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Retraction

Retracted: Application of Digital Painting Technology in the Creation of an Oil Painting Containing Graphene

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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] Y. Wu, "Application of Digital Painting Technology in the Creation of an Oil Painting Containing Graphene," *Advances in Materials Science and Engineering*, vol. 2022, Article ID 7611500, 9 pages, 2022.

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Research Article

Application of Digital Painting Technology in the Creation of an Oil Painting Containing Graphene

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Art and science and technology are two different ways people understand and reflect the objective world. The mutual penetration of science, technology, and art has promoted the development of art and the innovation of forms. Technology has become the carrier of social and cultural exchanges and spiritual world exchanges for artists, providing new ideas for modern art. In recent years, with the active development of various new media technologies, new media technologies represented by image technology and digital technology have gradually developed and are closely integrated with various fields. With the development and progress of image and digital technology, digital painting technology has had a great impact on the field of artistic creation. Of course, oil painting creation in the field of art has also encountered unprecedented challenges. This article introduces various functional methods in digital painting technology, and also introduces the preparation method of graphene graphite for printing. And through experiments, graphite with good performance was prepared, which showed that when ethylene glycol was used as a solvent and the mass fraction of graphene was 37.5%, the performance of the ink was relatively best. Finally, this paper designs a digital painting system and compares it with ordinary digital painting systems. It is concluded that the average satisfaction of painters in the designed system is 1.5 points higher than that of ordinary ones. These data show that the application of digital painting technology in the creation of graphene oil paintings has better applications than ordinary digital painting systems.

1. Introduction

1.1. Background. After being nurtured, modern oil painting has been continuously influenced by the artistic trend of thought in the background of large art, which more or less catalyzed the new state of oil painting art. As we all know, the field of art has always paid attention to the ideology of beauty, and the adjustment of human thinking ability is affected by many new technologies and plays a very important role. In the digital age, with the popularization of digital technology in the process of artistic creation, the ideology of artistic beauty has received an unprecedented impact and has undergone tremendous changes. At the same time, the ideology of artistic beauty has also been seriously affected. In the digital age, more and more young oil painting artists provide a wealth of meaning for modern oil painting creation. They combine their own experience and resources, and apply a large number of images and digital technologies to produce and reproduce. The innovative application of digital technology in oil painting has become a phenomenon and form of current oil painting creation, and has gradually developed into an innovative road and inevitable trend in oil painting creation. Because graphene pigments have good antistatic properties and can improve the friction resistance, adhesion, and hardness of oil paintings, people are paying more and more attention.

1.2. Significance. Since the 18th century, human civilization has entered an era of rapid development, and now is the era of digital information. The application of digital technology in the field of art is a double-edged sword, so it is very necessary to study the influence of digital painting technology on modern Chinese oil painting. Nowadays, when artists are making oil paintings, they incorporate computer digital image processing technology, which is not only an

innovation in the history of oil painting technology creation, but also makes creative ideas more diversified and diversified. For the art of painting, the best performance is not only the coolness of the techniques or the strong basic skills, but also the works of real artistic value must have certain visual effects and artistic appeal. For modern oil painters, it is necessary to keep up with the development trend of the times, correctly understand the advantages of digital technology, and apply it flexibly to the production of modern oil paintings to promote contemporary oil painting creation to a new level.

