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Research Article

Modern Art Interactive Design Relying on Neural Network Intelligent Algorithms

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The extraction speed of current art exchange element is relatively low, and its effect is relatively poor, so is the effect of art exchange. Therefore, a new art exchange method has been developed with respect to artificial intelligence technology, which analyzes the background of current art, providing a good environment foundation for the exchange place to integrate the artificial intelligence technology after the exchange, and interacts with the network artificial intelligence technology and the multimedia multielement exchange art in the control. It has been proved through practice that artificial intelligence technology embodies the advantages of design tools and the improvement of efficiency in modern art exchange; it allows the current diversity of artistic interaction and enables it to obtain new development in the current new technological background.

1. Introduction

Due to the poor network hardware conditions, many difficult problems occur to artificial intelligence network work [1, 2]. In artificial intelligence, the most important task currently is the smooth progress of modern art interaction [3]. Through the establishment of nodes through the network to form multiple ways of network art interaction, the reserve rate of modern art interaction data is higher, and the reliability of art interaction is guaranteed by the form of storing art interaction data. At present, ARM Developer Suite is adopted to store multimedia data for our modern art interaction, but this method has the disadvantages of high average loss and imperfect storage.

In the context of artificial intelligence, whether it is the method of unlocking difficulties in engineering design, or the painting and product design in modern art interaction, it also shows the synergy characteristics of artificial intelligence and design. Artificial intelligence just unlocks a new method for design. The current art interactive work mainly comes from the inaccuracy of creative inspiration, which is more stable and systematic than computer processing. Therefore, the integration of artificial intelligence and modern art interactive design is the key to improving machine design.

2. Artificial Intelligence Technology

In order to achieve the existing design knowledge in the high-level design and evaluation of modern art interaction, it is ensured that the algorithm always maintains the original design intent in the process of modifying the design and evaluation [4].

Assuming that the database can be expressed as $(x_i, y_i), i = 1, 2, \ldots, n$, d the function general form $g(x) = w \cdot (x + b)$ used is a specific classification surface equation:

$$w \cdot x + b = 0. \tag{1}$$

To ensure that the classification can be classified correctly for all samples, it must meet (2):

$$y_i[(w \cdot x) + b - 1] \geq 0, \quad i = 1, 2, \ldots n. \tag{2}$$

In summary, satisfying the above conditions, the smallest classification surface is the optimal classification surface. The matching of string similarity can convert the solution problem of optimal classification surface into the following constraint optimization problem, that is, meeting the

constraint conduction in formula $\|w\|^2$ (2) to solve the minimum value of the function:

$$\mu_{\lambda\overline{\alpha}}(z) = \sup\{\mu_{\overline{\alpha}}(x) | z = \lambda x\}. \tag{3}$$

This problem is further transformed into Lagrange function:

$$L(w, b, a) = \frac{1}{2}(w \cdot w) - \sum_{i=1}^{n} a_i \{y_i [(w \cdot x_i) + b] - 1\}. \tag{4}$$

The optimal classification function obtained by solving is the following equation:

$$\begin{aligned} f(x) &= \operatorname{sgn}\{(w^* \cdot x + b^*)\} \\ &= \operatorname{sgn}\left\{\sum_{i=1}^{n} a_i^* y_i \cdot (x_i \cdot x) + b^*\right\}, \end{aligned} \tag{5}$$

where sgn () is a symbolic function. The exact linear separability of the sample can be processed according to formulas (1)–(5).

Through the three steps of artificial intelligence technology symmetry feature, interactive definition algorithm feature and automatic creation of algorithm feature tree are shown in Figure 1; the advanced design knowledge of modern art model can be obtained to design and evaluate the searched modern art model.

2.1. Symmetrical Characteristics of Modern Art Interaction. The symmetry feature of the modern art model is that the point group of a feature in the modern art model overlaps with the point group of other features through rotation, translation, and transformation. These two features are considered to be symmetrical.

2.2. Defining Interactively the Characteristics of Modern Art Interaction. Some artificial intelligence technologies can automatically identify features with symmetrical constraints, but for the features of other algorithms, it is difficult to automatically obtain satisfactory features from artificial intelligence technologies in current feature recognition methods, so traditional network computing methods in computational method are used to define other characteristics in artificial intelligence technology. All surface sets belonging to a feature are interactively selected, and the type of the feature is specified.

2.3. Automatically Create a Feature Tree for Modern Art Interaction. Before automatically creating the interactive feature tree of modern art, it is first necessary to preprocess the automatically recognized algorithm symmetry characteristics. The purpose of preprocessing is to reduce the number of feature sets when creating a feature tree by integrating feature sets with the same symmetric constraint relationship into new features and to facilitate the determination of the dependency relationship between feature sets. After obtaining the feature set of artificial intelligence technology, all the features of the algorithm directly or indirectly depend on the main shape feature of the algorithm. In the root nodes where the main feature of the algorithm is used as the root of the feature tree, the dependency relationship between features can be determined sequentially and recursively, and a feature tree of modern art interaction can be created based on the adjacent relationship between different feature groups.

