Research on Digital Expression Design of Architectural Decoration Art in Hanshan Temple

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Abstract: Hanshan Temple mostly Qing Dynasty architecture, the main hall, Jing Lou, Zhong Lou, Bei Lang, Feng Jiang building, cream bell etc. Hanshan Temple's architectural layout is not strictly in the central axis. The Hanshan Temple gate in front of the stone arch bridge is a bridge between the village, bridge and the gate stack called yellow wall screen wall. The two anient camphor tree lined. Yellow wall in classical Pavilion cornices, right Maple river building, left Weishiugang tower, are derived from fenggiaoysbo poems. Behind a statue of the general majestic-looking Fokan like face, in front of the main hall, holding a Vajra, also called Jiang Mochu Weituo, is that, among the four kings under the thirty-two God first. This paper will be carrying a unique Hanshan Temple culture China temple Suzhou Hanshan Temple building as the prototype, from the “digital” ways to study the Buddhist architectural decoration of 3D digital display and virtual interactive roaming expression technology in two aspects. Hanshan Temple's digital performance is not only to the reality of the simulation, but the depth of the art of Hanshan Temple decorative excavation and carry forward. To explore a set of effective construction of large scene Buddhist temple architecture rapid method in digital expression technology ensures the interactivity and can achieve good art expression effect. In order to provide a new feasible way to carry on the inheritance of the traditional culture of the ancient buildings, it has a good reference value and practical significance in the digital design in the future. This paper firstly analyzes the Hanshan Temple digital expression principles of interpretation, and according to the structural difference between different parts of Hanshan Temple, comparative analysis of characteristics of a variety of modeling software, and ultimately determines the design software in this thesis use. Then it makes a brief description of the whole building decoration composition of Hanshan Temple and makes use of the modeling software to carry on the modeling inside and outside Hanshan Temple. First of all, the paper introduces several important technical features and key technologies of digital expression technology in the aspects of 3D digital display and virtual interactive roaming in Hanshan Temple. Then, the overall design of the digital design system of Hanshan Temple building decoration. The feasibility and effectiveness of the proposed view are expounded in the paper, combined with the 3D demonstration of Suzhou Hanshan Temple. Hanshan Temple as a Buddhist temple, its significance is far more than the building itself, it has a very important role in the cultural heritage and promote. However, due to the architectural nature of Hanshan Temple and its existence and its cultural dissemination has a certain time and geographical constraints, the application of digital technology is the best way to solve this problem. The development of historical change, destruction and maintenance of Hanshan Temple several times, and even reconstruction in order to better protect the building too many to count, and the unique culture of Hanshan Temple, Hanshan Temple building decoration design vocabulary mining, this paper selects the digital mode for the protection and expression of Hanshan Temple.

Keywords: Hanshan Temple; architectural decorative art; digital expression; 3D modeling; design research

