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Design and Shaping of Urban Cultural Image Based on 5G Virtual Reality

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Abstract: *In today's era of rapidly accelerating urbanization, the gap between cities is shrinking day by day, and all aspects of the city are also tending to standardize and internationalize the development track. This article aims to design and shape the urban cultural image based on 5G virtual reality. In this study, Penglai and Nanjing are selected as the research objects. Combined with the 3D image reconstruction algorithm and the virtual reality method of AutoCAD, the cultural buildings of the two cities are analysed, and the data compared with the traditional design under the change of virtual reality technology are analysed combined with the rating opinions of local and foreign tourists. The results show that VR technology is more three-dimensional and immersive in the model design of urban cultural design, with an average score of 4.83, which is higher than the traditional urban image design score of 3.93, and is much higher than the traditional urban image culture design in terms of design suitability, internationalization, culture and novelty. The conclusion is that the virtual reality technology in this study has a good effect on all aspects of urban cultural image design, making the urban cultural image design more modern aesthetic feeling and immersion.*

Keywords: *Virtual Reality; Urban Culture; Image Design; Visual Immersion*

1. Introduction

Under the impact of urbanization, Chinese cities pay more and more attention to the expansion of cultural significance and image trend. The concept of "urban cultural image design" reflecting modern urban civilization has been introduced into urban construction. At present, most cities in China have designed their own city brand image system and explained its outline. In Beijing, Shanghai, Guangzhou and other major cities, in order to find their own unique symbol of light, they have adopted various means to design their own unique image. The emergence of this upsurge shows that China's cities have shifted from the simple East-West in the traditional sense to the cities meeting the needs of life, production and residence, and to the cities with modern artistic and ecological characteristics. Seize the opportunity to realize the quality leap of urban cultural image design.

The urban cultural image design method based on virtual reality technology makes up for the lack of passive observation of traditional image design, and can bring new breakthrough to urban design language. Using the virtual reality technology with the characteristics of simulating real environment and virtual interaction, virtual display Ming style city, experiencing the immersion feeling brought by virtual display of users, improving the richness of display information, real perception, user ability level, has important application value.

In the research of virtual reality technology and urban image design, Dongmei Wu's modern landscape design starts from the local regional cultural characteristics, historical imprints and geographical characteristics. Through the inheritance of urban culture and the shaping of urban image, he can effectively enhance people's cognition and application of urban culture, thus changing people's cognition and application of urban culture. Based on the analysis of the expression meaning of landscape facility culture vocabulary, his research illustrates the application of landscape facility culture vocabulary through examples. His method has many defects [1]. Kourdis E's research scope is the semiotics study of the language, visual and spatial discourse depicted on the commercial signs of Limassol, Cyprus. These symbols use modified linguistic symbols and lengthy cultural copies for commercial communication. Each city's market is a collection of signs, forming the image of the city. His research focuses on the verbal cultural copying words on private signs, which is a special type of communication, but the researchers of business communication have not paid enough attention to it.

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His method lacks big data argument [2]. Kerner m explores new regional and multi-form media forms and re evaluates the cultural and tourism image of the city. His approach focuses on two core technologies: different forms of address and localized language descriptions, especially local deixis. Similar to the basic concept of conversation analysis "recipient design", he chooses the word "space design" to describe language means, so that multimodal text can adapt to the artifact of urban space, thus making an interpretative historical form attached to the space environment and changing the appearance of the city. His method is not practical [3]. Zhang Y proposed a digital image watermarking optimization algorithm based on VR. According to the watermark type and watermark preprocessing method, the watermark type and preprocessing method are determined, and the optimized algorithm is adopted. At the same time, the embedding, extracting rules and initial steps of digital watermarking are selected and recognized. His algorithm is not stable [4].

This paper first introduces the city culture and city image, then describes the characteristics of virtual reality technology and immersive virtual reality technology in detail, and explains the 3D image reconstruction algorithm of this study. This study also explains the value of virtual reality technology in the design and shaping of city image. In this study, Penglai and Nanjing are selected as the research objects. Combined with the virtual reality method of AutoCAD, the data of urban design in the two cities compared with the traditional design under the change of virtual reality technology are analyzed through the rating opinions of local and foreign tourists. And carries on the architectural design image analysis and the VR technology under the city image design analysis. It is concluded that the virtual reality technology brings advantages to the design of urban cultural image.

