Research on the Strategy and Visual Expression of Clor Semantics in High-end Brand Image Building

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Abstract: In view of the important role of color in high-end brand image shaping, from the strategic choice of color semantics and visual expression of two aspects, the use of color visual perception and color imagery, under the principle of color reconciliation, matching ratio calculation. Based on Prachik color emotion as well as cultural and emotional expression characteristics, the color emotion space is constructed. Through the relationship between the main color of the image and the color emotional space, the visual feeling of the brand color, the association design of color and emotion were analyzed. Visual technology and Gaussian difference analysis are introduced to identify the key elements and color distribution in the image, and fuzzy hierarchical analysis is used to complete the assessment of the expressive power of the visual design of high-end brand image, and analyze and validate the effect of color text emotion retrieval, with a high checking rate of 94.23%, an F1 value of 93.03%, and the highest frame rate of the visual perception assessment of 0.8035. There is a high degree of correlation between the color features of each high-end brand and the semantics of the brand image. brand image semantics have a highly correlated relationship, the mean value of correlation is 90, and the visual design has a significant impact on the brand image influence degree, the mean value is 87.64. This study emphasizes the key role of color in brand image shaping, and it will also provide useful insights and guidance for each brand enterprise in the field of design.
Keywords: Premium Brand Image; Visual Perception; Color Imagery; Prachik Colors; Fuzzy Hierarchy Analysis

1. INTRODUCTION

In today's highly competitive market environment, brand image has become an important part of the core competitiveness of enterprises (Hien et al., 2020). Brand image is not only related to the quality perception of

products or services, but also involves the overall impression and emotional connection of consumers to the brand (Liu et al., 2020). Among the many elements of branding, color, as a visual language, always carries rich cultural connotation and emotional expression. Color is not only the basis of visual perception, but also an important means of emotional transmission and identity (Khudobina et al.; Kopyriulina, 2021). Especially in high-end brand image shaping, it not only influences consumers' first impression of the brand, but also profoundly shapes the brand's unique temperament and market positioning. Similarly, visual expression is also indispensable, high-end brands through clever visual expression methods to create a unique brand atmosphere and visual impact, this visual expression not only enhances the brand recognition, but also in the subtle influence on the consumer's purchase decision (Aribarg & Schwartz, 2020). In recent years, with the intensification of brand competition and the improvement of consumers' aesthetic level, the role of color in brand image design has become more and more prominent, and a number of scholars have carried out in-depth research in this field. Azzahira, S et al. analyzed the impact of several factors on the brand image of Gojek Indonesia, including logo shape, logo color, typography, and quality of service. Gojek chooses colors that evoke positive emotions, such as warm, comforting tones, to enhance consumer love and loyalty to the brand. Incorporating unique color combinations can help a brand stand out from the crowd of competitors and improve brand recognition and recall (Azzahira & Dirgantara, 2021). Wang, F collected these women's color preferences through an extensive questionnaire survey focusing on their psychological characteristics and perceived rules of emotional needs for color. Colors were extracted from the samples and classified using the NCD system research method. The color preferences and image positioning of different female groups were accurately discovered to establish a color reference system suitable for beauty product packaging (Wang et al., 2021). César Machado, J et al. selected 260 participants and analyzed that dark blue and light pink colors enhance femininity. The main study investigated the moderating role of color in merchandise design to provide practical know solutions for logo design (César Machado et al., 2021). Zhang, X et al. used a combination of grey theory and perceptual engineering to mine the macro and micro factors in the product color design decision-making process based on the product color brand image. It can guide the product color design, comprehensively and quickly meet the emotional needs of users, and improve the accuracy of product color design elements and brand image correlation mining (Zhang et al., 2020). In color semantic analysis

methods, with the continuous development of big data and algorithmic technology, many scholars have achieved remarkable results in the field of color semantic analysis. Ibrahim, D et al. proposed a color image processing method based on (2,2) secret sharing and gave the Harris Hawkes optimization algorithm. For the encryption process, appropriate color levels are determined using the HHO algorithm and the relationship between features and packet colors is revealed by a big data analysis algorithm (Ibrahim et al., 2023). WU, L et al. extracted the low level features and high level features of the foreground portion using foreground network. An image coloring algorithm based on foreground semantic information was proposed to improve the image coloring effect to achieve natural overall image color and rich content color (WU et al., 2021). Jonauskaite, D et al. used machine learning algorithms to compute the association between color and emotion to investigate further theoretical and empirical issues that mainly explain emotional properties (Jonauskaite, Abu-Akel, et al., 2020). This study aims to explore the strategy and application of color semantics in high-end brand image building, and how to effectively convey brand values and enhance brand image through visual expression. Based on the study of color psychology and the Plutchik Color Emotion Model, it explores how different colors are associated with a specific brand image, and realizes the association between image color and emotional semantics. In addition, advanced visual perception technology is introduced, combined with Gaussian difference analysis, to extract key visual elements in the brand image and optimize their performance. Finally, an assessment model of brand image design expressiveness was established using fuzzy hierarchical analysis. The correlation between color and brand emotional expression is explored through color text emotion retrieval. Meanwhile, the assessment of visual perception of high-end brand image is verified to analyze the role of color usage in enhancing the aesthetics and cognition of brand image.