1. Introduction

Is located in "Suzhou City" and "the ancient canal", "Fengqiao town" of the Hanshan Temple, with his unique style and famous, become universally known ancient Temple Buddhist temple. Especially in the Tang Dynasty poet Zhang Ji's poem "midnight bells", although only a few words but reveal the poet's sincere feelings, more out of the temple of Zen and poetry charm with "midnight bells" background, and makes the Temple City Scenery perfect blend together, forever in the annals of history. The Hanshan Temple was called "Miao Li Punning Taysan" an ancient building, which has more than 1 thousand and 500 years of history, the creation time of ad 502-519 years during the period of six dynasties[1]. In the Tang Dynasty, the monk Hanshan and picking up here has chaired and renamed the "Hanshan Temple". Hanshan Temple after long years of baptism, continue to grow, the Hanshan Temple first because of Zhang Ji's poetry and become famous, because of Hanshan Temple Culture and architectural art and its international, now, after the 1500 storm of Hanshan Temple, visitors are still in a continuous line, people from all over the world, with immense reverence and worship for the tour. Is the experience and experience of this ancient temple Millennium style? The Hanshan Temple area is not large, but the overall layout is very compact, compact structure, reasonable layout. The ancient building is Tayuan Tang style full of plain with fortitude, simplicity in setting a vigorous, is a unique architectural style of art. Hanshan Temple's architectural style and architectural decoration have obvious geographical and religious characteristics, and the characteristics are very bright. To take into account the decorative elements characteristics of Hanshan Temple culture in both the structure function and also can complete the decorative design in a creative foundation of cultural heritage, the architectural decoration connotation has been greatly enriched, and render the strong atmosphere of Buddhism highlights the rich Buddhist theme. Through this strong Buddhist atmosphere, so that people get a deeper level of religious experience and cultural thinking. Hanshan Temple decorative art of classical architecture is a typical regional culture, religious culture and traditional culture Chinese fusion examples, it carries the history of various cultures, identity, penetration, thus displays the architectural decoration of the inner spirit and external style, the building decoration has use value and cultural value at the same time, more it is important to have a "sentimental value". It described a temple of historical development and continuity, people experience to human creativity in front of the building decoration. There may have been some glorious history of architecture, but as history they bring to people today is more cultural connotation [2]. Both sides of Hanshan Temple garden flower on the left side of the main block strip stone two, a Ming Dynasty carved from Chong frame "cold up traces"; another moment at the end of the Qing Dynasty Jiangsu governor Cheng Dequan wrote "Miao Li Zong fan". Out of the main hall, on the left and right Puming pagoda Abbot room, as the "midnight bells" with fame spreading far and wide to the bell tower, two storey houses in front of the library. Over the roof, Tang Seng, Sun Wukong and other visible Buddhist statue group, all the house painted carefully, has been called "cold Shian Dian", picking up the main hall of the ancient statue, the giant monument, engraved qianshouqianyan Guanyin, Li Guan and other characters. The clock tower is near the house of the cold. The temple of Buddha behind different and elsewhere, dedicated to the Tang Dynasty, Han Shian stone portrait picked up, rather than the island of guanyin. The portrait from the Qing Dynasty Yangzhou is one of the Eight Eccentrics of Luo pin hand pen bold, smooth lines. Figure refers to the right hand of Han Shan, laughing; picking up naked, happy listening. Hanshan Temple is relatively unique, pick up cold temple, this temple is located in the building, building roof decorated with "journey to the west" story, is the Tang master since the West made canon and the return of the image, theme and library meaning is very appropriate. The statue of Han Shan, two people stand up the house. Behind the cold, pick up the statue inlaid with Avalokitesvara stone carvings, a Qing Dynasty scholar of Suzhou stone Yun Yu seal "thousand hand eye". The left wall of the Southern Song Dynasty calligrapher Zhang Ji zi book "Diamond Sutra", a total of twenty-seven stone. Dong Qichang, Bi Maokang, followed by Lin Zexu, Yu Yue et al. A total of eleven stone inscriptions. The first floor of the original of the Hanshan Temple Fong Jiang monastery of the maple river building has three hundred years ago unrepair. This building is the Suzhou Municipal People's Government in order to protect cultural relics and monuments, dressing in 1954 in Hanshan Temple, Suzhou city in the cultivation of Xiang song Zhai famous "flower house" built this shift. The basket building, out of the ordinary in architectural style, the artistic value. This large building has two main columns, handle like flowers, bear the weight of the whole building, and general building, there must be at least four or more [3]. A building in
the beam and the connection of the former Yan put on two fine carving flower blue. The spiral staircase, which is coiled up, depends on a single column to bear the weight of the whole staircase. The panorama of Hanshan Temple is shown in Figure 1.

Figure 1. Hanshan Temple panorama.