2. Virtual Reality Technology And Urban Cultural Image Design

2.1 City Culture and City Image

(1) Culture is the soul of a city

Culture is the spiritual wealth of developing countries and countries. The unique urban culture with a long history is the charm of a city. Chengdu is located in the Minjiang River Basin of the upper reaches of the Yangtze River in Western China. The name of Chengdu, the capital of Zhou civilization, is set as long as one year, two years as city and three years as Chengdu ". This name reflects the formation and development of ancient Chinese cities. Chengdu is a famous cultural city with a long history. It not only has unique cultural resources, but also has a global cultural space protection and display system. It has constructed a pattern of "one ring, two axes, four lines and five regions". Economy is the power of modern city, landscape is the image of modern city, culture is the soul of modern city. Only a city with rich cultural connotation and strong development potential is a city full of infinite charm and vitality [5-6].

(2) Culture is the core competitiveness of a city

There are many factors that determine the competitiveness of a city. It's cultural solidarity. The main purpose of urban culture is to promote a high level of culture, improve the sense of belonging and identity of citizens, and enhance the unity and charm of the city. The second is cultural aspiration. The human ecology, human resources, values and actions of the city should be taken to optimize and preserve the urban lifestyle, promote the urban spirit, and promote the development of urban modernization through cultural guidance. The third is cultural innovation. It mainly refers to the driving force and influence of culture on economic and social development. As a world-famous cultural city and the core area of Asian hinterland cultural city, Chengdu has formed the cultural characteristics of relaxed, peaceful, optimistic, leisurely and beautiful life under the inheritance of Oriental Confucian culture. Chengdu has rich traditional cultural resources, such as Ancient Suzhou culture, water culture, Sichuan cuisine culture, trade culture, poetry culture, Three Kingdoms culture, folk culture, etc. In 2018, Chengdu put forward the slogan of innovating modern culture, promoting the innovative development and innovation reform of Tianfu culture, and building a "cultural creative city" emphasizing the characteristics of Chengdu and music culture [7].

(3) Culture is the core of city image

From the overall trend, the development of modern culture is urbanization. In the process of urban development, the city in its own way to condense the cultural unity of residents and establish its own image. City image can be said to be an important embodiment of urban cultural competitiveness. Chengdu is rated as the best tourism city in China by the United Nations tourism agency and the

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National Tourism Administration. In recent years, "China's happiest city", "China's top 10 entrepreneurial cities", "China's third largest cultural and innovation industry city" and "China's new charm city" rank first in terms of "commercial charm". As an ancient and young city, as the core of cultural development strategy, Chengdu occupies the position of "cultural capital of central and Western China", namely, international cultural center, heritage treasure house, cultural industry stronghold and city shared by citizens. The construction of urban cultural image plays an irreplaceable role in the survival and development of the city, and is also the source of urban charm. It is not difficult to understand that the construction itself is the construction of culture [8].

2.2 Characteristics of Virtual Reality Technology

(1) Existence

Virtual reality technology is a 3D image designed by computer based on various human sensory and psychological characteristics. 3D is really real. If people wear interactive devices, they are like being integrated by virtual environment, as if they are in the field. The ideal scenario is where people can't tell the truth from the false [9-10].

(2) Interactivity

Human beings perceive objects through mouse, keyboard or sensor devices in virtual environment. The virtual reality system can adjust the presentation according to the user's five feelings and actions. Image and sound, this adjustment is real-time synchronization, users can according to their own needs, natural skills and feelings in the virtual environment to operate things.

(3) Multi perception

Virtual reality system is usually equipped with a variety of perception devices. These perceptual devices include visual devices, auditory devices and tactile devices. In the future, taste and smell sensing devices may be developed. There is a kind of motion sensing device and response device, which enables the virtual reality system to have multi sensory functions, and users can obtain multiple senses in the virtual environment [11-12]. Figure 1 shows the 5G network deployment model.