1.3. Related Work. Digital painting technology is a new type of painting technology, a fusion of computer technology and art. Since its birth, many scholars have conducted related research on it. Zhao and Lee are committed to in-depth research on various expression techniques and brushwork of Chinese painting. By introducing new modeling and mapping technology, combining engine production and PBR rendering technology. As a result, the performance of the new game screen can be more breakthrough than the current artistic effect, and the research is relatively innovative [1]. Dutta and Gupta proposed an emotion-based oil painting technology that can be implemented and used in real-time in current smart devices without using any explicit hardware. By reducing processing time and power consumption, the proposed technology has been significantly optimized. He also developed a prototype on the Android operating system to create mood-based oil painting images, but the disadvantage is that the technology is less practical [2]. Jia and Chen's digital image restoration based on decomposition and synthesis of multispectral images solves the problem of low image restoration accuracy caused by the correlation between color components in the traditional digital image restoration process, and reduces the mismatch of image restoration [3]. Hung established a digital Chinese traditional painting image database, used the proposed technology to extract image and texture information, and searched for images similar to the query image based on the color histogram and texture features in the database. Hung expects that using this image technology to retrieve images that will make the retrieval of Chinese painting images more accurate and user-friendly, but the database lacks some humanized design [4]. Based on the experience of the Church in Cappadocia, Turkey, Higuchi et al. proposed a new method to record the conditions of preservation and restoration of on-site frescoes. His method is based on the comparison of nonmetric but approximate high-resolution images with actual murals. This method does not require special equipment, and can digitally record the mural conditions on-site with low cost, short time, and minimal human resources [5]. Scalera et al. proposed a new robotic system that uses a 6-degree-of-freedom collaborative robot to make watercolor paintings. After analyzing traditional watercolor paintings, different nonphotorealistic rendering techniques are used to make digital images into artworks. Then, the generated rendering is converted into a series of trajectories, and the robot reproduces these trajectories on paper. In this process, the artist of the control system can change the algorithm parameters and hardware variables (such as brush type, color dilution, etc.) to obtain different artistic effects, but the disadvantage of this research is that it requires higher research conditions [6]. D'Amico et al. focuses on the digital photogrammetric measurement results of 2D/3D model reconstruction using image-based methods. This model is used to quantify the important features of the painting and the extension of the repaired area. In addition, portable X-ray fluorescence spectrometers and Raman spectrometers are used to nondestructively identify the properties of painting materials on the elemental and molecular spatial scales, respectively. The ultimate goal is to reconstruct the artist's palette [7]. Oil painting color is a very important part in painting, but digital painting technology still lacks certain research.

1.4. Innovation. The innovations of this article are: (1) Introduce various methods in digital painting technology, such as image preprocessing, image composition method, and segmentation method. (2) The graphene conductive ink with good printing performance was prepared by changing the type of experimental materials and the mass fraction. (3) A digital painting system is designed, including computer hardware and painting process, and painters are invited to participate and compare their usual painting experience, which improves the painter's painting experience.

2. Application Method of Digital Painting Technology in Graphene Oil Painting

Although modern oil painting has certain restrictions due to the particularity of oil painting, it is also different from other art forms because of this. In the context of the popularization and application of image and digital technology, the proliferation of image processing software has reduced the difficulty of oil painting producers. A variety of image processing software has become the main material for oil painting creators, especially the mature development of dynamic digital image technology allows oil painting producers to have more choices. Among them, the dynamic image technology can truly record the shape of the landscape, so that the creator does not have to go out. When Western painting faces natural or objective situations, it generally starts from observing objects and depicting the scenery. In the process of painting, it pays attention to scientific perspective, and focuses on perspective, light and shadow, and color as the main criteria. In this environment, painters should not only pay attention to the content of the drawing board, but also learn how to use digital technology to enrich their painting content. If a painter can achieve a perfect combination of digital technology and artistic creation, the final product must be satisfactory [8].

2.1. Image Preprocessing in Digital Painting Technology. A work of art is always a complex, I have you, you include it, and the texture of material art itself is closely related to the details of artistic expression. The development of digital

technology allows creators to find a large amount of materials without searching and sketching, but often these materials are not directly used as soon as they are selected. Before oil painting creation, these image materials must be preprocessed. However, when processing, it is not to process all the colors in nature one by one, but to establish a color model. The color model is a model that uses a quantitative method to describe, and is based on the established color model to facilitate the subsequent processing and representation of the computer [9]. Modern people not only perceive endless natural textures in all things in nature, but also constantly create new texture aesthetics. Materials are an indispensable and important element for the final visual performance of space. Among the many color models, the RGB color model is the most representative, and is also the most used color model in life, as shown in Figure 1.