The Hanshan Temple was one of the ten famous temples in the history of our country. Suzhou is located in the west gate outside the Fengqiao town, with its long history and, inheritance, development and dissemination of local Buddhist culture all cannot do without the Hanshan Temple, Hanshan Temple and Hanshan Temple and the carrier characteristics of culture, culture, and the poetry culture, is a very precious cultural treasure. The Hanshan Temple building decoration also around the culture, the environment beautiful, lush flowers and trees, many historic sites pavilions, terraces and open halls, complement each other, such as Zhang ancient stone inscriptions, presided over the Hanshan and picking up stone statues, as well as Wen Zhiming, Tang Yin and other pieces of book inscriptions[4]. The different point of Hanshan Temple building layout and our temple layout is our temple layout more rules such as the temple at the entrance to the Mountain Gate (also known as the three door, gate) must be dedicated to the hengha will be two. Enter the gate after the king hall, between the gate and the king hall for the Bell Tower and Drum Tower, the drum tower, the clock tower right. The side of King Hall Shanmen for Maitreya need to worship Buddha, Buddha is enshrined in Maitreya around four kings in Maitreya, and the need to worship Buddha behind the rear fengtuo. Is the king of the rear of the main hall, the main hall, and the hall of heavenly kings and should be in a straight line, the center of the main hall should worship Buddha III, beside surrounded by eighteen Arhats, or dedicated to the twenty heavens or twenty-four heavens, behind the main hall should be dedicated to guanyin. The main hall after some temples to see the temple features and some Guanyin temple, some Canon house, some Tibetan temple, next to the temple and the temple with the temple. The main building of the Hanshan Temple main hall, king hall, hall, corridor; pick up the cold Puming pagoda bell tower, etc. Hanshan Temple is not in accordance with the law China traditional Buddhist temple layout in the back of the hall set up to pick up cold but Guanyin Temple instead of visible image is picked up, cold core is characteristic of the entire temple. The Buddha Hall behind not consecrate Guanyin, but in the Tang Dynasty, Han Shan stone portrait picked up from one of the Qing Dynasty in Yangzhou instead, portraits of eight strange up hand, bold, bold strokes and lines. Figure refers to the right to speak at Hanshan, picking up; naked, listen, Hantai can be cut. It is found in Han Shan and two Bodhisattvas Man jusri, Samantabhadra reincarnation, was later emperors called and ordered them, on behalf of the auspicious. The space layout of Hanshan Temple to pick up the overall layout of the cold palace as the center, the main hall, Puming pagoda, Zhang Han room, king hall, Zhaozi formation of the middle axis, flanked by the hall, Luo Hantang hall, bell tower and dharma[5]. The spatial hierarchy, layout well-proportioned, because the corridor's sake, connected together, as the buildings here in order, and the overall feel good, a sense of hierarchy: continuous, distance, brightness, height, density, exquisite design. Hanshan Temple paintings as shown in Figure 2.

Figure 2. Sketch map of hanshan temple like paintings.

2. Key technologies involved in the system

2.1 Virtual reality technology
Virtual reality technology is a kind of can create and experience the virtual world of computer simulation system which uses computer to create a kind of virtual environment is a system of multi-source information fusion simulation of 3D dynamic interactive scene and entity behavior users immerse in the environment. Virtual reality technology is an important direction of simulation technology is a set of simulation technology and computer graphics, human-computer interface technology multimedia technology network technology sensing technology is a challenging subject of cross technology and research field. Virtual reality technology (VR) mainly includes simulation environment, perception, natural skills and sensing devices, etc. The simulation environment is produced by the computer, real-time dynamic 3D stereo images. Perception is the ideal VR should have all the people have the sense of. In addition to the computer graphics technology generated by the visual perception, there are hearing, touch, force perception, motion and other sensing, and even the sense of smell and taste, also known as multi. Natural skill refers to the rotation of the head, eyes, gestures, or other human behavior by the computer processing and participants of the action and adapts the data, and the user input to make real-time response and feedback to the user's facial features respectively. Sensing device is a three-dimensional interactive device. The evolution of the history of the development of virtual reality technology can be divided into four stages with dynamic simulation of the sound shape is the first stage of the ideological implication of virtual reality (1963 years ago) virtual reality sprout into second stages (1963 -1972) and the theory of virtual reality concept initially became a third stage (1973 -1989) virtual reality theory further improvement and application of fourth stage (1990 -2004). Virtual reality is a comprehensive variety of technologies, including real-time 3D computer graphics technology, wide-angle (wide field) stereo display technology to the observer head, eye and hand tracking technology, and tactile / haptic feedback, stereo, network transmission[6], voice input and output technology etc. These techniques are described below. By comparison, it is not too hard to use a computer model to produce a graphic image. If there is enough eye and hand tracking technology, and tactile / haptic feedback, stereo, network transmission[6], voice input and output technology etc., of these whole scene, the scene includes distance information. Of course, distance information can also be obtained by other methods, such as the distance of the focal length of the eye, the comparison of the size of the object, etc. In the VR system, the binocular stereo vision played a great role. The user's two eyes to see the different images are generated respectively, displayed on different monitors. Some systems use a single display, but the user wearing special glasses, only one eye to see the odd image, the other eye can only see the even frames between odd and even different frames is produced stereoscopic parallax. User (head, eye) tracking: in the artificial environment, each object has a position and attitude relative to the coordinate system of the system, and the user is also the case. Users to see the scene is determined by the user's location and head (eye) direction to determine the. Virtual reality headset head motion tracking in computer graphics technology in the traditional view, the change is realized through the mouse or keyboard [7], visual motion perception system and the users of the system are separated, and the use of head tracking to change the image from the perspective of visual system and motion perception system users can connect. Feel more realistic. Another advantage is that the user can not only through the binocular stereo vision to recognize the environment, but also through the head of the movement to observe the environment. In the interaction between the user and the computer, the keyboard and the mouse is the most commonly used tool, but for three-dimensional space, they are not suitable for. Because there are six degrees of freedom in the three-dimensional space, it is difficult to find a more intuitive way to map the mouse's planar motion into a three-dimensional space of any movement. Now, there have been a number of devices that can provide six degrees of freedom, such as the 3Space digital instrument and the Space Ball space ball, etc. Some of the more excellent performance of the device is the data gloves and data clothing. The sketch map of virtual reality technology is shown in Figure 3.