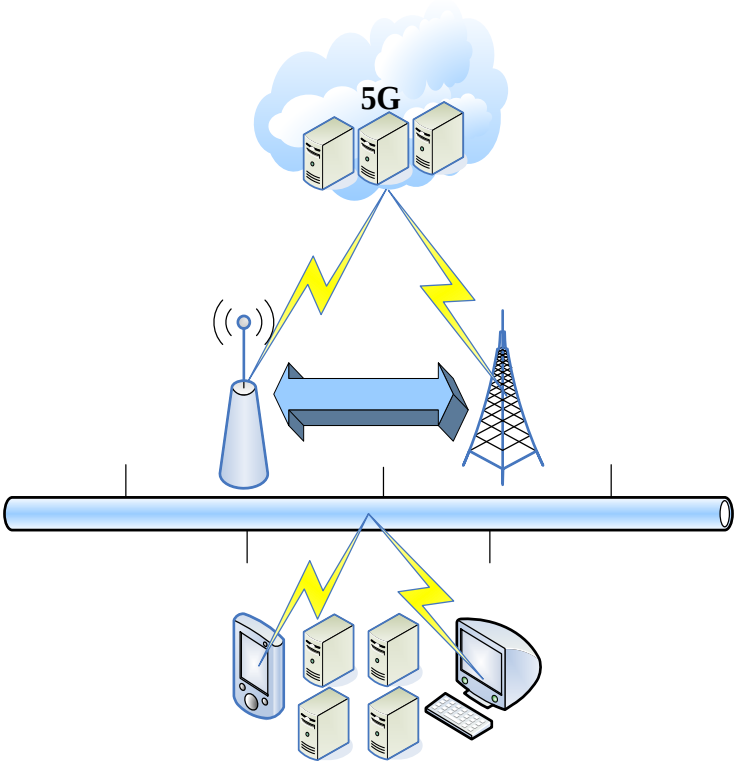

Figure 1: 5G network deployment model

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2.3 Immersive Virtual Reality Technology

Embedded virtual reality (VR) technology uses three-dimensional input and output devices and software system to generate embedded virtual simulation environment interactively on the computer. In this way, users can experience the multi-channel feeling and let users feel it in the virtual environment. According to the interaction and intrusion degree between users and virtual environment, virtual reality system can be divided into desktop VR (desktop VR) system, immersive virtual reality system, extended reality (AR) system and distributed virtual reality (distributed VR) system. Embedded virtual system has better interaction and embedded experience [13-14].

The processing control system is mainly responsible for the establishment and presentation of complex models and environments, the calculation and generation of real-time scene images, and the recording of user feedback information. In order to ensure a fast and smooth continuous display in the process of scene output, high-performance PC or workstation with high-speed computing speed and powerful graphics function is usually used.

In the display system, the most important is the display device. The performance of embedded display device determines the user expansion directly. If the resolution of the display device is too low, the image will be seriously distorted, affecting the user's stereo image. If the refresh rate of the display device is not high enough, the image will flicker and jitter. If the display device is too heavy, it will affect the user's action, causing vertigo and discomfort to the body. At present, the most commonly used display devices are embedded helmets, ultra close range projectors and high reflection screens to ensure the quality of 3D analog images [15].

The motion capture system is mainly responsible for the capture of the user's actions and other physiological information in the actual environment. The captured data is fed back to the processor and tracked into the virtual reality system. Generally, motion capture uses high-speed infrared capture sensor, and physiological data capture is easy to use wearable wireless physiological measurement equipment. Processing control system, display system and motion capture system are three components of a typical embedded virtual reality system [16-17].

2.4 3D Image Reconstruction Algorithm

(1) Construction of 3D data field for image reconstruction

The contour length formula of 3D image reconstruction is as follows:

$$E = \gamma E^{LBF} + (1-\gamma)E^{LBF} + vL(\varphi) + \mu P(\varphi) \quad (1)$$

Where: V and μ are constants greater than 0, representing the weighting coefficient of the spatial scanning control vector of each local image.

The box model is obtained by applying smoothness evolution game to the image target region and background region.

$$L(\varphi) = \int_{\Omega} \delta(\varphi)|\nabla\varphi|dx \quad (2)$$

δ (φ) and ∇φ represent the regular terms of pixel sparsity in the image target region and background region respectively [18].