3. Interactive Design of Artificial Intelligence and Modern Art

The interactive design of modern art incorporates knowledge from multiple fields. Both the expression of aesthetics and the logical thinking of philosophical concepts are included. Therefore, it is not only the artist's process of artistic creation but also the entire process of their logical thinking. Therefore, on the basis of modern technological interaction, the interaction between art can be combined with artificial intelligence technology to generate a combination of artificial intelligence and modern art. Among them, the comparison between traditional art design and artificial intelligence technology is shown in Figure 2.

The spatial construction operation of artificial intelligence technology in computers has gradually matured, and the theory of artificial intelligence technology also plays an important role in mutual computing. The principle of continuous Turing machine in artificial intelligence technology is used to design the performance of modern art in this paper. The persistent Turing machine is built on the basis of the Turing machine, so it has a stronger performance ability than the Turing machine. The persistent Turing machine has an output belt, an input belt, and a working belt. Let the set of elements be I and 0, then the two sets are defined as follows:

$$\begin{aligned} X &= \{s | s = i_1 i_2 \ldots i_n \text{is an infinite sequence on } I\}, \\ Y &= \{s | s = O_1 O_2 \ldots O_n \text{ is an infinite sequence on } O\}. \end{aligned} \tag{6}$$

Due to the constraints of the parameters in the function, the input value of its variables is calculated according to the corresponding mapping principle of the function. The conversion is performed by setting the value of mapping f_x. When the first mapping condition in the operation space is blank, then the output value of the function will all become 0, and when the content will not be blank, the output value is all 1. The corresponding sequence of f_x can be quickly obtained.

The artificial intelligence algorithm is represented by a ternary array of cleared numbers $(r_1, r_2, r_3)(r_1 < r_2 < r_3)$, and its subordinate function is as follows:

$$\mu(x) = \begin{cases} \dfrac{x - r_1}{r_2 - r_1}, & r_1 \le x \le r_2, \\ \dfrac{x - r_3}{r_2 - r_3}, & r_2 \le x \le r_3, \\ 0, & \text{other.} \end{cases} \tag{7}$$

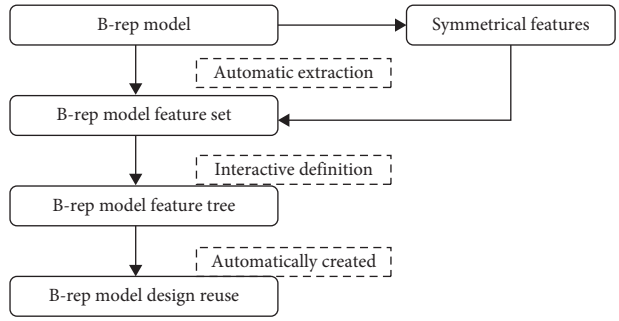

Figure 1: Flow chart of modern art interactive design and evaluation method.

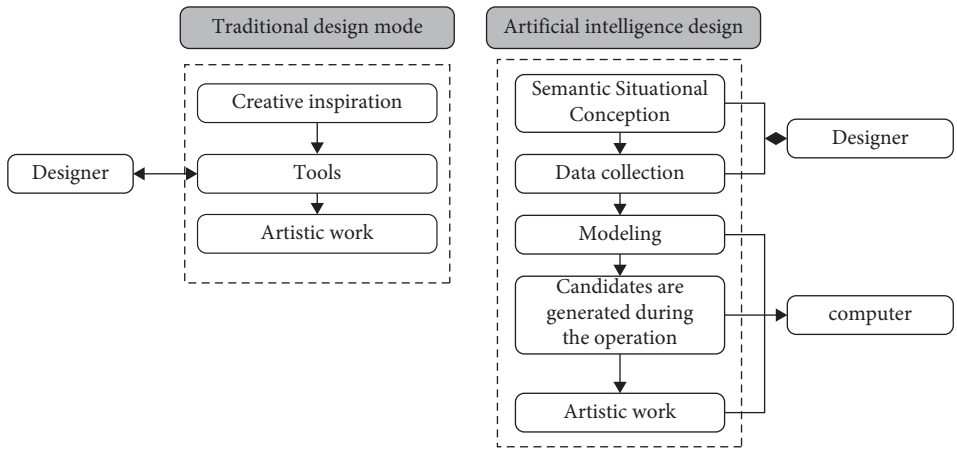

Figure 2: The division of labor between traditional design methods and artificial intelligence design.

Assuming artificial intelligence technology based on extension principle of addition and multiplication based on artificial intelligence calculations,

$$\mu_{\alpha+\beta}(z) = \sup\left\{\min\left\{\mu_{\overline{\alpha}}(x), \mu_{\overline{\beta}}(y)\right\} | z = x + y\right\}$$

$$= \begin{cases} \dfrac{z - (a_1 + b_1)}{(a_2 + b_2) - (a_1 + b_1)}, & a_1 + b_1 \le z \le a_2 + b_2, \\ \dfrac{z - (a_3 + b_3)}{(a_2 + b_2) - (a_3 + b_3)}, & a_2 + b_2 \le z \le a_3 + b_3, \\ 0, & \text{other.} \end{cases} \tag{8}$$

Then

$$\overline{\alpha} + \overline{\beta} = (a_1 + b_1, a_2 + b_2, a_3 + b_3). \tag{9}$$