2.2 Introduction of fault type classification

Augmented reality (Augmented Reality, referred to as AR), is the position and angle of a real-time calculation of the camera image and the image with the corresponding technology, the goal of this technology is set in the virtual world and interact with the real world on the screen. This technology was first proposed in 1990. With the improvement of computing power of portable electronic products, the use of augmented reality is more and more widely. Augmented reality technology, it is a kind of new technology of the real world and the virtual world information seamless integration, is the original in the real world, the scope of a certain time and space is difficult to experience the entity information (visual information, sound, taste, touch, etc.) by computer science and technology, simulation after stacking, the application of the virtual information into the real world, is perceived by the human senses, so as to achieve realistic sensory experience beyond. Real environment and virtual objects are added to the same picture or space in real time. Augmented reality technology[8], not only to show the real world of information, but also the virtual information displayed at the same time, the two kinds of information complement each other. In the visual augmented reality, the user uses the helmet display, the real world and computer graphics multiple synthesis together, you can see the real world around it. Augmented reality technology includes multimedia, three-dimensional modeling, real-time video display and control, multi sensor fusion, real-time tracking and registration, scene integration and other new technologies and new. Augmented reality provides information that is, in general, different from that of human beings. AR system has three outstanding characteristics: the real world and the virtual world of information integration; the real time interaction; the third is to add virtual objects in the three-dimensional space. AR technology can be widely used in military, medical, construction, education, engineering, film and television, entertainment and other fields.
complete augmented reality system is composed of a group of closely linked, real-time work of hardware components and related software systems to achieve, commonly used in the following three forms. In a AR implementation scheme based on a computer display, the real world image of the camera is input to the computer, and the virtual scene synthesis generated by the computer graphics system is output to the screen display. Users from the screen to see the final image enhancement. Although it is simple, but cannot give the user a sense of how much immersion. Helmet mounted display (displays Head-mounted, referred to as HMD) is widely used in virtual reality system, to enhance the user's sense of immersion. Augmented reality researchers have also used a similar display technology, which is widely used in AR, the penetration of HMD. According to the specific implementation of the principle is divided into two categories, respectively, based on the optical principle of the HMD (See-through HMD Optical) and based on the video synthesis technology based on HMD (See-through HMD Video). AR technology not only in the field of application of similar VR technology, such as sophisticated weapons, aircraft design and development [9], data visualization, virtual training, entertainment and art has been widely applied to many fields, but also because it can enhance the properties of the real environment display output, in medical research and training, anatomy precision instrument manufacturing and maintenance, engineering design, military aircraft navigation and robot remote control and other fields, is more obvious than the advantages of VR technology. The sketch map of augmented reality is shown in Figure 4 and 5.

![Figure 4. Implementation scheme of Monitor-Based augmented reality system.](image1)

![Figure 5. Schematic diagram of an optical system to realize the optical system.](image2)