(2) 3D image reconstruction output

According to the reconstructed 3D data field, the 3D direct volume of the image is drawn. The 3D texture map and 3D array coordinate parameters are used to reconstruct the 3D texture map in the 3D data field. The matching formula is as follows:

$$H_{\varepsilon}(z) = \frac{1}{2}\left[1 + \frac{2}{\pi}\arctan(\frac{z}{\varepsilon})\right] \quad (3)$$

$$\delta_{\varepsilon}(z) = \frac{1}{\pi} \bullet \frac{\varepsilon}{\varepsilon^2 + z^2}, z \in R \quad (4)$$

Where $H_{\varepsilon}(z)$ and $\delta_{\varepsilon}(z)$ are the reconstructed 3D texture map and 3D array coordinate

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parameters [19].

2.5 Urban Image Design Dominated By Urban Visual Design

(1) Content and form should be interactive

In the design of urban visual image, theme content and communication form are the key points of interactive design. They take the time to stop when they praise the city. First of all, the specific factors of urban image design are the physiological understanding and interaction of citizens, and the use of colorful digital media to promote the city image. Second, the abstract elements of the city's visual image must interact with the citizens' physiological consciousness to make the city leave a deep impression on people [20-21].

(2) Natural interaction design principles

From the most basic communication language and people's actions, the new media can be combined with urban image design. Natural design must follow the following two principles. First of all, combined with a variety of new media information dissemination characteristics, imitate the most basic way of human communication, in the simplest, most convenient and fastest way to provide the necessary information for the public to meet various needs. According to the individual needs of the age group, the psychological burden of various users can be reduced, and the psychological characteristics of urban population can be fully considered. Next, in order to let citizens experience the new media visual design, we must apply the interaction of language, sound and expression to the visual design of urban images [22].

2.6 The Value of Virtual Reality Technology in Urban Image Design and Shaping

(1) Improve the city's popularity and reputation

With the development of modern communication technology and network technology, people rely on 4G mobile phones or computers to receive information at any time in order to receive information and eliminate the limitations of traditional media. It's easier to choose former media such as TV and magazines. The use of virtual reality technology to popularize the city's image can provide the audience with a sense of immersion and real mood in the shortest time, thus making the audience's memory more clear and improving the popularization effect. The construction of modern Chinese city image is consciously using the media to design and form the constructive action of city image culture, that is, the "modeling" movement of modern emerging cities is gradually evolving. Due to the emergence of virtual reality technology, the one-way communication mode of city propaganda film has changed so far. By using flexible and intuitive expression methods and cooperating with VR glass wine cup, the audience can directly experience the word-of-mouth on the basis of city charm and interest. In order to let the audience spontaneously promote and promote the experience effect, and better improve the popularity and reputation of the city.

(2) Promote the further development of local tourism

Virtual reality technology uses the real three-dimensional display of photos and combines the image and meaning of the city in interactive drawing. As a result, people pay more attention to the activities, dig out the connotation of urban culture, and find the most representative and recognizable characteristics of the city. Virtual reality technology focuses on the demonstration of practical experience through actual refining photos and participating functions. This is not comparable to a simple commercial. Compared with the traditional propaganda mode, the use of virtual reality technology is not easy to cause bad feelings. This kind of moisturizing and silent communication way extends the image of the city to the audience's vision, making the display of the city image not only limited to the landscape and architecture, but also more prominent. The meaning of the city's humanistic spirit, such as sacrificial custom, specialty, delicacies and so on. Virtual reality technology increases the opportunity and space of city display, and users can experience the beauty and culture of the city without leaving home. This virtual "real" experience can encourage more audiences to choose to have strong interest in the city, travel and promote the development of local tourism [23-24].

(3) Creating city uniqueness and competitiveness

City competitiveness refers to the city's social, economic, cultural, environmental and other aspects of indicators reflected, refers to the city's ability to attract, promote, obtain and use various resources for its own development. When using virtual reality technology to design and form urban cultural

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image, we must emphasize the uniqueness of the city, so as to expand social interests and improve competitiveness. The historical accumulation and regional characteristics of each city are gradually established after thousands of years of accumulation and precipitation, which can reflect the unique temperament and spirit of the city. Now, due to the combination of virtual reality technology and urban application, the concept of digital city is also advocated. The application of virtual reality technology undoubtedly provides a new concept and means for people to provide a comprehensive immersive dynamic interactive content. Its application of virtual reality technology and the design and formation of city image not only helps to promote and popularize the city image, but also plays a more active role in the planning and development of the whole city [25].