From $\mu_{\lambda\overline{\alpha}}(z) = \sup\{\mu_{\overline{\alpha}}(x) | z = \lambda x\}$, the following equation can be obtained:

$$\lambda\overline{\alpha} = \begin{cases} (\lambda a_1, \lambda a_2, \lambda a_3), & \lambda \ge 0, \\ (\lambda a_4, \lambda a_3, \lambda a_2), & \lambda < 0. \end{cases} \tag{10}$$

Assuming that $\overline{\alpha}_i = (a_{i1}, a_{i2}, a_{i3})$, $i = 1, 2, \ldots, m$, is the technical parameter of artificialintelligence, the nonnegative linear combination and $\overline{\alpha}_i$ adopted can obtain the following expressionaccording to the artificial intelligence technology:

$$\sum_{i=1}^{m} \lambda_i \overline{\alpha}_i, \quad \lambda_i \ge 0, \tag{11}$$

and

$$\sum_{i=1}^{m} \lambda_i \overline{\alpha}_i = \left(\sum_{i=1}^{m} \lambda_i a_{i1}, \sum_{i=1}^{m} \lambda_i a_{i3}\right). \tag{12}$$

Artificial intelligence technology is a random plan. Constrained condition includes random parameters, and chance represents the probability of the constraint being established. Under artificial intelligence technology, the possibility of taking opportunity as a constraint need to be understood. The stochastic artificial intelligence technology control plan provides a powerful tool to solve the planning problem with stochastic parameters and artificial intelligence technology parameters. This model is in general form:

$$\begin{cases} \max\limits_{x} & f(x, \xi, \eta) \\ \text{s.t.} & g_j(x, \xi, \eta) \le 0, \; j = 1, 2, \ldots, m. \end{cases} \tag{13}$$

Among them, x is the decision vector, ξ is the random vector parameter, η is the artificial intelligence technology vector parameter, $f(x, \xi, n)$ is the objective function, and

$g_j(x, \xi, n)$ is the constraint function. Due to the emergence of artificial intelligence technical parameters η and random parameters ξ, the symbols $\max_x$ and constraints in the model (1) lack clear meaning [5, 6]. In order to solve this problem, the artificial intelligence technology and random elements appearing in the model simultaneously are regarded as the coexistence of artificial intelligence technology and random chance for further consideration.

In the process of solving the problem of modern art interaction design, the transition probability of modern art interaction k from customer i to customer j needs to consider the length of the art interaction path of the following customer point and the information pheromone concentration on the art interactive path. J means accessible customer integral; O means modern art interactive center. The calculation formula for the probability of selecting modern art interaction k from client i to j is as follows:

$$P_{ij}^{k}(t) = \begin{cases} a \times \dfrac{\left(\tau_{ij}(t)^{\alpha} \times \eta_{ij}(t)^{\beta}\right)}{\sum_{h \in Q}\left(\tau_{ij}(t)^{\alpha} \times \eta_{ij}(t)^{\beta}\right)} + \dfrac{\left(b/\left|t_{ij} - e_h\right| + \left|t_{ij} + l_h\right|\right)}{\sum_{h \in Q} 1/\left|t_{ih} - e_h\right| + \left|t_{ih} + l_h\right|}, & j \in Q, \\ 0, & \text{otherwise.} \end{cases} \tag{14}$$

In the formula, a and b represent weighting factors, and t_{ij} represents the time from client i to client j. α represents the information transmission factor. β represents a factor that is expected to start. $\eta_{ij}(t)$ identifies the initiation information value related to the art interaction path (i, j) as defined in the following equation:

$$\eta_{ij}(t) = \frac{1}{d_{ij}}. \tag{15}$$

Among them, d_{ij} represents the distance between customer i and customer j.

In artificial intelligence technology, in order to make full use of the optimum solution of the cycle and the optimum solution found so far, each cycle will update the pheromone of each modern art interaction. The pheromone update rules are as follows:

$$\begin{aligned} \tau_{ij}(t+n) &= (1-\rho) \times \tau_{ij}(t) + \Delta\tau_{ij}(t), \\ \Delta\tau_{ij}(t) &= \sum_{k=1}^{m} \Delta\tau_{ij}^{k}(t). \end{aligned} \tag{16}$$

After a few days, the pheromone volatility coefficient ρ becomes a random number between [0,1], and $1-\rho$ represents the residual factor of pheromone. $\Delta\tau_{ij}(t)$ represents the artistic interaction path in this cycle. (i, j) represents the increment of the above pheromone, and its initial value is $\Delta\tau_{ij}^{k}(t)$. $\Delta\tau_{ij}(0) = 0$ means that the k-th modern art interaction remains on the path of art interaction in this cycle (i, j). The total amount of the above pheromone is as follows:

$$\Delta\tau_{ij}^{k} = \begin{cases} \dfrac{Q}{L_k}, & \text{Art } k \text{ passes by } (i,\ j), \\ 0, & \text{otherwise.} \end{cases} \tag{17}$$

Here, Q represents the concentration of the pheromone, which is a constant and affects the convergence speed of the algorithm. Lk represents the length of the art interaction path taken by this cycle for the k-th modern art interaction.