2.3 GIS technology analysis

GIS (Geographic Information System) is a multi-disciplinary cross product, it is based on the geographic space, using geographic model analysis, provides many kinds of spatial and dynamic real-time geographic information system is a computer technology for geographic research and geographic decision-making services. Its basic function is to convert tabular data (whether it comes from a database, a spreadsheet file, or directly in the program) into a graphical display, and then browse, operate, and analyze the results. The display range from the intercontinental map to a very detailed map of the block, the real object includes population, sales, transport lines, and other content. Geographic Information System (GIS) is a spatial information analysis technology which has developed rapidly in recent years. It has played a leading role in the field of resources and environment. GIS technology can not only effectively manage all kinds of resources and environment information with spatial attributes, rapid and repeated analysis to test the environmental resource management and practice mode, to make evaluation of science and policy decision, and can compare the standard, dynamic monitoring and analysis of resources and environment condition of the multi period production activities and changes effectively. Also, the data can be collected, spatial analysis and decision-making process integrated into a common information flow, improve work efficiency and economic benefit, in order to solve the problems of resources and environment protection and sustainable development to provide technical support. Data sources and data quality is difficult to guarantee (a wide range of data sources, but the data quality is not high). Resources and environmental issues involved in soil science, environmental science and geography and other disciplines, the impact of complex factors, the need for a large amount of data and high quality requirements. However, due to the limitation of equipment and manpower, many data are difficult to obtain. But the existing data is often due to a data source, different data formats [10], in the different causes of land resources and ecological environment to ensure the quality of data, especially the data format, it is difficult to share the data area, seriously affecting the application of GIS. At the same time, the basic characteristics of the geographic information system is each item of data with spatial coordinates, and the artificial collection and field investigation data of space positioning ability of the traditional difference, and often point to the face, inevitably bring about various errors. So the data source and data precision have been the bottleneck of GIS technology to solve the problem of resource and environment ”. The schematic diagram of GIS technology is shown in Figure 6.
2.4 Digital modeling technology

The production of digital technology can be traced back to the beginning of the last century, in the middle of the twentieth century, it was predicted that mankind will enter the information society, into the digital age. Now these predictions have become reality, although the operation ability of the early computer, but with the development of computer software and hardware development, has now reached a high-speed processing of large amounts of information, have enough storage space and a variety of input and output devices of the era. With the development of digital products and computer technology, rapid reduction in price, the computer into the modern people's life, and changed people's way of life, we cannot do without the basic necessities of life are digital technology, and the popularization of the computer users for the spread of digital products has laid a good foundation for the audience. After the material level of satisfaction, people began to pursue a higher level of spiritual. Digital technology is specific to the protection of ancient architecture and cultural communication, including image capture, three-dimensional scanning, virtual reality, digital information editing, etc. Image capture and 3D scanning is the main material for information acquisition, image is two dimensional image data, 3D scanning is a full range of three-dimensional data acquisition, according to the collection of objects to choose different ways, the object is small and easy to move, can use 3D scanning to collect data [11], more detailed and accurate data, and can directly from the three-dimensional model of the object, is very high. If the object is large, easy to move, can use the image, the image capturing should note the following points, first, to shoot the object to be measured from the multi angle, in order to have the spatial relationship and proportion in the later data processing of reference data, secondly, should pay attention to detail when shooting especially, in the construction of the simulation, in order to restore the ancient building more accurate style, brick should be recorded in detail, finally, in order to realistic modeling texture to late paving, pillars details of selected light and close-up photography, not a strong sense of perspective, try to shoot with the measured objects vertical. The formation of the scene material library. These information through digital processing and mapping modeling line frame and the entity graph as shown in figure 7. To form a complete image and data, and stored to the Internet as a permanent data storage. Virtual reality technology is the core technology of digital ancient architecture decoration, virtual reality is to reconstruct the buildings using digital means, the first use of 2D image acquisition information to complete the establishment of 3D model, and achieve the best visual effect by texture, light and material, rendering and other means, and then through the platform is that these models can in one scene, and the user is free with arbitrary angle and the distance to see everything in the scene, the formation of interaction, so that visitors such as general personally on the scene.