In this color model, the three components of red, green, and blue are distributed in different proportions. In the RGB color model, we can establish the RGB coordinate system, then each color point has a new interpretation, that is, a vector from the origin to the point. Assume that A is any vector in the RGB color model space, then there is:

$$A = \begin{bmatrix} A_R \\ A_G \\ C_B \end{bmatrix} = \begin{bmatrix} R \\ G \\ B \end{bmatrix}. \quad (1)$$

In the formula, it is pointed out that A contains three components, and its components only represent a color image. It has three components at one pixel, namely, RGB components. We can express the color component as a function containing coordinates (x, y) [10]:

$$A(x, y) = \begin{bmatrix} A_R(x, y) \\ A_G(x, y) \\ C_B(x, y) \end{bmatrix} = \begin{bmatrix} R(x, y) \\ G(x, y) \\ B(x, y) \end{bmatrix}. \quad (2)$$

For an image of size $c \times d$, where $x = 0,1,2,\ldots,c-1$ and $y = 0,1,2,\ldots,d-1$. The preprocessed image has relatively high readability, and it is also more convenient for computer analysis, processing, and recognition. The operation of this link lays the foundation for subsequent processing and affects the accuracy of the results. Therefore, we can first carry out preprocessing such as smoothing, sharpening, and blurring of the image [11].

2.1.1. Image Grayscale. In the RGB color model, red, green, and blue are called three primary colors, and other colors can be mixed in various proportions through these three basic colors, namely:

$$C = rR + gG + bB. \quad (3)$$

In the above formula, C represents the color value of the synthesized color, and R, G, and B, respectively, represent the component values of the red, green, and blue colors in the current color pixel, and the proportion of the three colors r, g, and b in the pixel of the color.

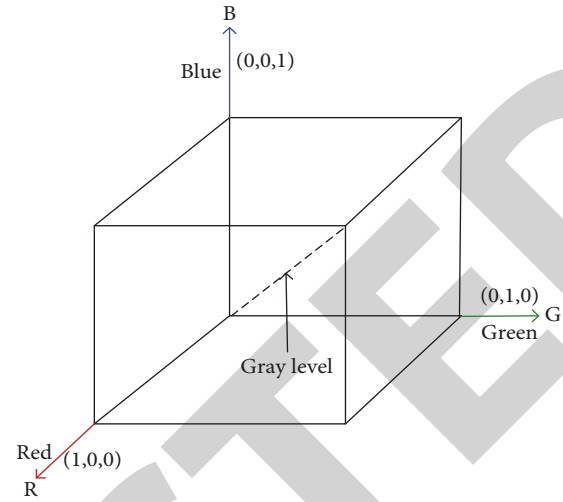

Figure 1: RGB color model.

The grayscale of a color image is to replace the three-component values of the color pixels of the color image with the same appropriate value and convert it into a grayscale image. There are many methods for image grayscale processing, and there are three commonly used methods:

(1) Average Method. The values of the three components of R, G, and B are added before calculating the average value, and this average value is used as the value of the pixel in the converted grayscale image [12], namely:

$$R = G = B = \frac{(R + G + B)}{3}. \quad (4)$$

This is a relatively common method of image grayscale, and the image after grayscale is relatively soft.

(2) Maximum Method. The maximum value of the three components of R, G, and B, is taken and this value is used as the value of the pixel in the converted grayscale image, namely:

$$R = G = B = \mathrm{MAX}(R, G, B). \quad (5)$$

The brightness of the grayscale image converted by this method is usually higher than that of the original image.

(3) Weighted Average Method. People's visual sensitivity to R, G, and B is different, based on importance, actual needs or other indicators. It is necessary to assign different weights to the three components of R, G, and B, and let the values of the three components of R, G, and B be weighted equally, namely:

$$R = G = B = \left(W_r R + W_g G + W_b B\right). \quad (6)$$

2.1.2. Smooth. Since the low frequency or intermediate frequency band of the amplitude spectrum concentrates most of the energy of the image, an image may be interfered

and affected by the existing multisource noise. Therefore, one method is smoothing, which can not only eliminate these interferences and effects, but also makes the lines and edge contours of the image not blurred. In general, noise is contained in high-frequency components, so we use a low-pass filter to prevent high-frequency components from convolution processing on the image, which can effectively reduce or eliminate noise. The Gaussian function is a low-pass filter with such a function. The Gaussian function model curve is shown in Figure 2 [13]:

In image processing, we define the two-way Gaussian function as:

$$G(x, y) = Ae^{-x^2+y^2/2\sigma^2}. \quad (7)$$

2.2. Application of Composition Function in Digital Painting Technology. Oil painting creators can cut, integrate, arrange densely, and compare the distance between various elements in the work to achieve the most ideal composition effect. Digital painting technology greatly provides convenience to painters in composition, allowing painters to compare the effects of different compositions with painting tools and find the best composition method. What needs to be mentioned here is the method of image scaling. The essence of scaling an image is to change the pixels of the image, reducing the pixels of the image is to reduce the image, which is relatively simple. Many painters need to add pixels to enlarge the image to obtain the desired effect. In fact, if an image is enlarged, it is essentially interpolation, which is a process of interpolation based on the pixels in the image. An interpolation method is introduced here, the nearest neighbor interpolation method [14].

This method is a relatively simple method. When calculating the gray value of the pixel, it is equal to the gray value of the input pixel closest to the position where the output pixel is mapped. The interpolation convolution kernel function is as follows:

$$h(x) = \begin{cases} 1 & |x| < 0.5 \\ 0 & \text{elsewhere} \end{cases}. \quad (8)$$

As shown in Figure 3, let (a, b), $(a, b+1)$, $(a+1, b)$, $(a+1, b+1)$ be a 4 before interpolation using nearest neighbor interpolation, and their gray values are $h(a, b)$, $h(a, b+1)$, $h(a+1, b)$, $h(a+1, b+1)$.

The nearest neighbor interpolation method is used to compare the distances between (a, b), $(a, b+1)$, $(a+1, b)$, $(a+1, b+1)$ these four points, respectively, and then compare with the gray value of the nearest point (m, n) is used as the gray value of the (m, n) point. Nearest neighbor interpolation can ensure that the edge of the interpolated image is clear, and it also has simple and fast calculations, but it will bring aliasing to the edge, making the image visual effect very poor. In the image there will also be overlaps and holes [15].

2.3. Image Segmentation Function in Digital Painting Technology. Image segmentation is the method and process of segmenting an image into several specific areas with

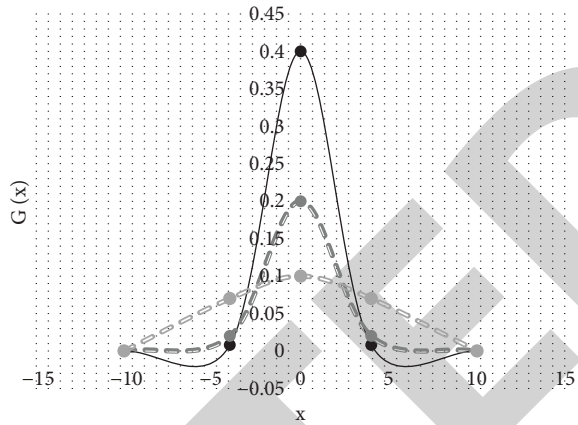

Figure 2: Gaussian function curve model.

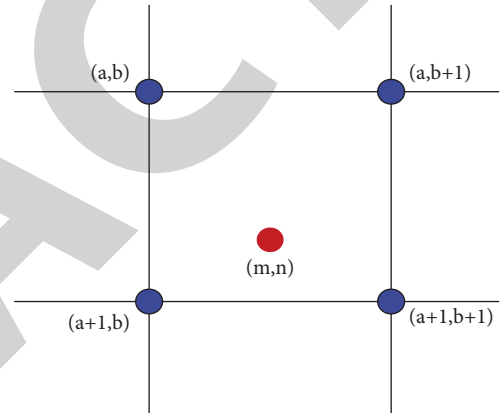

Figure 3: Nearest neighbor interpolation.

inherent properties and proposing objects of interest [16]. From a mathematical point of view, image segmentation is the process of segmenting digital images into disjoint fields. Compared with color images and grayscale images, the difference between them lies in the pixels. The pixels of color images usually have three components. Since there are many kinds of segmentation methods, we first introduce one of them, which is based on the K-means clustering method.