The use of artificial intelligence technology reflects the diversity, repetition, and spatiality in the interaction of multimedia elements. The method adopted is to first determine the target customers based on customer confidence and be able to take different interactive services according to different customers. Providing willful services to users is the purpose of interactive art, which can analyze and collect user information and establish a good interactive platform. Artificial intelligence technology shows the performance of hearing, tactile sensation, visual sense, and other functions in the interaction of multimedia elements, and these elements promote each other. Users are allowed to fully integrate into the multimedia interactive art, giving customers a strong visual impact. The common visual effects of visual pictures, the adjustment of screen colors, and the structure of characters are used in the artificial intelligence technology. It is a three-dimensional and multidimensional space where users feel the vision.

4. Application of Artificial Intelligence in Modern Art Interactive Design

4.1. Characteristics of Modern Art Graphics

4.1.1. Self-Similarity. Modern art graphics look very complicated, and the changes are variegated varied, but their integrity is not lost. The reason is the internal order within itself and seeking unity amidst changes [7]. There is a certain similarity between the part and the whole, and various parts of the modern art graphics, that is, it partially reflects the overall structural form and graphic style. This characteristic seeks for change in unity, maintains a unified form of beauty in the change, and also reflects the harmonious beauty of the whole and the part. This unique feature of self-similarity brings great charm to subtype graphics and can produce aesthetic pleasure when people watch them.

4.1.2. Infinite Scalability. The self-similarity of modern art graphics determines its infinite scalability. In other words, the modern art structure is embedded infinitely according to

its own similarity. The reason why modern art patterns have a strong visual impact is that each part of the pattern is infinitely subdivided according to self-similarity. When the viewer is far-sighted, what he sees is an overall mobile beauty. If the viewer looks at it closely, he can see the visual beauty with rich details. This infinite nesting structure breaks the finiteness of the traditional aesthetic form of graphics and can extend infinitely, greatly enriching the structural form of graphics, making it always full of fantasy artistic charm, and providing new perspectives for the innovation of modern art graphics.

4.2. Color Judgment of Modern Art Graphics. Color judgment is mainly processed for shadowed pictures, because the shadows in the picture are mainly concentrated around the target object, a threshold is set for a certain type of image slice, and then the area exceeding the pixel threshold is changed to the same color as the background [8, 9]. Since the background used in this design picture is all black, the assigned value of pixels exceeding the threshold is set to 0, and the pixel value range of the shadow part is experimentally determined. The threshold parameter is set to split those exceeding the pixel value of the parameter into the background. Taking a shadowed orange photo as the experimental object, after reading and designing a photo, the color of the shadow is used to determine the pixel value of the shadow part, and the pixels in the shadow part are eliminated. The specific discriminant is as follows:

$$d(i,j,u) = \begin{cases} [0,0,0], & \text{if } i \geq a \text{ and } j \geq a \text{ and } u \geq a, \\ [i,j,u], & \text{if } i < a \text{ and } j < a \text{ and } u < a, \\ [i,j,u], & \text{if } i > b \text{ and } j > b \text{ and } u > b. \end{cases} \tag{18}$$

A represents the threshold value obtained through experiments, and about 240 numerical values are set. Through b, the edge of the image can be maintained appropriately, and overdesign of the edge can be avoided. This time the background of the design is black, and the pixel value is black. (0,0,0), the color of the shaded part is usually close to white, but the pixel value is greater than any single color except white. Therefore, the state of the pixel value smaller than the color value is not changed, the pixel larger than the pixel value is converted into the background, and the target close to the white edge is maintained. Through color judgment, the undesigned image can be improved.

5. Application of Artificial Intelligence Technology in Modern Art Graphics

As for modern art interaction design analysis, diversity and accuracy are used to perform definition and are comprehensively evaluated to complete the selection of modern art interaction design [10]. During the analysis of modern art interaction design, the particle swarms are formed in the search space for modern art interactive design, and the expression of the information feature vector χ_i of corresponding modern art interactive design data is as follows:

$$l_\varepsilon(g) = (1-\rho) l_\varepsilon(g-1) + \gamma f\left(\chi_i(g)\right). \tag{19}$$

In the above expression, f represents the adaptive function corresponding to the feature vector χ_i of the feature data of modern art interactive design. $\gamma\chi_i(g)$ represents the modern art interaction design analysis corresponding to the ε th design in the actual application process.

The expression of design π_p in modern art interaction design II is as follows (20):

$$Acu\left(\pi_p\right) = \mathrm{NMI}\left(\pi_p, \pi^*\right). \tag{20}$$

In the formula, π_p and π_q express the modern art interactive designs. If there is less information shared with the basic cluster of modern art interaction design, the accuracy of the basic cluster is low. Otherwise, it is vice versa.

Based on the accuracy and diversity characteristics of clusters on the basis of modern art interaction design, the comprehensive evaluation criteria are defined for the clusters based on modern art interaction design, which includes

$$\mathrm{Eval}\left(\pi_p\right) = \lambda \mathrm{Acu}\left(\pi_p\right) + (1-\lambda)\mathrm{Div}\left(\pi_p\right). \tag{21}$$

In the formula, $\lambda \in [0,1]$ the correctness and diversity of modern art interactive design are important degrees in the comprehensive evaluation criteria.