2. SEMANTIC ANALYSIS OF COLOR IN EMOTIONAL EXPRESSION OF BRAND IMAGE

2.1 Calculation of the Visual Perception of Color Selection

For high-end brand products, high-end image is the most important quality that users and buyers look for. In order to be able to meet the psychological feelings and intuition of the color chooser, the method of color gradient is used to represent the different brightness and purity of

colors under a certain hue. Gradient color changes the stimulus of the color in equal or proportional order, so that a certain attribute changes from small to large or vice versa in a stepwise manner from large to small (Qin et al., 2024). This gradual color change can make people's eyes naturally move from one end to the other, and this gradual change is in line with the most direct visual perception of people's color selection.

2.1.1 Variations in Purity, Intensity and Lightness of Colors

The feeling of color intensity is mainly affected by the purity, so set the purity as the parameter of color intensity and lightness. Let the color purity of a certain hue be C_i, N is the number of gradient colors. Then the color purity C_i of the gradient is calculated as:

$$C_i = 100 - (i-1) \times 100/N \quad (1)$$

of these, $1 \leq i \leq N$.

2.1.2 Changes in Brightness, Light and Dark Colors

The perception of the brightness and darkness of a color is mainly affected by the brightness of the color, so set the brightness as the parameter for the brightness and darkness of the color. Let the color luminance of a certain hue be L_i, and N be the number of colors in the gradient. Then the color brightness L_i of the gradient is calculated as:

$$L_i = 100 - (i-1) \times 100/N \quad (2)$$

2.1.3 Cool and Warm Colors

In the study of color semantics of high-end brand image shaping, color warmth and coolness are not only visual expressions, but also important carriers of brand emotions and values (Jeon & Nam, 2018). Orange-red is known as the warm pole in the color system, conveying a warm and energetic brand atmosphere. Sky blue, on the other hand, with its cold and noble image, in order to represent the cold pole, giving the brand a calm and image. Cold pole and warm pole are used to delineate the degree of warmth and coldness of some other colors on the color dichotomy of branding. To further explore, the contrast between white and black has the same profound significance in the construction of high-end brands. White, with its pure and flawless appearance, is often associated with elegant and simple brand image, conveying a calm and high-end atmosphere. Black, on the other hand, with its depth and inclusiveness, has become a symbol of luxury and classic, adding a touch of mystery and dignity to the brand. Meanwhile, in terms of the purity attributes of colors, the higher the purity,

the stronger the sense of warmth. High purity color with its distinctive personality, strengthen the brand recognition and memory points, such as red enthusiasm, dark blue steady. Light blue can bring a cooler feeling than dark blue, and red conveys a warmer feeling than pink. Therefore, in high-end brand image building, accurately grasping the semantics of color and skillfully using the emotional power of color are crucial to building a unique and attractive brand personality. Figure 1 shows the cold and warm of the color, in the algorithm, the cold and warm poles correspond to hue angles of 30° and 210°. If the selected color is close to the warm pole, the cold pole is used as the starting point and the hue of the selected color as the end point. Otherwise the reverse is true, and the order of the gradient is the direction of the smaller angle between the two endpoints. In addition, the numbering of purity C and lightness L are taken into account, so that the values of the warm and cold gradient colors can be obtained.

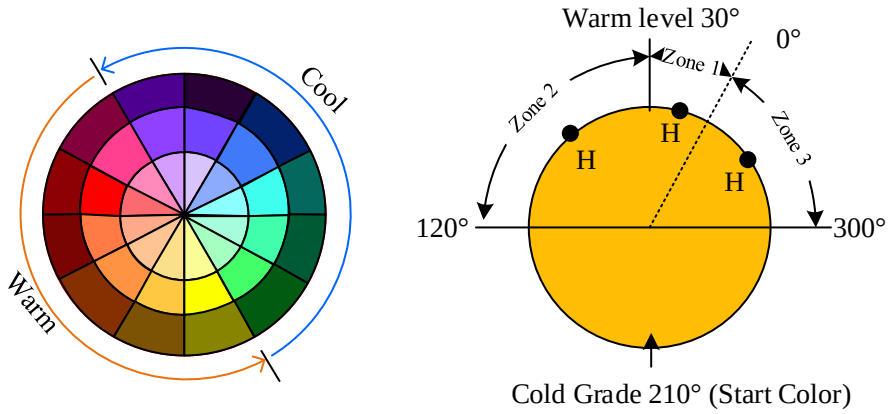


Figure 1: Cool and warm colors

Let the hue of the selected color be H, the purity, lightness and hue of the gradient color be C_i, L_i, H_i, and H_i be the number of gradient colors. When the angle of H from the warm pole is small, H_i is calculated as in Eq:

$$\begin{cases} H_i = 210 + i \times 150 + H/N & 0 \le H \le 30 \\ H_i = 210 - i \times 210 + H/N & 30 \le H \le 210 \ or \ 210 \le H \le 360 \end{cases} \quad (3)$$