For an image, if you want to divide the image into K regions, you can use the K-means clustering method. For grayscale images, assuming that (a, b) represents the coordinates of the image pixel, $h(a, b)$ represents the grayscale of the pixel (a, b), then the K-means clustering method is minimized and expressed as follows [17]:

$$\varepsilon^2 = \sum_{j=1}^{K} \sum_{(a,b)\epsilon q_j^i} \left| h(a, b) - \mu_j^{i+1} \right|^2. \quad (9)$$

In this formula, there are K regions in the image, which is expressed by K. q_j^i represents the j-th region in the image after the i-th iteration, and μ_j^{i+1} represents the average value of the j-th region after the $i + 1$ iteration. In fact, this formula gives the sum of the distance between each pixel and its corresponding area mean. Therefore, the steps of the K-means clustering method are as follows:

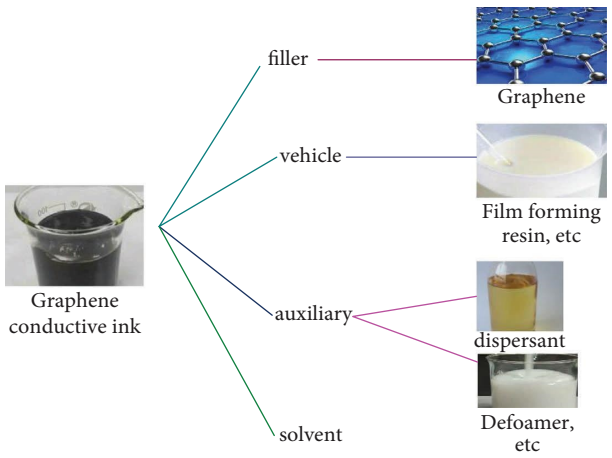

Figure 4: Composition of conductive ink.

(1) Randomly select K initial class mean values, μ_1^1, $\mu_2^1, \ldots, \mu_K^1$.

(2) At the i-th iteration, we assign each pixel to one of the K-type regions.

(3) For each class, we use the following formula to update the mean value of this class:

$$\mu_j^{i+1} = \frac{\sum_{(a,b)\in q_j^i} h(a,b)}{n_j}. \quad (10)$$

In the above formula, n_j represents the number of pixels in the updated class q_j^{i+1}.

For all classes, if there is $\mu_j^{i+1} = \mu_j^i$, then the algorithm is convergent, and the algorithm ends; otherwise, it will skip to the second step to continue the next iteration process until the algorithm converges [18].

2.4. Preparation Method of Graphene Conductive Ink. Graphene has a variety of properties, mainly including six properties: they are electronics, chemistry, optics, mechanics, magnetism, and thermal properties. Since we are studying oil paintings containing graphene under digital painting technology, oil paintings are printed by the computer. At this time, graphene conductive inks are needed as printing materials [19].

2.4.1. Graphene Conductive Ink Composition. Graphene conductive ink is mainly composed of conductive fillers such as graphene, binders, solvents, and additives. The composition of the ink determines the printing adaptability and the conductivity of the conductive ink after printing. The composition of graphene conductive ink is shown in Figure 4:

Among them, conductive filler is an important part of conductive ink, and its performance directly determines the conductivity of conductive ink. The binder of the ink is in a fluid state at room temperature and assumes the role of the pigment carrier in the ink to disperse the pigment in it. Additives can change some of the characteristics of the ink itself to meet the special requirements of printing, and are an indispensable part of the ink [20, 21].

2.4.2. The Performance of Graphene Conductive Ink

(1) Viscosity. In the printing process, the ink can only be transferred in each printing system if it has viscosity, otherwise the ink cannot be used normally. However, the viscosity must be reasonably controlled and prepared. Only the proper viscosity can ensure the stable progress of the printing process. If the viscosity is too large or too small, it will cause problems, so it is necessary to grasp the viscosity of the ink well.

(2) Film Formation. Film formation is a manifestation of the comprehensive evaluation of film appearance. The main factors affecting the film formation are the particle size of the pigment, the type of the pigment, the dispersion state of the pigment, the gloss of the film, leveling and adhesion, etc. The film-forming performance can directly reflect the reproducibility of ink printing.

(3) Glossiness. Glossiness refers to how much the surface of an object resembles a mirror surface. Gloss gives the appearance of printed products a sense of beauty. Therefore, gloss is an important indicator of printing quality. The type and nature of the ink binder, the flatness of the ink film after drying, the type, size and shape of the pigment particles, and the substrate, etc., all have varying degrees of influence on the gloss of the ink.