3. The Experiment of City Cultural Image under Virtual Reality Technology

3.1 Experimental Data Objects

In this research experiment, we chose Bilai and Nanjing as the research objects, analyzed the cultural buildings of the two cities, and combined with the evaluation of local tourists and foreign tourists. The age, education background, times of visiting, ways to understand the city, motivation to travel to the city, amusement facilities that best reflect the image of the city, the most representative regional culture of the city, and the overall impression and improvement of the city are the necessary links. Survey method: in the random on-the-spot investigation in the city, the tourists answer the questionnaire immediately after the answer. The survey sites are mainly near scenic spots with many tourists.

3.2 Design Preparation

This paper introduces the technology and techniques of outdoor architectural renderings with the main tools of 3ds max, AutoCAD, V-Ray plug-in and Photoshop. Therefore, it mainly introduces the tool technology introduction, rendering process, key parameters of V-Ray, preparation before modeling and so on.

3.3 Virtual Reality Production Process of City Image Design

In order to render the landscape, we should learn the relevant tools and software, master the reading method of CAD drawings and the understanding of rendering process, and simply start. Of course, it is ideal to have a certain artistic foundation and architectural knowledge. At present, there are many software and post-processing software, such as 3ds max, AutoCAD, Yuanfang, Zhongwang and so on, which are used to make architectural rendering. To master the technique of rendering skillfully, we must use the corresponding tool software. As shown in Figure 2, the flow chart is made.

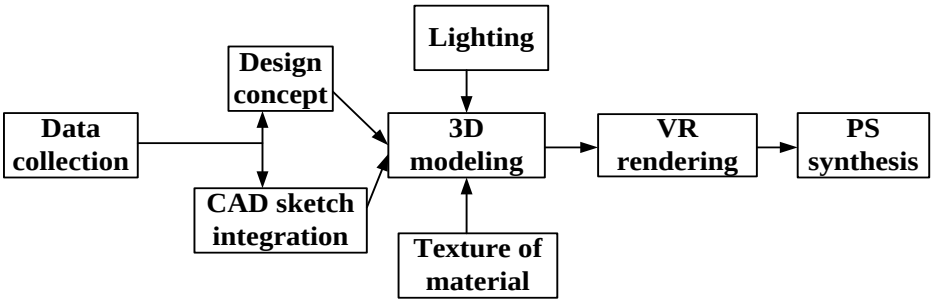

Figure 2: Schematic diagram of production process

3.4 Virtual Reality Method Based on AutoCAD

AutoCAD is an engineering drawing software developed by Autodesk. In the production of landscape rendering, the main work of AutoCAD is to draw the plan. Of course, 3D modeling can also be carried out, but 3D modeling requires many conditions, so it is very rare. In the rendering phase, 3D modeling doesn't work best, but a lot of things happen after that. In this paper, the horizontal drawing application of AutoCAD is only used to import 3ds Max as the basic map, thus simplifying the CAD graphics.

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4. The Embodiment Analysis Of Urban Cultural Image Design Under The Virtual Reality Technology

4.1 Investigation and Analysis of Penglai Cultural Image Design

According to the statistical results, in this survey, 68% of the total number of tourists from the whole country (including local residents), but 32% from outside the province. This reflects the need for further development of Penglai tourism market. The young and middle-aged tourists were the main groups. The tourists aged 26-45 accounted for 46% of the total, and the tourists aged 46-60 accounted for 32.3%. 58% of the total number of visitors accounted for a high proportion of the total number of visits, the first and second visit strokes the most, respectively 39% and 26%. The main way to understand Bilai's image of urban tourism is to obtain the organization and consultation of network and travel agencies, accounting for 30%, 20%, 18% and 15% of the total survey. As shown in Figure 3, the main cognitive approaches of urban cultural image.