When the angle of H from the cold pole is small, H_i is calculated as in Eq:

$$\begin{cases} H_i = 210 + i \times 150 + H/N & 0 \le H \le 30 \\ H_i = 210 - i \times 210 + H/N & 30 \le H \le 210 \ or \ 210 \le H \le 360 \end{cases} \quad (4)$$

2.2 Color Emotion Semantic Association Design

2.2.1 Color Quantitative Design

In order to improve the computational efficiency of this paper on the

HSV color space quantization, color quantization can be used uniform quantization algorithm and non-uniform quantization algorithm is a common two types of quantization algorithms for HSV color space. Uniform quantization algorithm is to divide the HSV color space in H, S, V three components at equal intervals. This paper uses a non-uniform quantization algorithm, which is a quantization algorithm that mainly refers to human visual perception and thus performs a non-equal interval division of each component of the color (Yu et al., 2023). The more commonly used non-uniform quantization algorithm quantizes H hues into 7 parts, and the quantization formula is:

$$H = \begin{cases} 0\ if\ \ h \in 330,22 \\ 1if\ \ h \in 22,45 \\ 2if\ \ h \in 45,70 \\ 3if\ \ h \in 70,155 \\ 4if\ \ h \in 155,186 \\ 5if\ \ h \in 186,278 \\ 6f\ \ h \in 278,330 \end{cases} \quad (5)$$

The color quantization is based on the Plutchik model of color classification, in which hue H is quantized into 6 copies, and the 0 interval of the latter H contains the 0 and 1 intervals of the former, which is designed not only because of the crossover nature of the emotions but also because it makes full use of the principle of the three primary colors and their complements. The same algorithm as commonly used is used for quantifying luminance V. When $v < 0.2$, the human eye sees the color as black. When $v > 0.7$, the human eye sees white, in both cases ignoring the effects of H and S (Fukuda et al., 2020). Therefore the quantization formula for V is:

$$V = \begin{cases} 0\ if\ \ v \in 0.2,0.7 \\ 1\ if\ \ v \in 0.7,1 \end{cases} \quad (6)$$

The quantization for S -component saturation is when $s < 0.2$, the effect of H is ignored and visually seen as a grayscale image, and when $s > 0.2$ to quantize as:

$$0\ if\ \ v \in 0.2,0.7\ 1\ if\ \ v \in 0.7,1 \quad (7)$$

Combine the three components into a one-dimensional feature vector:

$$G = HQ_sQ_v + SQ_v + V \quad (8)$$

Where Q_s and Q_v are the quantization levels of components S and V, respectively, so bring in $Q_s = 2, Q_v = 2$ and compute G as a 2D histogram

of 24 bin. The HSV color space is quantized into 24 different spaces, and then each pixel on the image is traversed for its HSV values and mapping them to the corresponding spatial regions at the same time yields the color feature histogram of the image.

2.2.2 Color and Emotional Association Design

Since different colors have different natural-emotional, socio-emotional and artistic-emotional properties, the emotional semantic pool of colors revolves around the emotional semantics of colors in psychology (Jonauskaite, Parraga, et al., 2020). Based on the use of Plutchik's model, the selection of appropriate colors in high-end brand image design is crucial for conveying the values and atmosphere of the brand. Table 1 shows the color emotional space of high-end brand image, and these colors and their emotional space can provide designers with a strong reference to help create visual elements that match the brand image and positioning.

Table 1: Color emotional space of high-end brand image

Color	H	S	V	Emotional Expression
Gray		S<0.2	0.2-0.7	Steady, simple and modern, conveying professionalism and technology sense
White			V>0.7	Pure, simple and elegant, conveying a sense of nature and high class
Black			V<0.2	Mysterious, elegant and authoritative, conveying a sense of luxury and nobility.
Red		0.2-0.65	0.2-0.7	Enthusiasm, vigor and passion, often used to convey strength and love.
Yellow				Bright, happy and lively, conveying a sense of warmth and sunshine.
Magenta	270-335			Gentle, romantic and feminine, conveying a sense of softness and coziness.
Green	75-150			Natural, vibrant and healthy, conveying environmental protection and ecological awareness.
Cyan	150-185			Fresh, quiet and peaceful, conveying a sense of freshness and freedom
Blue	185-270			Stable, trustful and professional, conveying a sense of security and reliability.