3. Analysis on the technical requirements of the digital hanshan temple

3.1 Modeling technology needs analysis
Hanshan Temple digital model can be divided into two parts: the need to interact with the main part of the trigger event and does not need to interact with the environment without triggering the event part. When the event is triggered, the user will be close to the main body, and the precision of the model and the fluency of the event are required. While guaranteeing the visual viewing and viewing the results of the use of the number of models to reduce the amount of computing to improve the flow of event triggered. The main trigger part for the building, such as the main hall, Puming pagoda, and temple and pick up the cold for modeling must reach the following points: (1) structure accurately. Digital Hanshan Temple is the pursuit of the true reduction and the art of recreation; everything is based on the real. And the structure of Chinese ancient architecture of the United States is the world's leading. In particular, both the garden style of Hanshan Temple, Hanshan Temple of the United States is not only reflected in the building, but also reflected in the environment, layout, culture and art in Hanshan Temple. In order to truly reproduce the beauty of Hanshan Temple, the need for more than five convenient to carry out accurate digital expression design. (2) delicate decoration. In the building construction is complete and accurate under the condition that the decoration is the focus of this system, in order to better restoration of architectural decoration, should use the collected images and image data combined with text data to restore the decorative elements. And the decorative elements of the classification, as digital data for cloud storage. (3) to minimize the number of model surface. To ensure the degree of simulation model considering the operation data of the computer, some buildings can be processed by low mold, such as no virtual event triggered window, ancient building window for hollow lattice windows, if fully completed by modeling, model faces a window can reach 2 million pieces how, if every window using a fine model of this although visual effect is guaranteed at the expense of computing speed. In order to balance the entire system, as far as possible to reduce the number of surface. (4) the components needed to trigger the virtual event should be built separately. If the entire building is a complete model, then the open part will not be implemented. In order to complete the virtual event trigger, the component parts of the model need to be processed separately [12].

3.2 Texture technology requirement analysis

In order to show the Hanshan Temple unique architectural decoration, to restore the true map through a large amount of data, reproduction of high simulation, the relationship between colors, and the harmony between the environment and the reasonable collocation of Hanshan Temple, making the overall environment has a certain artistic effect. In the texture technology needs to complete the following requirements: (1) real reflection. The object's surface by ray tracing procedure can reflect the way, the real sense of the metal or the glass product can be improved to a certain extent, and the method can also be used to illuminate the object on the basis of not providing the light source. (2) using a high quality bitmap. Due to the foundation of the field investigation, a large number of high resolution and high resolution mapping data were collected to ensure the authenticity of the texture and the fine texture. (3) dynamic map. In order to reduce the amount of data in computer operations, not all models use real-time rendering, but the choice of parts of the object using a dynamic mapping method to simulate real-time rendering, to reduce the amount of computer computing. (4) every object to be independent and has the same texture map that can ensure the proportion of all objects to get a good feel of the material. (5) independent rendering. After the completion of the fine model can be used to separate the fine model to get a positive picture, the use of this image as a low number of the surface of the low module of the map can achieve a low number of high quality texture mapping effect. Modeling based on geometric model (Based - Modeling Geometry) referred to as GBM technology, also known as the based graphics modeling and rendering (Based - Modeling and Rendering Graphie) referred to as GBMR technology. This modeling approach is through the software in the virtual space in the three-dimensional model of the formation, and then use the camera angle of observation and observation methods fixed, select the appropriate physical illumination and projection process, finally completed the three-dimensional geometric model of the stereo images of multi angle, the three-dimensional model of vivid and delicate. And the viewing angle and the viewing direction can be changed arbitrarily, but there are also shortcomings, the modeling process in a three-dimensional model of the complex and tedious steps, so the calculation maker has strong modeling capabilities and requirements of computer equipment, widely used in graphic work station. Image based modeling (Image Based Modeling, referred to as IBM) technology; the modeling method is the use of multi angle image combination method to achieve the dynamic display of the modeling environment. The creation of the 3D model, using rotating camera, from different angles were observed [13], each turn a camera, the formation of an image, so that multiple angles of image combination, then image post processing and cutting and compression preservation, to form a dynamic panorama. Users can call the panoramic view of the complex three-dimensional scene roaming. The superiority of GBMR and a IBM method is compared with does not require complex geometry modeling, reduce a lot of tedious work of computer user modeling; operation ability is not high, the equipment requirements are reduced; can reflect the fact that the environment, in dealing with the complexity of image information is. Not want to model data so simple, but the complexity associated with the model. For a fixed operation does not need any things such as Hanshan Temple and the flowers mountain and trees, the use of image based modeling technology to build the computer operation in order to reduce the amount of data. By adjusting the angle of the camera, can make use of three-dimensional geometric model of real and virtual environment using image modeling effectively combining with the actual match to the virtual, makes digital space set up, to meet the user can smoothly browse practical requirements at the same time also can realize humanized human-computer interaction.