(4) Adhesion. Adhesion is the ability of two substances to bond to each other through physical and chemical interactions. Adhesion has an important influence on the adhesion of graphene conductive ink on the substrate. If the ink adhesion is not good, it will be difficult to form a uniform and strong film on the substrate, which will affect the film formation of the ink and the square resistance [22, 23].

3. Application Experiment of Digital Painting Technology in Graphene Oil Painting

3.1. Preparation of Graphene Conductive Ink. Before the digital painting technology experiment, the experimental raw materials must be prepared, and the raw material for this experiment is the graphene conductive ink used for printing. Using graphene as a conductive filler to prepare conductive inks for printing and preparation of conductive devices can make up for the current poor conductivity of inorganic nonmetallic conductive inks. In this experiment, the influence of ink solvent, binder system, and conductive filler content on the performance of the ink was discussed, so as to determine and prepare graphene conductive ink with good performance.

3.1.1. Experimental Materials. The materials selected in this experiment are shown in Table 1:

Table 1: Experimental materials.

Name	Attribute
Graphene	Conductive filler
Ethanol	Solvent
Glycol	Solvent
Glycerol	Solvent
Polyurethane system binder	Vehicle
760	Dispersant
810	Defoamer

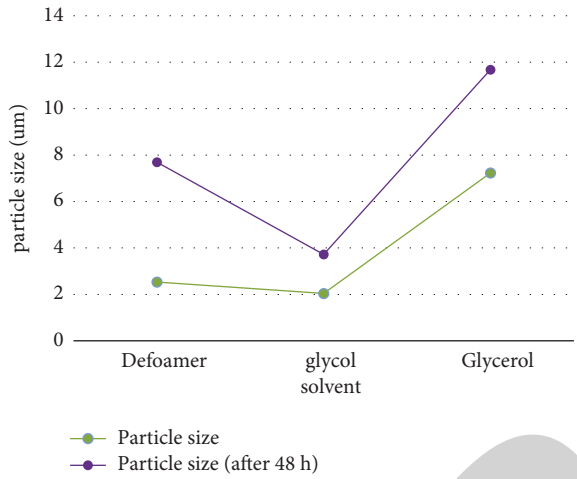

Figure 5: The particle size change graph of the dispersion.

3.1.2. Experimental Process

(1) Preparation of Graphene Dispersion. Considering the hydrophobicity of graphene, ethanol, ethylene glycol, and glycerol were selected as solvents, respectively. 10 g of graphene was weighed, it was added to 20 mL of solvent, placed on an electric stirrer, stirred and dispersed for 60 min, and left to stand at 4°C for 48 h.

(2) Preparation of Graphene Conductive Ink. According to the ink formula, mix the graphene dispersion, the varnish, and additives into a beaker, and place it on an electric mixer for predispersion for 60 minutes. Place it on an electric stirrer and stir for 30 minutes. After stirring, the graphene conductive ink can be obtained, and the ink can be sampled.

3.1.3. Graphene Conductive Ink Performance

(1) The influence of Solvent on the Stability of Graphene Dispersion. The dispersion state of the pigment particles has a decisive effect on the performance of the ink. It determines the color rendering, stability, and film-forming properties of the ink. The particle size test of the graphene dispersion and the dispersion after standing for 48 hours with a laser particle size analyzer is shown in Figure 5.

It can be seen from the above that the stability of dispersions prepared with different solvents is different, and the greater viscosity of glycerol itself has a certain impact on the dispersibility of the dispersion. The particle size of the graphene dispersion prepared with ethylene glycol is relatively small, and the change in the particle size of the solution is minimal after standing for 48 hours. Therefore, when preparing the base ink, we use a graphene dispersion prepared with ethylene glycol to improve the performance of the ink.

(2) The Influence of Graphene Content on the Film-Forming Properties and Conductivity of Conductive Inks. Graphene is the conductive filler of the ink. Its substance fraction greatly affects the conductivity of the ink, and at the same time indirectly affects the dispersion stability and film-forming properties of the ink. Therefore, the determination of the appropriate amount ratio of graphene ink system can ensure that the ink achieves the best performance to a certain extent. By changing the ratio of the graphene ink system for grinding and dispersing, the influence of different material fractions of graphene on the apparent film-forming and conductivity of graphene conductive ink is discussed. Based on this, five conductive inks were manufactured, and the performance of the five inks was tested and calculated. The performances are shown in Table 2 and Figure 6.