Figure 2 shows the color sentiment semantic association E-R, the dominant color of an image, the image is considered as a one-dimensional entity with attributes such as image name, image path, and dominant color,

indicating that each image can be associated to one or more sentiment semantics. Each image is associated with a primary color that is associated with a sentiment word ID, indicating that each color can be associated with one or more sentiment words. The color-emotion space also establishes a direct link between color and emotion through the association of color IDs with emotion word IDs, forming a mapping path from image to emotion. By obtaining the dominant color of an image, its color attributes are determined, and then its color is linked to the emotion semantics (Papazian, 2021).

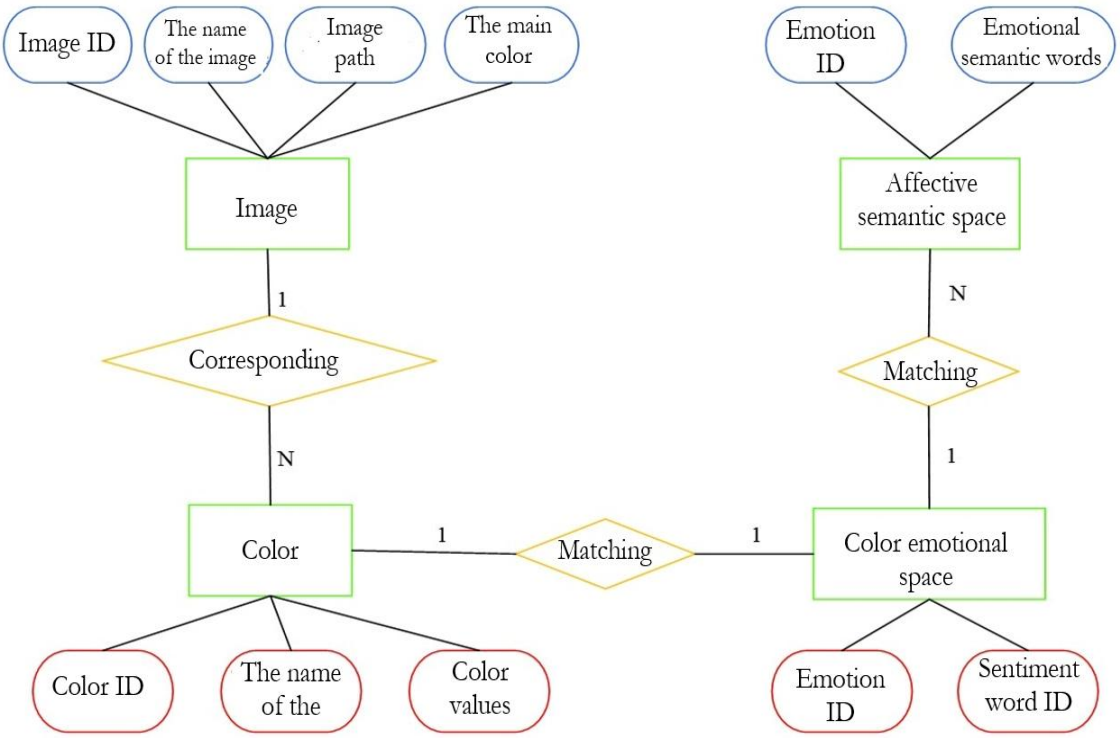


Figure 2: Color Emotion Semantic Association E-R

3. EVALUATION OF BRAND IMAGE DESIGN BASED ON VISUAL PERCEPTION

3.1 Visual Presentation Design Elements

Brand image design advertisement is a visual image presented in a certain form by the designer through the relevant needs of the puter, in order to ensure the scientific nature of this design method, before launching the evaluation, the brand image design advertisement design performance elements acquisition work was carried out (Faraoni, 2021). Through the results of the study of brand image design advertisement design standards, the visual performance elements of brand image design advertisement are shown in Table 2. The brand image design advertisement reflects the

expressive power of the advertisement through the above elements, integrates the above elements organically, and reflects the design results of the brand image design advertisement through the arrangement of the picture information, creativity, and the use of the concept of interactivity. In this evaluation method of expressiveness, the above elements are used as the basis of evaluation to enhance the scope of the index system of the evaluation method.