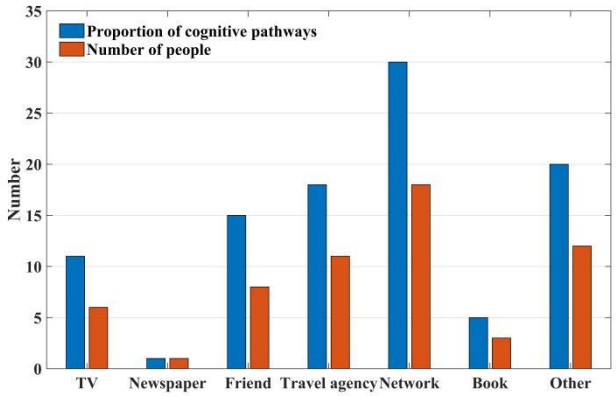

Figure 3: The main cognitive approaches of urban cultural image

As can be seen from Figure 3, according to the survey on the enthusiasm of tourists to stroke tourism, scenic spots and coastal cities are the main reasons for attracting tourists. Among them, tourist attractions account for 40%, coastal cities account for 33%, and history and culture account for 10%. In the survey of Penglai's tourist attractions, Penglaige scenic spot ranks first with absolute superiority, and it is the most typical tourist attraction in Penglai City.

Among them, Jingwu, Penghai, Penghai are the most typical, accounting for 33% and 45% respectively. In the evaluation of the overall impression of strokes, "average" and "relatively satisfied" accounted for more than half, 53% and 34% of the respondents. In the survey, most of the tourists choose to build and maintain scenic spots, sightseeing tourism and revitalizing tourism. These three are the first issues to explore the improvement of pen travel.

4.2 Image Analysis of Cultural Architecture Design in Nanjing

In the first part, the revolutionary commemorative category, the villa category of luxury house and the new national architecture with Chinese and Western characteristics are selected as the characteristic elements. In this survey, a number of choices were made for these four categories and the architectural choices of the Republic of Nanjing, China, which has the highest recognition. As shown in Table 1, the identification rate of urban cultural buildings in Nanjing.

Table 1: Identification rate of urban cultural buildings in Nanjing

City Building	Sort 1	Sort 2	Percentage
Sun Yat-sen Mausoleum	18	18	18.77%
President Office	18	17	18.16%
Yihe road Mansion	16	13	16.2%
Block 1912	7	12	11.4%

As can be seen from Table 1, sun's temple accounts for 18.77%, presidential residence accounts for 18.16%, Yihe Road apartment area accounts for 16.2%, and 1912 blocks account for 11.4%. As shown in Table 2, the average number of cultural architecture images in Nanjing.

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Table 2: The average number of cultural architectural images in Nanjing

Overall impression	Average (m)	Standard deviation (SD)	Number of tested (n)
Classic - fashion	3.02	1.068	150
Culture - progress	2.68	0.999	150
Urban - local	3.56	1.060	150
Leap - leisure	3.21	0.924	150
Vitality - elegance	3.79	0.952	150
Lively - quiet	3.65	1.033	150
Modern - tradition	3.61	0.927	150
Nostalgia - Youth	2.49	0.963	150

In the figure, C-F stands for classic - fashion, C-P for culture - progress, u-l for urban - local, L-P for leap - leisure, V-E for vitality - education, L-Q for lively - quiet, M-T for modern - trade, n-y for nostalgia - youth. As shown in Figure 4, the image of urban cultural architecture.

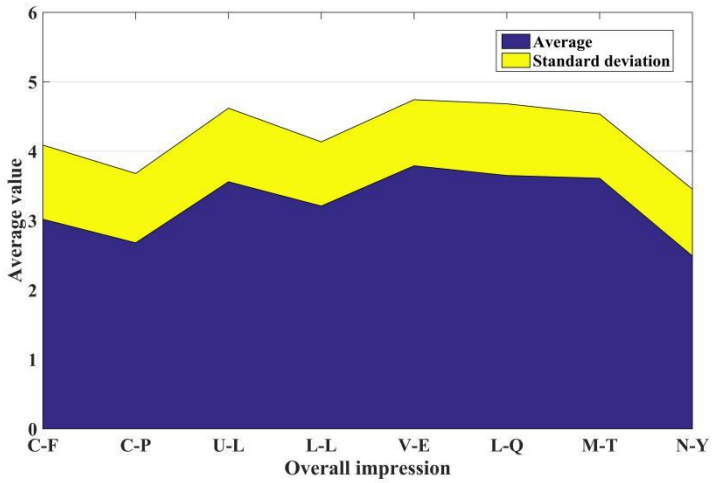

Figure 4: Image of urban cultural architecture

It can be concluded from Figure 4 that the overall impression of Nanjing is nostalgic (M = 2.49, SD = 0.963) and cultural (M = 2.68, SD = 0.999). The above survey and analysis results show that the image of Nanjing among ordinary citizens is nostalgic culture, while the architecture of the Republic of China in Nanjing is mainly nostalgic culture. Based on this, all the characteristic elements are combined. And, the image is merged, the image design of Nanjing brand.