It can be seen that as the content of conductive filler increases, the conductive phase in the ink increases, the sheet resistance of the graphene conductive ink gradually decreases, and the conductivity increases. The binder can improve the dispersion state of the filler in the ink system. It can be seen from Table 2 that when the mass fraction of the ink filler is 57.14%, the apparent film-forming property of the ink does not expect the conductivity to increase with the increase of the filler. This shows that with the increase of conductive fillers, the proportion of the binder in the ink system decreases, and the binder cannot achieve a good dispersion effect. Therefore, when the graphene mass fraction is 37.5%, the overall performance is relatively good.

3.1.4. The Performance of the Developed Ink.

The graphene conductive ink obtained according to the final formula is proofed on the proofing machine, and the performance test of the ink and the proof is performed to obtain the data shown in Table 3.

Experiments have found that using ethylene glycol as a solvent and a polyurethane binder system as a binder. According to this formula, when the mass fraction of graphene is 37.5%, the conductivity and apparent film-forming properties of the conductive ink are relatively best, and the sheet resistance is 38.5Ω, which is suitable for printing.

3.2. Oil Painting Experiment Based on Digital Technology

3.2.1. Painting Hardware Design.

The digital tablet adopts the graphics king Q620M digital tablet with a pressure sensitivity level of 8912. The layout is a large panel, the reading speed can reach 266 points per second, and the reading resolution is 5080LPI. The computer uses a Dell desktop computer with a 21.5-inch LED display, and the

Table 2: Performance table of five inks.

Number	Mass fraction of conductive filler	Block resistance
1	14.38	71.3
2	16.76	66.1
3	28.75	54.2
4	38.24	41.8
5	56.91	38.5

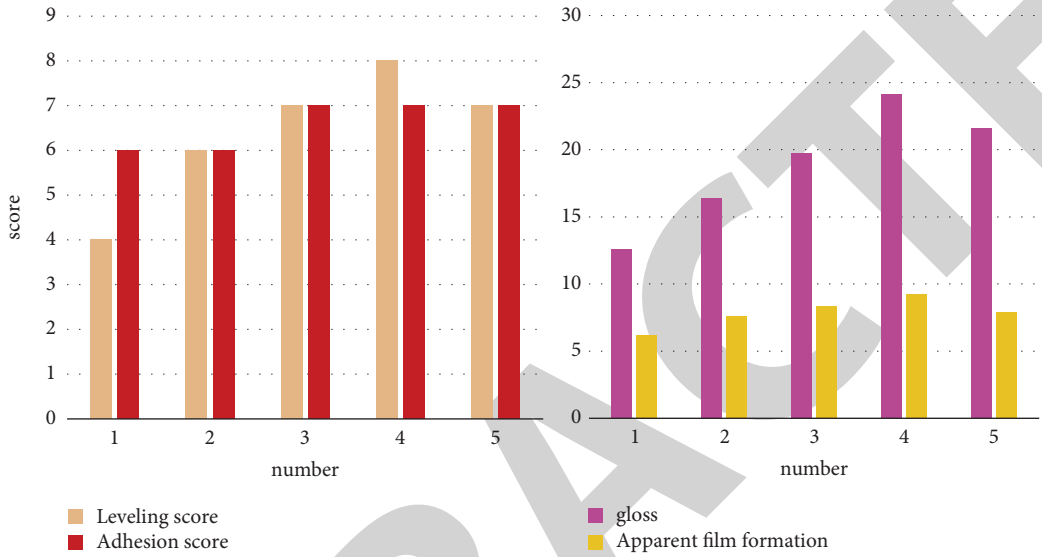

Figure 6: Ink performance under different graphene content.

Table 3: Properties of developed ink.