Formula (21) is based on the diversity $\mathrm{Div}(\pi_p)$ of the basic design of modern art interaction design to calculate the probability $pro(\pi_p)$ of selecting the basic design algorithm of modern art interaction design as the evaluation basic design. The calculation formula is as follows:

$$\mathrm{pro}\left(\pi_p\right) = \frac{\mathrm{Div}\left(\pi_p\right)}{\sum_{p=1}^{B} \mathrm{Div}\left(\pi_p\right)}. \tag{22}$$

It is used to use roulette to randomly select an interactive design based on modern art and obtain modern art interactive design analysis. Scrambling rearranges the pixel positions of the image and only changes the correlation between adjacent pixels of each basic color image but cannot change the histogram of each basic color image. Or, by converting the pixel value of each basic color image, the overall histogram distribution characteristics of the basic color map can be changed. Therefore, if the pixel value is transformed after scrambling, better design security can be obtained.

In this article, we propose a new three-dimensional chaotic system that connects the Lorenz system and the Chen system, but the Liu system is just a special example, which is called a unified chaotic system:

$$\begin{cases} \dfrac{dx}{dt} = (25\alpha + 10)(y - x), \\ \dfrac{dy}{dt} = (28 - 35\alpha)(x - xz) + (29\alpha - 1)y, \\ \dfrac{dz}{dt} = (xy) - (8 + \alpha)\dfrac{z}{3}. \end{cases} \tag{23}$$

In the formula, $\alpha \in [0, 1]$, a system with uniform system parameters within this range has overall chaotic characteristics.

The purpose of the image restoration network module is to ensure that the color and spatial position of each reconstructed pixel can restore the original color and texture of the image to the greatest extent. The total loss function Linp of the image restoration network module is defined as shown in equation (8), which consists of the repair loss of the nonmasked area, the repair loss of the masked area, the loss of perceptual loss style, and the loss of resistance and the total variation loss:

$$L_{\text{total}}^{\text{inp}} = 2L_{\text{valid}} + 12L_{\text{hole}} + 0.04L_{\text{per}} + 100\left(L_{\text{style}}^{1} + L_{\text{style}}^{2}\right) + 100L_{\text{adv}} + 0.3L_{\text{var}}. \tag{24}$$

The weight of each loss item is determined after analyzing the results of 50 independent experiments.

The Manhattan distance between the repaired image and the unmasked area of the real image is used as the repair loss, where Idam represents the damaged image, M represents the irregular binary mask (the corresponding area to be repaired in the mask is 0, and the others are 1), Iinp represents the repair result image, and Ireal represents the real undamaged image. The repair loss function of the masked area is shown in the following equation:

$$L_{\text{hole}} = \left\|(1 - M) \times \left(I_{\text{inp}} - I_{\text{dam}}\right)\right\|_1, \tag{25}$$

$$L_{\text{valid}} = \left\|M \times \left(I_{\text{inp}} - I_{\text{dam}}\right)\right\|_1. \tag{26}$$

Artificial intelligence technology no longer needs to specify this parameter. The algorithm dynamically adjusts appropriate parameter values based on the texture complexity of different regions of the image, and if the artificial intelligence technology maintains a constant speed, the superpixels produced are more neatly unified and help to reduce the influence of superpixel shape difference on the algorithm in the subsequent processing.

6. Artificial Intelligence and Generation of Artistic Inspiration

Artificial intelligence cannot achieve the best effect of art. The progress of art is the result of the progress of human thinking. Through continuous improvement, we continue to absorb the crystallization of experience. Computers are inherent thinking without the human subjective way of thinking. The original design of modern art is the feedback of people's thoughts, activities, and experiences. Design is targeted innovative behavior using subjective analysis, and machines cannot think about problems independently, but they can also use empirical theories to perform artistic creation, with some simple creativity. It is just that the way it is formed has an artistic style, and the content is really fixed and repetitive.

Modern artists at home and abroad no longer use familiar patterns, expression subjects, and styles to attract people to love them [11, 12]. However, many innovations are quite the contrary. Therefore, in the interactive creation of modern art, we not only need to understand the purpose of artistic creation but also need artists to adjust independently according to the scenery.

6.1. Integration of Artificial Intelligence and Design Data. With the continuous improvement of the level of science and technology and the continuous development of Internet technology, it has been widely used in many fields. Security and data protection need to be increased for the modern art interactive design of large-scale data information on the Internet. However, modern art interaction has its own fragility, because the data information protection system has more hardware, and the shortcomings of software or data information security methods will cause major risks of security. If these vulnerabilities are used illegally, then modern art interaction will suffer a huge threat. Therefore, the research on modern art interaction has aroused the focus of researchers at home and abroad (Figure 3). In general, it is difficult to obtain satisfactory results by using the past data methods to solve the problem of data encryption and modern art interaction. With the usage of bionic intelligent algorithms on classic problems, it has a relatively global performance in the application. By means of the integrated design style, a page layout that humans love can be created according to the corresponding visual space configuration, color, design principles, and cognitive methods of the image.

The information can be transmitted in a more diversified mode, and real-time interaction is enhanced. While improving the user experience, the interactive design of modern art is also more intelligent. As the basic conditions of artificial intelligence technology in modern art interactive design, artistic creation inspiration and data information integration can effectively combine the two key elements of color and style to illustrate the superiority of the combination of artificial intelligence in modern art interactive design [13].