4.3 Scoring Analysis of Urban Cultural Image Design

This survey is centered on the post questionnaire created by Nanjing as the brand image, and 172 valid questionnaires are collected based on the online questionnaire. In order to understand the understanding of the four proposals, the city brand image design works were put into the questionnaire survey. S1, S2, S3 and S4, respectively. As shown in Table 3, the average analysis of urban cultural image design.

Table 3: Average analysis of urban cultural image design

	Image design S1	Image design S2	Image design S3	Image design S4
Modelling	3.93	3.54	3.57	3.43
Color matching	3.34	3.45	3.27	3.84
Fitness	3.58	3.69	3.48	3.76
Internationalization	3.54	3.24	3.80	3.58
Nostalgia	3.62	3.34	3.38	3.35
Culture	3.79	3.42	3.62	3.26
Novel	3.84	3.29	3.35	3.27

According to the average analysis in Table 3, in terms of modeling, the preference and suitability of modeling are the highest among the average of 3.93 and 3.64 of S1. At the color level, the preference for color was the highest, and the average value of S4 was 3.84. The ferrule is still the highest, with an

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average of 3.64 for S1. In the city conception, as the evaluation standard of nostalgia and culture, the image adjectives of Nanjing Republic and Nanjing city are used, and the international evaluation standard is added to meet the needs of cultural export. As shown in Figure 5, the average number of cultural image design. Table 4 shows the business model of each scene in the tourist city.

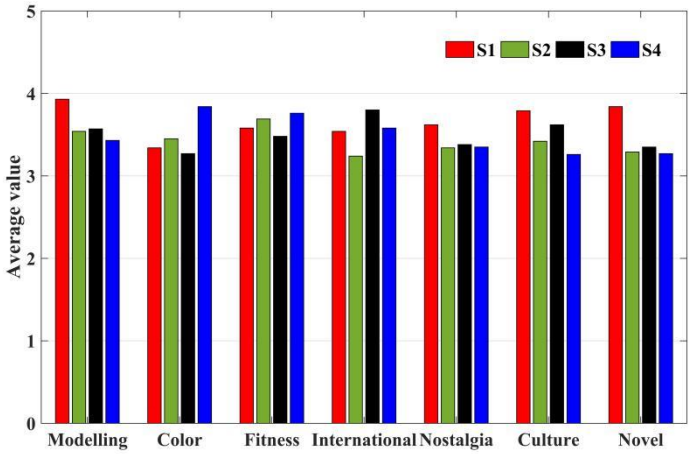

Figure 5: Average number of cultural image design

Table 4: Business models of various scenes in tourist cities

Scenes	Comprehensive natural scenic area	Eco-tourism scenic spot	Humanities tourist attractions	Single venue	Place of residence and community
Connection density (ten thousand/km2)	19	1.9	33	29	3.5
Upstream experience rate (Mbit/s)	13.01	16.89	12.02	12.13	15.05
Downlink experience rate (Mbit/s)	15.89	6.21	10.79	49.78	99.88
Time delay	5~10	50~100	5~10	5~10	50~100

As can be seen from Figure 4, among the three projects, S1 is still the highest, with the average values of 3.62 and 3.79 respectively. In the international projects, the highest average value of S3 is 3.80. The brand image design of Nanjing city and whether it is eye-catching. In the two projects in Nanjing, the average value of S1 is 3.84 and 3.47, and the average value of adaptability is the average value of S4. 76 is the best. Table 5 shows the reference values of antenna weights in different scenarios in tourist cities.

