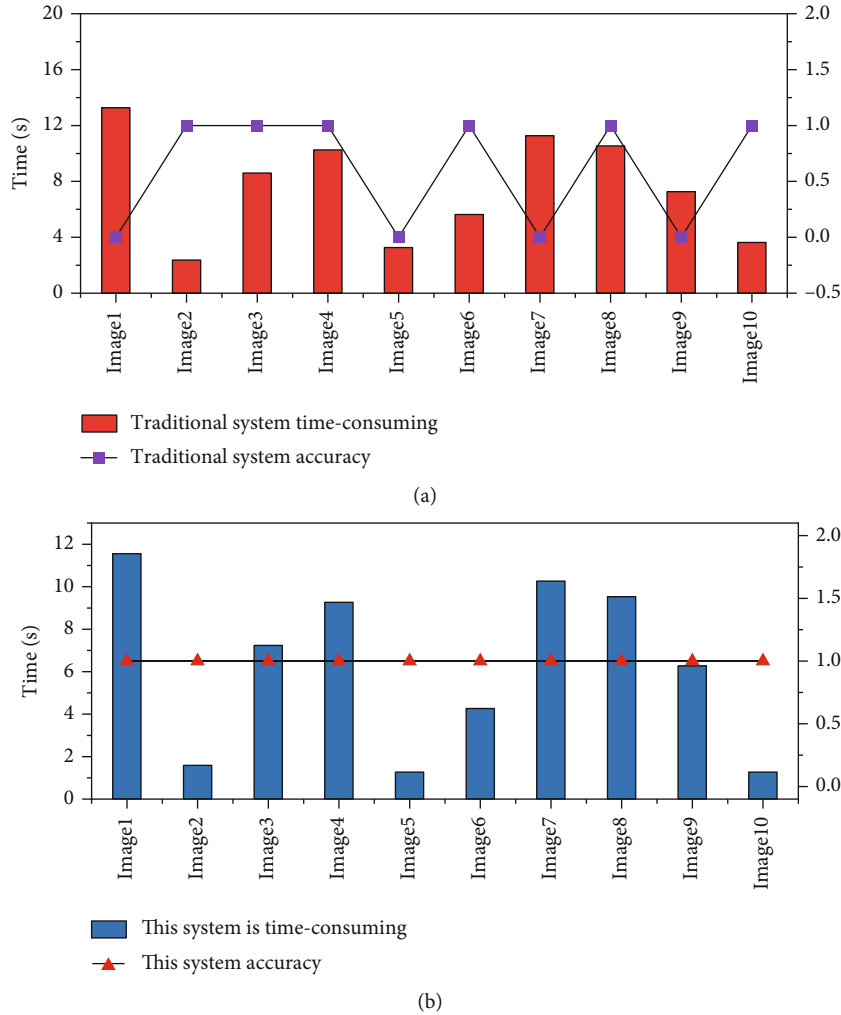


FIGURE 7: Comparison chart of system running time and accuracy rate.

will send the picture to 2#DSP and 3#DSP; after splitting, upload the image data to the corresponding location. According to the abovementioned setting up test environment, use the image plug-in to continuously send 10 or more image data, transfer through the data interface, and upload the test results to the system. The images selected in this paper are assigned according to factor factors, reflecting their representativeness to all images. Experimental test of the two systems during the debugging process, the calculation of digital media art design is time-consuming, and the test results are shown in Figure 7.

It can be seen from the test results in Figure 7 that using the system in this paper to process 10 simple tasks takes less time to run. Compared with the traditional system, each average time is shortened by 1-2 seconds, and the overall time is shortened by 10-15 seconds; using the traditional system when the digital media art design system detects the target, there are 3 errors, and the target detection task accuracy rate of the system in this paper is 100%, which fully shows that the system can stably complete the task processing time and monitoring task accuracy requirements and meet the high performance of the system require.