7. Development Prospects of Artificial Intelligence in Modern Art Interactive Design

7.1. Collaborative Design under Complex and Diverse Data. One of the most significant features of the big data era is quantitative thinking, which can be fully quantified. Quantitative thinking comes from people's desire for data analysis. There is still controversy about the quantification of artistic and cultural resources. However, as an interdisciplinary subject that integrates innovation and science, large and diverse data are used. The traditional design is obviously incapable of data processing. Meanwhile, a lot of repetition is also reflected in the traditional design process. The allocation rate of each working time of the designer in a day is shown in Figure 4. Repetitive and fixed operations in batches are important.

At the 2017 Design and Artificial Intelligence Conference, the relationship between future design and artificial intelligence was expressed by brain ratio (that is, the ratio of

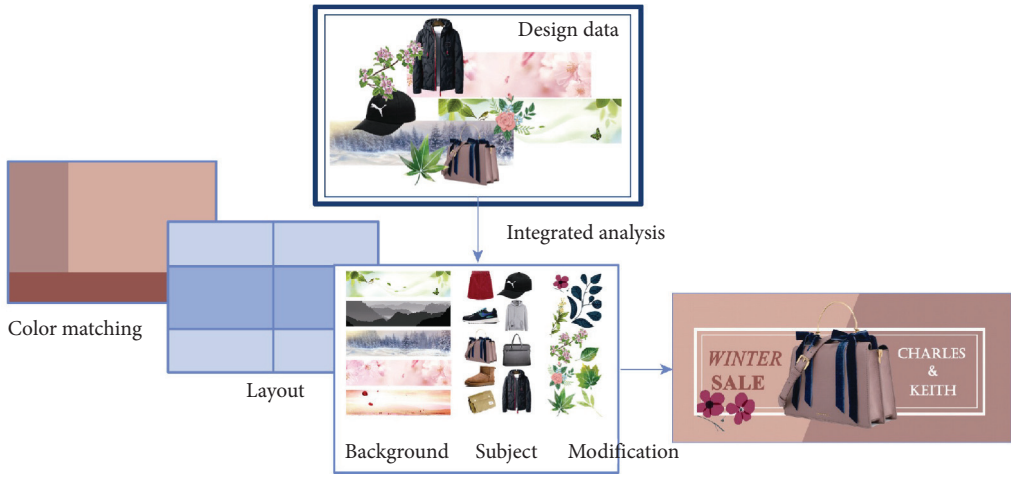

Figure 3: "Luban" design data integration example.

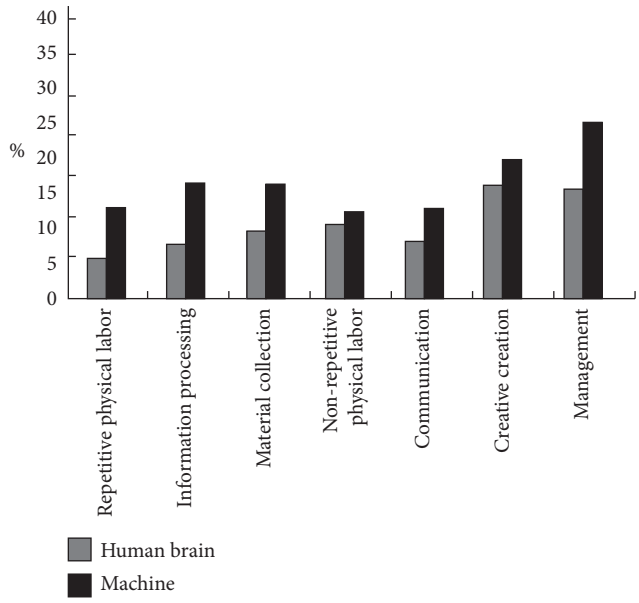

Figure 4: The distribution ratio of the designer's working hours in a day.

brain to machine). In the design work, the ratio of the human brain to the machine is shown in Figure 5. The involvement of a lot of work may be enhanced due to the participation of machines. The components involved in the human brain are getting smaller and smaller, and the degree of human participation is lower. Machines may replace part of human positions. For the design work, even if the participation of the machine increases, the participation of the human brain will only decrease, and it will even lead to the evolution or even the release of the human brain. Therefore, the design of the machine is included, more commonality of the machine and the human and the interaction between the machine and the human are expressed.

Efficiency is another important concern in thinking about big data. The design by the computer greatly shortens the life cycle of the product and greatly improves the production efficiency of the design. The efficiency problem caused by the influence of big data mainly means that the data update speed is fast and the update cycle is short. Fast food; demand means taking too much time. The consumption of energy is a problem disproportionate to demand. For example, posters and banners often used in the advertising industry and e-commerce do not need to be too exquisite. The demand needs to be expressed as much as possible through concise expression. In this case, training the computer to design smart posters can help designers deal with these high-speed design tasks.