Table 2: Elements of visual presentation of brand image design advertisements

Target Layer	Elements of Expression	Detailed Indicators
Brand image design advertising visual perception elements	Elements of Graphic Expression	Dynamic image references
		Blurred representation
		Asymmetric representation of images
		Irregular space of the plane
		Homomorphic isomorphic structure
		Heteromorphic isomorphic structure
	Color elements	The meaning of color
		The decorative nature of color
		Contrast of colors
		The unity of color tones
		Local color echoes
		Contrast of color brightness
	Textual elements	Interactivity of text
		Arrangement of text
		Graphic forms of text
		Positioning of text

3.2 Multiscale Gaussian Difference Visual Perception Enhancement

In this design, visual perception technology is used to complete the data enhancement of the advertisement image. In order to ensure that the design method is more in line with the requirements of visual perception of the human eye, the computational model of visual perception is used to assess the expressiveness of the brand image design advertisement, and the multi-scale decomposition and reorganization of the advertisement is shown in Figure 3. Inspired by the visual perception technology, a multi-scale Gaussian difference model is used to simulate binocular visual behavior and obtain the brand image design advertisement results. The above model is represented by DOG, which is applied to simulate the processing of advertisements from the human eye to the brain nerves, and DOG decomposition is performed for each element in the advertisement.

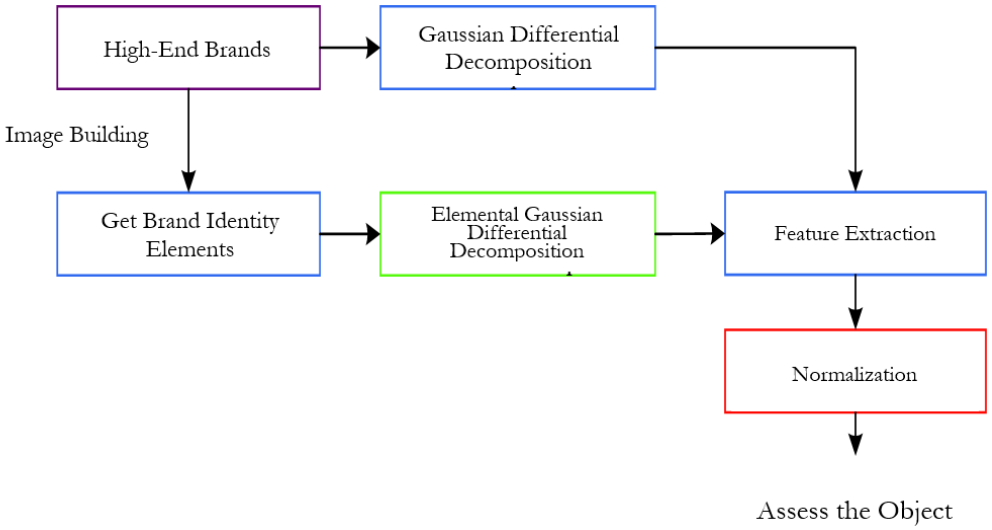


Figure 3: Multi-scale decomposition and reorganization of advertisements

Setting the Gaussian corresponding difference in this model with two different standard deviations is specified as Eq:

$$DOG_{g1*g2}[a] = \Delta G_{g1}[a] - \Delta G_{g2}[a] \quad (9)$$

where $G_{g1}[a]$ is a Gaussian function with a standard deviation of $g1$, the subband of the image can be expressed as:

$$IDOG_{g1*g2}[a] = I * \left(G_{g1}[a] - G_{g2}[a]\right) \quad (10)$$

The brand image design advertisement is decomposed into the form of multiple sub-bands, and the Gaussian corresponding standard deviation is set in order to ensure the validity of the setting (Han & Moghaddam, 2021). As in Eq:

$$g1 = k^{i-1} \quad (11)$$

where k denotes the frequency band in the subband, and a multiscale decomposition of ad A gives:

$$A_{DOG} = \begin{cases} A * \left(g - G_{g1}\right) = A_{G0} - A_{G1} \\ A * \left(G_{g1} - G_{g1+i}\right) = A_{G1} - A_{G1+i} \\ A * G_{g1} = AG_{g1} \end{cases} \quad (12)$$

Decomposing the brand image design advertisement into the basic architecture of the retinal visual perception field of view, and after that, restructuring the decomposed image using the DOG model, the original signal of the decomposed advertisement can be expressed as:

$$A = A_{G0} + A_{G1} = A_{DOG0} + A_{DOG1} + A_{DOG2} = \sum_{i=0}^{N-1} A_{DOGi} \quad (13)$$

The enhanced image component superposition is equal to the original image, and the DOG model does not cause the original brand image design advertisement image to be missing.

3.2 Assessment of the Expressive Power of Brand Image Design Advertising Design

Cite the fuzzy hierarchical evaluation method to construct the assessment model of brand image design advertisement design expressiveness, and get the assessment results of brand image design advertisement design expressiveness. Set the above elements as the evaluation indexes used in the evaluation, and set the weights of the evaluation indexes. Embodying the assessment indicators in the form of indicator sets, expressed as Q, there are $Q = [q_1, q_2, q_3, \cdots, q_n]$. Setting the evaluation level expressed as set P, there are $P = \{p_1, p_2, p_3, \cdots, p_n\}$ (Jiang et al., 2024). Using the fuzzy hierarchical evaluation method to calculate the weights of the assessment indicators, the content of the indicators contained in the brand image design advertisements corresponds to the calculation in turn, and the results of the calculation are organized into a comment set, and the set of comments is set to be 5, and the indicator factors in the comment set are expressed as $R = \{R_1, R_2, R_3, \cdots, R_n\}$ kinds of evaluation results of the visual expression of very good, good, average, poor, and very poor. The indicators in the rubric set are regarded as a vector and their values are assigned (Han & Han, 2021). The corresponding model for evaluating the expressiveness of brand image design advertisements can be derived E. The formulas are as follows:

$$E = \begin{bmatrix} E_1 \\ E_2 \\ \cdots \\ E_m \end{bmatrix} = \begin{bmatrix} e_{11} & e_{12} & \cdots & e_{1n} \\ e_{21} & e_{22} & \cdots & e_{2n} \\ \cdots & \cdots & \cdots & \cdots \\ e_{m1} & e_{m2} & \cdots & e_{mn} \end{bmatrix} \quad (14)$$

Where e_{mn} is the degree of affiliation of level m rubrics to the nrd indicator. The corresponding values are obtained, and the assessment results can be obtained by comparing with the assigned values of the rubric set, which completes the design of the assessment method of visual perception of the expressiveness of the brand image design advertisement design.

4. ANALYSIS OF STRATEGIES AND VISUAL EXPRESSIONS OF COLOR SEMANTICS

4.1 Color Text Emotion Retrieval Effect

In order to verify the accuracy of the color semantic association method in this paper, a test was carried out to test whether the color information can enhance the recognition effect of the textual emotion of brand image.

The retrieval effect of the model is tested using the test set, and key indexes such as check accuracy rate, check completeness rate, and F1 value are recorded, and Fig. 4 shows the results of brand image emotion semantic retrieval. In terms of the search rate, the performance of each color is relatively excellent, in which the search rate of yellow with the emotional semantics of enthusiasm, vitality, and passion is the highest, reaching 94.23%, and the search rate of grey with the emotional semantics of stability, simplicity, and modernity reaches 90.12%, which indicates that the system is capable of identifying the emotional semantics of the brand image in these two colors. Other colors also have relatively high recognition rates, all exceeding 93%. In terms of the check accuracy rate, the performance of each color is relatively more scattered. Red has a 76.57% percent search rate for the emotional semantics of enthusiasm, vigor, and passion, meaning that a high percentage of all relevant results were successfully retrieved. The F1 values give a more comprehensive assessment. In terms of F1 values, yellow still performs best with 93.03% of the semantic terms for bright, happy, lively emotions, indicating that yellow is a relatively clear and commonly used choice for expressing happy, lively emotions. Gray's F1 value of 90.02% is also at a high level, is for colors such as yellow and grey have a better ability to identify the emotional semantics of brand image. Overall, the retrieval results for all colors remain at a high level, indicating that the experiment achieved good results in brand image emotion semantic retrieval.