4.5. Interface Design User Perception Evaluation Analysis. User satisfaction describes the degree to which the user’s perception of the product or service provided by the service industry matches the user’s own expectations. It is generally believed that user experience determines user satisfaction, and there is a positive correlation between the two. This section tests the user’s satisfaction with the system by collecting scoring data reflecting the user’s perception of interface layout, ease of operation, practicability, and interactivity. User scoring data is collected through phone calls, text messages, and APP, and user perception information comes from the data of interviewed users within three days. The time granularity is hourly, and one time period is selected during busy time and idle time, and the average value of the three days is taken. A total of 16,043 pieces of data are involved in the modelling and divided into five evaluation levels: very satisfied, satisfied, fair, dissatisfied, and very dissatisfied.

It can be seen from Figure 8 that compared with the previous system satisfaction number, very satisfied and satisfied users have been greatly improved, and dissatisfied and very dissatisfied users have decreased to a certain extent. The very dissatisfied users of this system are 0. In general, 83% of

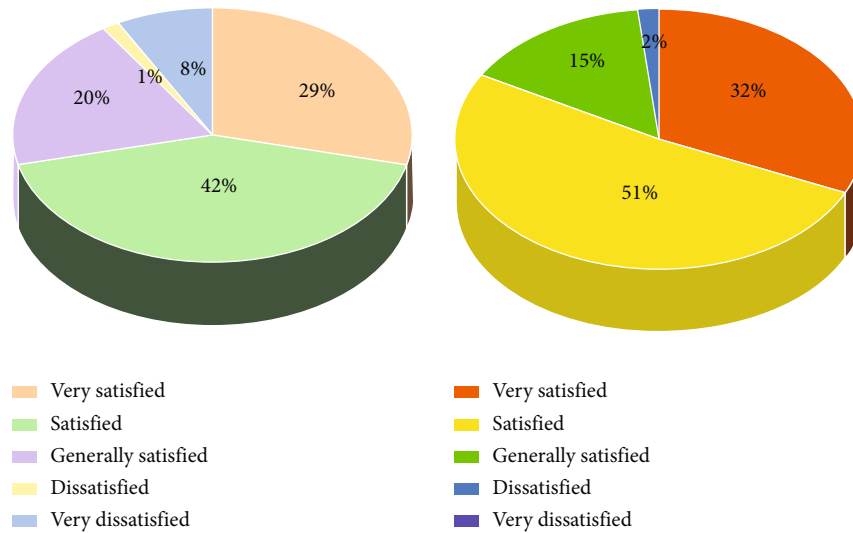


FIGURE 8: User perception evaluation comparison chart.

users are satisfied with the system design interface, and overall satisfaction has been greatly improved. Combined with the evaluation data, it can be seen that the system design interface in this paper needs to be further optimized in terms of practicability and interactivity, and the system needs to be further improved, so as to continuously improve the overall satisfaction. But pay special attention to follow-up surveys of dissatisfied customers, understand the reasons, and then make further improvements to the system.

5. Conclusion

In summary, the advancement of artificial intelligence technology has enriched the forms of digital media art creation, and the integration of artificial intelligence algorithms into the design of digital media art interface has brought outstanding advantages to the presentation of graphic elements. Therefore, this article takes the graphic element as the research perspective and artificial intelligence algorithm as the research direction to study the application of this algorithm in the digital media art interface design system to show the advantage value of the artificial intelligence algorithm, so as to obtain more accurate image information and improve the interface and design the performance of the system to help the development of digital media art. Finally, it is concluded that the graphic element algorithm fused with artificial intelligence has obvious advantages in image matching, restoration, optimization, etc. According to comparative experiments and questionnaire surveys, it is verified that the running time of the system is shortened by 1-2 seconds, and the user satisfaction is as high as 80%. Therefore, its design is more in line with user needs. In the next step of the work, to do the user-centered interface evaluation, according to the user's experience evaluation, the user interface animation design is improved, so as to bring better interface design and use effect to the user.

Data Availability

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

Conflicts of Interest

The author declares no competing interests.

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