7.2. Personalized Design under User Behavior Analysis. While molding the product image, design is also a process of satisfying the needs of users. Today's society is rich in materials and increasingly mature in technology. The expectations and needs of the user community for the product

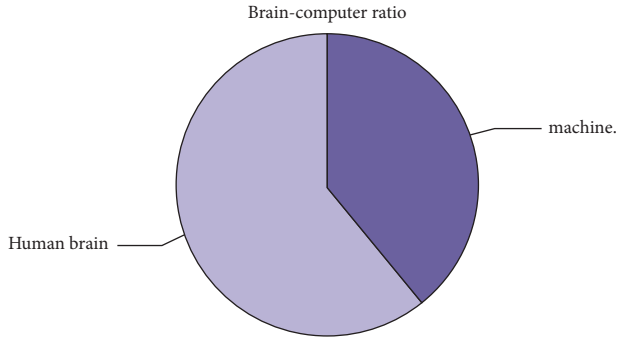

Figure 5: Percentage of human brains and machines in design work.

have undergone great changes, from the traditional focus on the form, and gradually changed to be more concerned about its content and experience [14]. Therefore, the design point of view has also shifted from the traditional focus on the surface of things to compatibility and practicality.

The user's needs are satisfied by the interaction between the user and the product, that is, the user's subjective behavior. Traditional design often pays attention to the visual features, design concepts, and interaction methods of the product, while the modern design is not only a creative process. In addition, many extensible ingredients are added. The product demand difference between traditional design and modern design is shown in Figure 6. Designers, decision-makers, and manufacturers must pay more attention to actions and other information of users to improve design products. Temperature reflects the care for users, and the designed products are more targeted. In several designs facing a fixed group, there will be better practicability. The advantage of artificial intelligence is that it can perform intelligent analysis on large and regular data. In the past, questionnaire surveys were mainly used for the analysis of user. The artificial intelligence is introduced not only to reduce a large number of manual processing procedures but also to analyze and organize a large number of users' action information and to make decisions, and then the user's action information is added to the design, not just an increase in products. It can also bring more economic effects to human products.

8. Examples and Results Analysis

Modern art interaction under artificial intelligence has become a future development trend. Traditional modern art interaction methods have been unable to meet people's needs [15]. Based on artificial intelligence technology, this article designs modern art interactions for new media, improves the defects in traditional expressions, and verifies the effectiveness of the expression methods designed in this paper through experimental research and comparison.

The experimental environment is listed in Table 1.

The design in this paper requires five steps: preprocessing, unification of concepts, user question processing, information extraction, and intelligent recognition to provide users with a multielement interactive art experience. The experimental process flow chart is shown in Figure 7.

It can be concluded from Figure 8 that the main content to be done in the experimental preprocessing process is to perform statistics based on the data analysis that users like; meanwhile, it can meet the purpose of adjustment at any time. During this process, unified processing and interaction are mainly carried out in the expression style according to the complexity of the operation. The development of modern art interaction is promoted in the successive alternate process, which can effectively improve the accuracy and practicability of modern art creation. The extraction of modern art interaction information is mainly based on artificial intelligence technology to extract the parameters of modern art interaction information. Intelligent recognition brings a better experience for users to recognize the interactive needs of intelligent users, shorten the extraction time of interactive elements, and improve the flexible operation speed of interactive expressions. As shown in Figure 8, it is a modern art interactive information extraction diagram based on artificial intelligence technology.

It can be seen from Table 2 that by comparing the features extracted by the three methods, it can achieve 100% variable data extraction during the first and fourth iterations. In other experimental processes, it is found that the extracted variables are higher than the algorithm. It shows that the algorithm proposed in this paper is faster than other algorithms in variable feature data speed.

The flexibility of the big data modern art interaction method, the network-artificial coordination modern art interaction method, and the modern art interaction method designed in this paper are compared, and the result is shown in Figure 9.

From the comparison result in Figure 9, it can be seen that the interactive design of modern art designed in this paper is more flexible. The topological calculation is adopted in this paper, which can reflect the expression of interactive art at any level based on artificial intelligence technology without being restricted by time and space. The interactive method of big data modern art and the interactive method of network-artificial coordination of modern art can only apply the corresponding interactive method of modern art at a specific time or place.

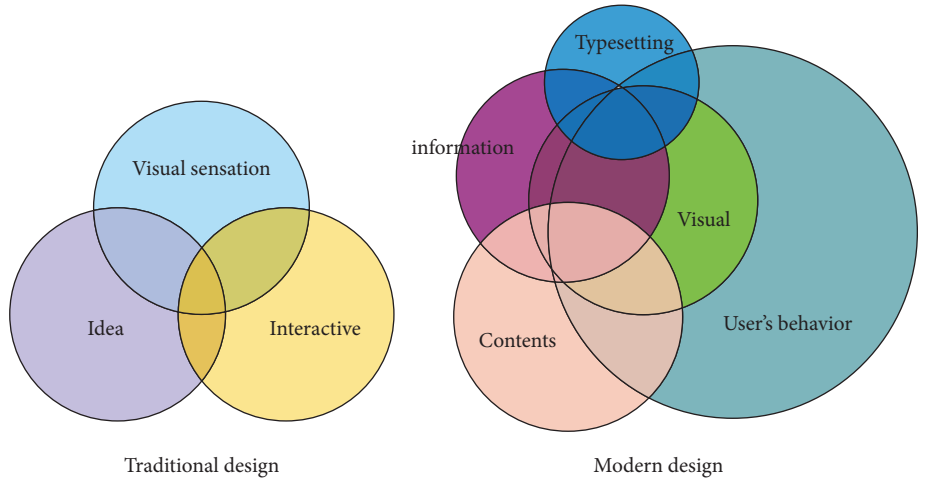

Figure 6: The difference between traditional design and product requirements of modern design.