Block resistance	Gloss	Block resistance	Adhesion score	Surface tension	Viscosity
38.4	22	6	7	32.95	0.17
37.7	21	5	6	31.34	0.14
37.2	20	5	6	31.04	0.13

CPU model is i7-8700, which is used to calculate and send data in the painting. The tablet is connected to the computer to complete the hardware design.

3.2.2. Design of Painting Process. When painting through Corel Painter 2022 software, you can feel that this is a top painting software, and the software has a friendly user interface. It allows users to create custom brushes, color palettes, and workspace layouts, as well as faster tool switching functions to bring users a better painting experience. Paint on this software, and then print with the graphene conductive ink prepared before to complete the painting.

3.2.3. Satisfaction Survey Results. We invited ten painters with computer oil painting experience, let them use the hardware, software, and ink designed in the experiment to complete a simple oil painting. Then give a score for their usual digital oil painting experience and the painting

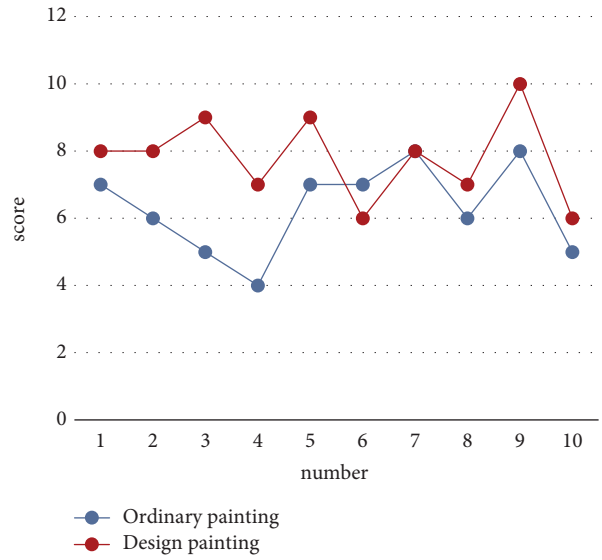

Figure 7: Two system notes reaction time.

experience in this experiment, and make a satisfaction score. These ten painters were numbered from 1 to 10. Figure 7 shows the results of satisfaction ratings.

It can be seen from the above that painters' ratings for ordinary digital painting experience are generally lower than the painting experience in this experiment. For the ordinary digital painting experience, the painter's average satisfaction rate is 6.3, and for the painting system designed in this experiment, the painter's average painting satisfaction rate is 7.8. In summary, the design process in this experiment made the painter more satisfied, with an average of 1.5 points per person.

4. Discussion

Modern people not only perceive endless natural textures in all things in nature, but also constantly create new texture aesthetics. Materials are an indispensable and important element for the final visual performance of space. In fact, artistic creation is an innovation process that not only inherits tradition, but also continuously absorbs and draws on new achievements of human civilization. With the rapid development of society, cultural exchanges between the East and the West have become more frequent, making it impossible for any artist to deny that every innovation and progress in the field of culture and science and technology has brought new ideas and creations of artistic concepts and works of art. In addition to the exploration of production techniques, modern oil painting creation requires the highest purpose of adhering to freedom and surpassing this art. People must continue to introduce the old and bring forth the new, adopt a diversified and open attitude towards advanced culture, let advanced technology be used for their own use, and create exquisite works.

5. Conclusion

This article discusses the research of digital painting technology in the creation of graphene oil paintings, introduces a series of methods that digital technology is used in painting, and introduces the preparation methods of graphene ink used in digital painting technology. Finally, a graphene ink with good performance was prepared, and a reasonable digital painting process was designed, and detailed as follows: (1) The image preprocessing, composition, and segmentation functions in digital painting technology are introduced. (2) The preparation method of graphene graphite for printing is introduced, and good performance graphite is prepared through experiments. It shows that when ethylene glycol is used as the solvent and the graphene mass fraction is 37.5%, the performance of the ink is relatively best. (3) A digital painting system is designed, including computer hardware and painting process, invited painters to participate and compare their usual painting experience. It was concluded that the painting process of this experimental design made the painters more satisfied, with an average of 1.5 points per person. However, there are no more methods for the preparation of graphene ink in the creation of graphene oil paintings by digital painting technology.

Data Availability

No data were used to support this study.

Conflicts of Interest

There is no potential conflicts of interest in this study.

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