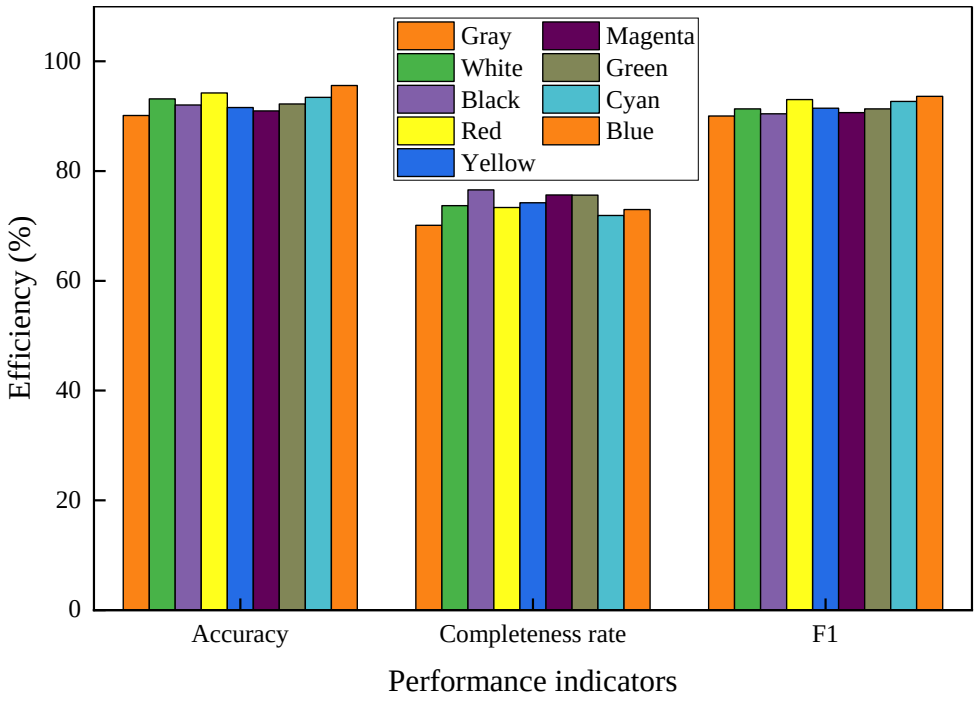


Figure 4: Brand image emotional semantic retrieval results

4.2 Validation of Visual Perception Assessment of High-End Brand Image

4.2.1 Aesthetic Accuracy

The comparison of the aesthetic accuracy of visual perception is shown in Fig. 5, which is analyzed using SIFT algorithm, SURF algorithm, YOLO algorithm, HOG algorithm and DOG algorithm of this paper for comparison. The method of this paper can effectively capture the edge information in the images of high-end brands by calculating the difference between the images after Gaussian filtering at two different scales. It makes the edges more clear and obvious. In the pre iteration is, the frame rate FPS of this paper's method is slightly higher than other methods, the difference is negligible, in the iteration number of 152000, the FPS of this paper's method reaches 0.8035, far more than other methods, and it can quickly and accurately capture the key features in the visual perception of high-end brand image, so as to improve the evaluation of the aesthetic accuracy. When the iterative transmission is 30000, the frame rate of SURF accelerated robust feature algorithm reaches 0.8014, YouOnlyLookOnce algorithm, or YOLO for short, the frame rate reaches 0.79921, the frame rate of HOG directional gradient histogram algorithm reaches 0.79805, and the frame rate of SIFT scale-invariant feature transformation algorithm reaches 0.79254, and the method of this paper remains higher than the other methods, while the others though focus on the edge and texture information of the image. However, it is not as effective as this paper's method in constructing global feature descriptors for the visual perception of high-end brand image. This paper's method performs well in the comparison of aesthetic accuracy of visual perception of high-end brand image, and its high accuracy makes it able to quickly and accurately capture the key features in practical applications, which improves the evaluation of aesthetic accuracy.

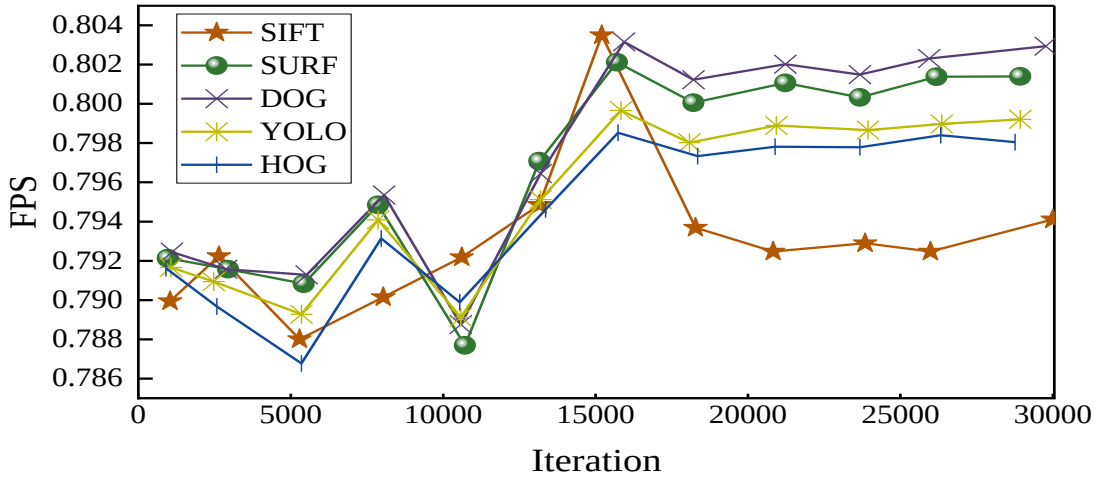
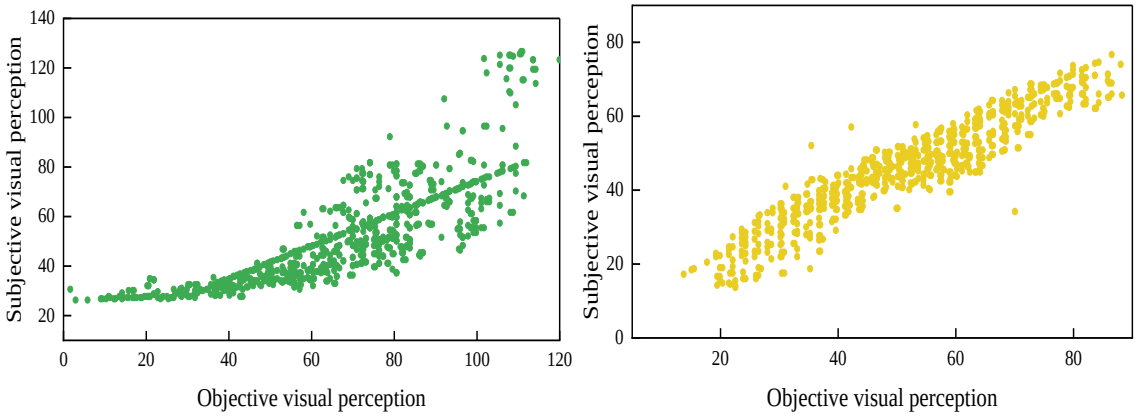