Table 1: Experimental environment.

Item	Parameter
Programming language	C++
Working time	10 s
Times of experiments	5 times
Operating system	Windows10
Operation buses	RS485
Operating platform	Man-machine interaction interface

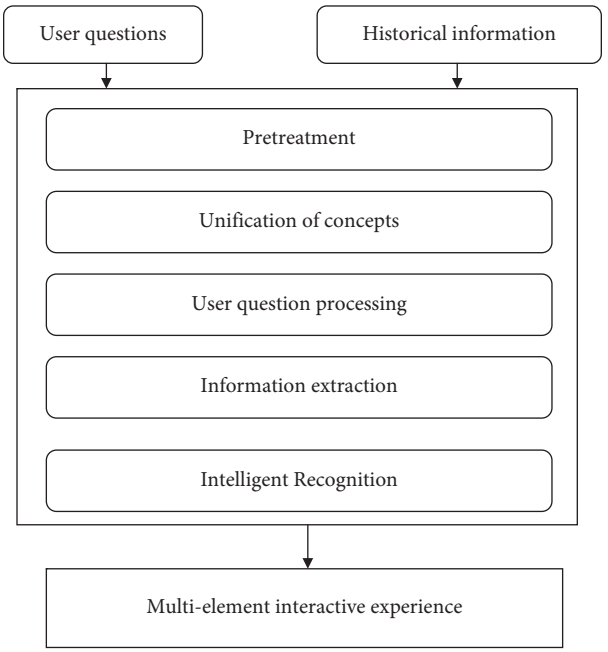

Figure 7: Experimental process diagram.

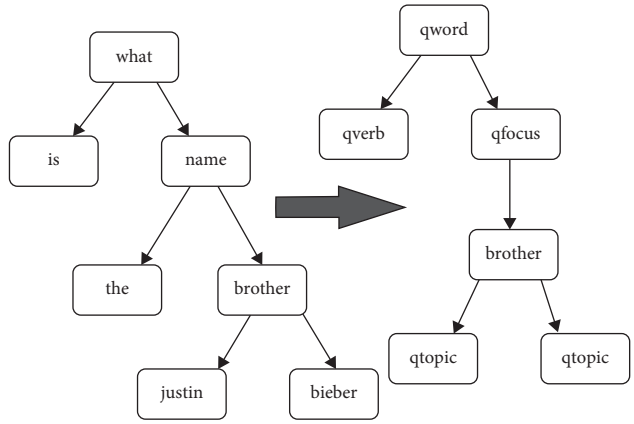

Figure 8: Information extraction diagram based on artificial intelligence technology.

Table 2: Comparison of the extraction speed of interactive elements through different methods.

Iteration times	Network-manual coordination method (%)	Big data modern art interaction method (%)	Method proposed in this paper (%)
1	64	54	100
2	61	61	98
3	61	64	98
4	63	62	100
5	100	62	98
6	96	70	98
7	95	58	98

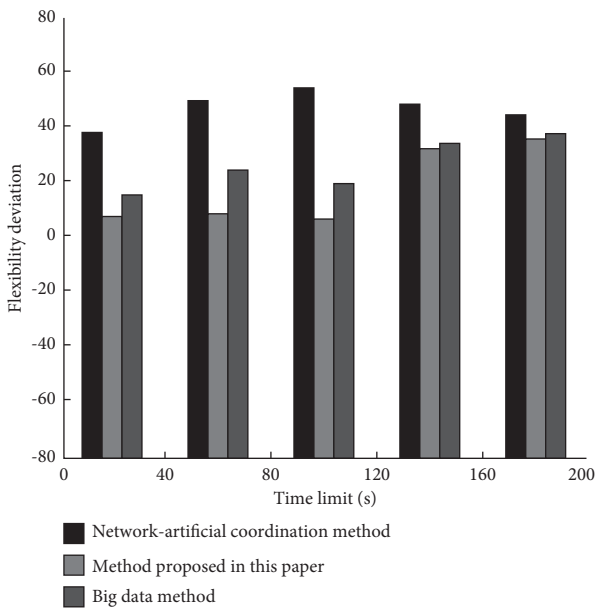

Figure 9: Comparison diagram of the flexibility of interactive expressions.

9. Conclusions

Artificial intelligence has introduced reforms in all walks of life. In the design industry, artificial intelligence can allow designers to reduce the tedious and complicated work to introduce some means of artistic expression of fixed machinery. A detailed analysis and summary of artificial intelligence technology and art are performed in this paper. Meanwhile, it is demonstrated based on real cases in practice, confirming that artificial intelligence technology can bring greater convenience to designers and the design industry, and reformative breakthroughs may occur to design methods. Technological reforms are also updates of method reforms. The innovative products of human-machine cooperation are worth looking forward to.

Data Availability

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

Conflicts of Interest

The author declares no conflicts of interest.

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