3.3 Comparison of modeling methods

At present, many mature computer software can be used to establish the three-dimensional model of the digital environment, in the above I have introduced the virtual object of Hanshan Temple created according to the demand, there are three software to meet the requirements of FLASH, Max and 3D respectively is MAYA, FALSH is a 2D software in data collection and preservation are to effect of 3DMAX and Maya are relatively powerful 3D software, each has its advantages, I will be following the specific needs of digital Hanshan Temple based on a detailed comparison of the software. For different needs of the processing object using different software will make the production efficiency with half the effort, so that the three software which is good, depends on the object engaged in the production of [14]. 3DMAX resources and tutorials are abundant, there are strong material base model library as a backup, and Maya need to spend a lot of effort to learn without abundant model library as a backup, but once the matter can make arbitrary things, flexibility. Each software has its own characteristics, MAYA provides a variety of modeling methods, which can be chosen according to their needs, a variety of modeling methods can be exchanged for each other, to facilitate data exchange. In the map has a very efficient UV editor, providing a variety of editing methods to include all the complex model. It can be said, from modeling to animation, to efficiency and stability, Maya is very good. Therefore, this paper selects MAYA as the main production software of Hanshan Temple. Because of the unique characteristics of other software, according to the need to organize the data in the beginning of the use of FLASH for data collection and storage, in the intersection with other software through the 3DMAX as a bridge software. Hanshan Temple modeling process as shown in Figure 8 and 9.
4. The design and implementation of DRC management tool

The real data collection, analysis, sorting and post processing based 3D modeling; whether the data is accurate and complete 3D modeling is really key degree, namely the quality model and quality of data are closely related. There are two main types of data sources, the first is through the network to collect, or get satellite images, through satellite positioning, the second is the field data collection field research such as photography, 3D scanning and manual measurement distance. In this paper, the modeling of three-dimensional data of the Hanshan Temple to take field measurements and photography, as well as the drawings as a data base. For the purpose of modeling in digital photography is greatly different from the usual photography, in order to ensure the accuracy of the model and texture clarity, must have high quality photos, which requires before shooting to good planning, good design, has reached the final photograph complete and available. High quality photographs taken at the end of the final shot. To reduce the errors and omissions in the process of data acquisition, and to form an immeasurable influence on the construction of the model in the future. According to the different shooting angle can be divided into the main building, photo atmosphere as well as the requirements of high positive maps photos, so to choose the objects in the photo shooting map, do not select the strong part of the light, should choose the uniform illumination, no shadow as part of the map, to avoid unnecessary reflection and the extra reflection, which can reduce the photo post processing; shooting photos of the main building, attention should be paid to the choice to show the construction overall style and its own characteristic angle, but there is no lack of complete requirements of shoot architecture details, and try to capture part of the environment around the building in order to determine the size of the atmosphere; photo shooting is usually building decoration or is surrounded by flowers and trees or pavement, mainly to the relationship between buildings and environment background. At the same time, the camera is recommended to be supplemented by the camera, the purpose of the camera is more simple, mainly in order to record the spatial layout of a number of buildings, and the details of the surrounding environment and the continuity of architectural decoration. A variety of acquisition methods and complement each other, for the subsequent data processing to lay a solid foundation. After the object geometry model is established, and then the material and texture are given to build the model. Material records is the object's texture, metal or plastic cloth are relying on material properties to control and record the color map information, reflecting information, materials and textures can be combined with the model of image control. Proper creation and use of materials play an important role in digital environment image modeling. In the digital modeling of virtual object is given material, geometric model is more sophisticated, more the number of the other side, the easier it is to produce three-dimensional sense of reality, but the detailed description will produce large amounts of data to reduce system fluency. Therefore, in the design, should ensure the effect of the same time looking for a balance point to take into account the flow. When the material is given, we should consider the utilization of the map, when the scene is complex and the object is far away, the material can be simplified. When the observer close range, the use of high resolution mapping, in order to avoid the emergence of pixels due to the jagged [15].

5. Summary and Prospect

Architectural decorative art design of digital expression Chinese famous Buddhist temple - Hanshan Temple in Suzhou, field research on Hanshan Temple to obtain first-hand information based on the combination of digital technology at present, puts forward a new way of expression from Hanshan Temple digital, three-dimensional display and interactive virtual roaming technology two aspects discussed the digital expression of ancient architecture, in at the same time to ensure optimization of digital expression method of good visual effect and good architectural art expression effect, which is to ensure the visual effect but also the convenience of fluency and the use of interactive. To prove that the development model of three-dimensional digital is effective and feasible, and has a good reference value and practical significance in the virtual reality simulation system.

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