Figure 5: Comparison of aesthetic accuracy of visual perception

4.2.2 Visual perception assessment

In the experiment, a set of brand image design advertisement design images with different degrees of distortion were selected. In order to verify the effectiveness of the method, and the objective visual perception assessment scores were compared with the subjective visual perception scores. Figure 6 shows the objective visual perception and subjective visual perception, the original test as shown in Figure 6(a), the distribution of points is more dispersed, the objective assessment scores of the images may only be 60. But the subjective perception scores are between 20-80, this inconsistency shows the limitations of the original method in assessing the images of the brand image design, which indicates that there is a large discrepancy between the objective assessment of the original test method and subjective perception. Compared with the original test, the method test of this paper is shown in Fig. 6(b), and the consistency between the assessment values of the proposed objective assessment algorithm and the subjective values is better and more centralized. For example, when the subjective perception score is 50, the objective assessment score is also mostly concentrated between 40-52, which is robust to different distortion levels and different distortion types, and can be a good way to assess the objective perception quality of visual brand image design advertising design.



(a) Raw testing **(b)** Testing of the methodology of this paper

Figure 6: Objective and subjective visual perception

4.3 Color Semantics Associated with Visual Expression of High-End Brand Image

Table 3 shows the influence of color semantics and visual design on brand image, and it can be seen that there is a high degree of correlation between the color characteristics of each brand and the brand image semantics. For example, Tiffany's blue hue is closely linked to its romantic,

elegant and high-end brand image, and this unique blue color is closely linked to the brand name, with a model score of up to 95. The Chanel brand, with black and white as its main colors, shows an elegant, noble and classic brand image, with a model score of up to 92, and the other high-end brands' color features have a semantic correlation score of more than 85. The visual expression assessment shows that the color and visual design of each high-end brand has a significant impact on the brand image. Apple's simple white and silver design enhances its brand image of technology, simplicity and high-end, with a model score of 90. Hermès' orange color palette conveys a unique, noble and elegant brand image, with a model score of 92.

Burberry's classic beige plaid conveys a high-end brand image that combines tradition and modernity, with a model score of 91. The impacts of other high-end brands' visual design on brand image were all tied at 80 or above. The impact of the other high-end brands visual design on brand image are all above 80 points, the effect is better, user feedback shows that the color design of each brand plays an important role in brand recognition and loyalty. The highest color recognition is 95, and the highest color effect on brand loyalty is 89. There is a highly correlated relationship between the color features of each high-end brand and the semantics of brand image, and color and visual expression have a significant impact on user recognition and loyalty.

Table 3: Influence of color semantics and visual design on brand image

High-End Product	**Main Colors**	**Color Features and Semantic Correlation**	**Degree of Influence of Visual Design on Brand Image**	**User Feedback: Color Recognition (%)**	**User Feedback: Color Impact on Brand Loyalty (%)**
Apple	White, Silver	90	90	90	89
Chanel	Black, White	92	88	88	75
Tiffany&Co.	Tiffany Blue	95	89	95	88
LouisVuitton	Brown, Gold, Beige	87	85	92	80
Hermès	Orange, Brown	90	92	90	73
Gucci	Green, Red	89	80	85	65
Prada	Black, White	90	85	90	80
Cartier	Red, Gold, White	88	85	88	74
Burberry	Beige Plaid	86	91	90	75
Valentino	Red, Gold	85	84	85	69
Fendi	Brown, Gold	88	85	88	70

5. CONCLUSION

This study constructs a color emotion space with textual characteristics and realizes the association between the visual perception of brand color and color emotion semantics. The study further establishes an assessment model of brand image design expressiveness based on visual perception, combining visual Gaussian difference and fuzzy hierarchy method, and analyzes and verifies its validity. In the validation of the visual perception assessment of high-end brand image, the highest frame rate of this paper's method reaches 0.8035. There is a high correlation between the color features and brand image semantics of each brand, with the average value of correlation being 90, and the color and visual design have a significant impact on brand image, user recognition, and loyalty. Among all the high-end brands, Tiffany's color features have the highest semantic correlation of 95, and Apple's color recognition is the highest at 90%, which shows the significant effect of its color design in brand image building. This finding provides strong empirical support for brand color design and visual expression, and is expected to help brand companies better use the language of color, accurately grasp the market dynamics, and shape a unique and attractive brand image.

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