Table 5: Reference values of antenna weights in different scenarios in tourist cities

Application scenario	Horizontal wave velocity angle	Vertical wave velocity angle	Adjustable range of inclination	Application reason
Main park	108 °	5 °	-2~8 °	Realize park hotspot coverage
Large President's Center	109 °	11 °	1~7 °	Achieve coverage of hot spots in the convention and exhibition center
Hill type tourist spot	89 °	13 °	1~5 °	Achieve wide and three-dimensional shallow coverage of the mountain
Business center	63 °	5 °	-1~10 °	Increase area capacity and reduce interference
Residential area	43 °	14 °	2~8 °	Realize full coverage of residential areas
Large shopping mall	23 °	22 °	5 °	Achieve high-rise coverage of shopping malls

According to the above data, S1 has some generally accepted characteristics. Among the four suggestions mentioned above, S1 is the most conceptual, that is, the architectural elements of the Republic of China should be applied to the detailed shape of Nanjing brand, with both cultural and nostalgic aspects. Table 6 shows the scene models of scenic spots and residential areas.

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Table 6: Scene model of scenic spots and residential areas

Scenes	Scenic spot	Residential area
Connection density (ten thousand/km2)	1.39	0.23
Upstream experience rate (Mbit/s)	12.13	7.98
Downlink experience rate (Mbit/s)	16.76	139.79
Time delay	50~100	50~100

4.4 Analysis of Urban Image Design under VR Technology

As shown in Figure 6, the scores of urban cultural image design under VR technology are compared.

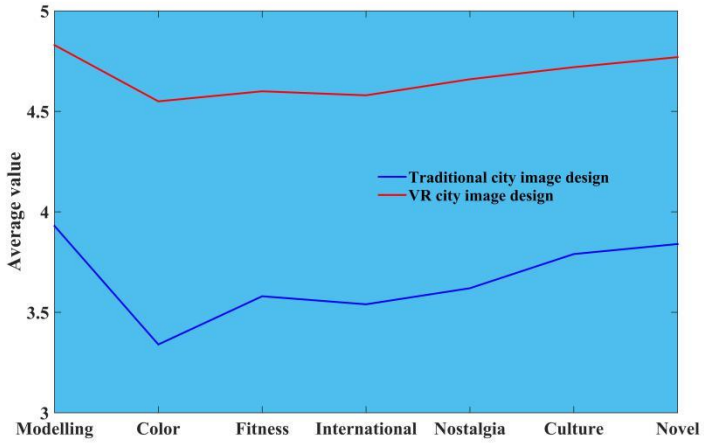

Figure 6: Comparison of urban cultural image design scores under VR technology

As can be seen from Figure 6, in the design of urban cultural image with VR technology, according to the scores of experimental subjects, VR technology has a more three-dimensional and immersion sense in model design, with an average score of 4.83, which is higher than the score of 3.93 of traditional urban image design. In terms of color coloring and matching degree, VR coloring technology has a good embodiment, so its score reaches 4.55, which is about 1 point higher than that of traditional urban image design. In terms of design suitability, internationalization, culture and novelty, it is much higher than the traditional urban image culture design. It shows that the virtual reality technology has brought more aesthetic and ornamental value to the modern design of urban culture in all aspects.

5. Conclusion

To design a city's cultural image, the early participation of citizens is a very important part. This is a large-scale understanding of the city image and urban architecture of the general public, and the results are generally provided in the last process. By selecting the appropriate choice, the quality identification is used as the keynote of the design to make full use of it, so as to prevent unnecessary problems in practical use. In the four urban cultural image design works, the average score of S1 is relatively high, so in the follow-up survey, in order to get the most effective understanding of the public, we must pay attention to the concrete and abstract image level.

The research on the application of culture in the design of urban cultural image is expressed through the theoretical summary of urban culture and the research of visual expression method, and is applied to urban image design. Combined with theoretical research and case analysis, this paper summarizes the main expression methods of six regional culture: induction and summary, graphic combination method, element reorganization method, element superposition method, abstract generalization method, image representation method, and media segmentation direction: traditional media, actual space and new media further systematically and comprehensively construct and promote the city. Applying regional culture to urban cultural image design can better show the uniqueness of the city, thus generating the sense of identity and public belonging. The city's history and culture can be visually and

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visually expressed.

Using virtual reality technology, combining urban design and cultural image for context display. The combination of new technology and new method is expected to promote the design and promotion of urban cultural image. In this study, the excellent image processing function of virtual engine is used to improve the simulation effect of urban buildings and display space. Combined with the external equipment of the platform, the "immersion" expansion of tourists and residents can be realized: the virtual roaming function of rendering terminal enables users to experience the embedded expansion of indoor virtual roaming. The virtual reality technology platform resources are combined with urban culture and image design to realize the modernization of urban culture.

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