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Research Article

Application of Planar Binary Image in Building Elevation Design

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Architecture is one of the key and important parts of a city. Various kinds of buildings have absolute control over the quantity and area and are the key factors for the appearance of a city. With the development of cities and the increase of population, high-rise residential buildings can effectively alleviate the shortage of urban residential land, but at the same time, it also brings some problems, such as monotonous elevation of high-rise residential buildings, improper selection of elevation forms. As people's aesthetic awareness is getting higher and higher, people's requirements for the image of residential buildings are getting higher and higher. However, the research on the elevation design of high-rise residential buildings is relatively lagging behind. Therefore, it is necessary to enrich and expand the elevation design of high-rise residential buildings. Image binarization is an important technology in image preprocessing. It plays an important role in pattern recognition, optical character recognition, and medical imaging. Binary image is a simple image format. It has only two gray levels, but it occupies an important position in the field of image processing. In specific image processing application systems, it is often necessary to obtain binary values. The binary image processing arithmetic is developed from set theory under mathematical morphology. Although its basic arithmetic is simple, it can produce complex results. Based on the characteristics of binary image and the complex effect it produces, this paper finds out its regularity, finds a design method of building elevation, and realizes the application of binary image in building elevation design.

1. Introduction

Architecture is a material entity created by using existing technology, materials, and construction methods in order to meet people's living and social needs. Architecture forms space. Architecture can arouse people's emotions and bring people a variety of spiritual feelings. Beautiful urban space environment is not only because of beautiful buildings, but also because it has suitable scale of external space. "Field" is a state of existence of matter. There are effects of this field in "field," such as electric field, magnetic field and so on, and there will be a numerical value corresponding to any point in the field. We call the psychological influence and feeling of architecture on people as "building field." Affected by the construction site, people will have such feelings as grandeur, solemnity, simplicity, simplicity, repetition, order, nonlinearity, and so on. The generation of these feelings is the field effect of architecture. Because human perception of architecture is mostly accomplished by vision, the field effect of architecture is mostly the visual field of architecture. Similar to the division of external space by the visual field of architecture, when people observe architecture, it is not a static state, but a dynamic process from far to near or from near to far. Observing the changes of distance, angle, direction, color, texture, and outline of buildings will have different effects on people's perception of buildings and make people get different psychological experiences. Whether these locations, which produce different psychological feelings, can also find some mathematical relationship to quantify like the visual field of architecture, is a question worth exploring. In the study of traditional geomantic omen theory in our country, there is a description of "100 feet for shape, 1000 feet for potential" about the design of external space. This can be said to be a concise summary of the experience of architectural external space design in ancient China, and there are similar discussions abroad. Before the reform and opening up, limited by the economic foundation and people's living standards, we did not pay enough attention to the design of external space [1–3]. After the reform and opening up, with the rapid development of economy, people's living

standards are improving day by day, so are the aesthetic and environmental needs. With the rapid development of urban construction, high-rise buildings sprang up and the construction workload increased dramatically. The scale control of the external space of the building was relaxed or ill-considered. At the same time, the city has gradually lost its control and grasp of the external spatial scale. Today, with the rapid development of science and technology, we can draw lessons from the traditional theory of external space design and make more accurate and effective analysis and evaluation of architectural external space design through advanced computer technology, so as to make urban construction and space construction more scientific and reasonable. Simply put, when architects design houses, they use floor slabs and walls to create "nothing" that is space. Architecture is a kind of space which surrounds people. It can also be called the interior space of a building. The outer space of the building is relative to the inner space concept of the building and is closely related to human beings. Many famous historic and cultural cities at home and abroad not only have famous historic buildings, but also have many suitable external spaces, such as square streets, which give people visual enjoyment. Therefore, the study of cognitive scale of external space is of a great significance to architectural design and urban design.

As a subject with rich contents, digital image processing [4–7] mainly studies image transformation, enhancement, compression, restoration, segmentation, and comprehensive utilization, among which image transformation plays a very important role in digital image processing. Image transformation includes many important image processing methods and operations, such as image binarization [8–11]. Image binarization is often used in image processing to identify the object in the image and to segment the foreground and background regions of the image. It plays an important role in correctly analyzing the information contained in the image. Binarization is an image processing method for gray image. The so-called binarization is to transform a gray-level image in the range of 0–255 gray level into a black-and-white image (binary image) with only 0 and 255 gray levels. Therefore, binarization is a gray level transformation operation. Because binary image plays a very important role in digital image processing, binarization has a wide range of applications and is a very important means of image processing. It is necessary to study the binarization method. The application fields of general binarized images are license plate recognition and character extraction of images.

Based on the plane binary image, this paper puts forward the application method of plane binary image in building elevation [12–16] design, and applies the basic method of plane composition to three-dimensional building elevation through the law of binary image composition. The specific contributions of this paper are as follows:

(1) Firstly, the skeleton form of the elevation binary image is selected according to the architectural form

(2) Secondly, the binary image is constructed and adjusted according to the facade of the building, including the proportion of black and white and the relationship between part and the whole

(3) The binary image is mapped to the building facade, and the shadow generated by facade construction is taken into account as black

2. Proposed Method

The concept of diversified design [17–20] of assembly building includes that the structural system of the building can meet the diversified needs, the construction method of the building has good adaptability, the product needs can meet the personalized needs, the component parts can achieve diversified personalized performance on the basis of generalization, and the appearance of the facade of the building can achieve richness and artistic characteristics. In this paper, the elevation diversification design is based on the application of plane binary image, which meets the requirements of architectural aesthetics and has diversified performance. The purpose is to realize the individualization and diversification of facades of assembly buildings on the premise of standardization, and to increase the artistic appreciation, regionality, and sustainability of assembly buildings.

2.1. Building Elevation

2.1.1. Analysis of Building Elevation Design

(1) Comparison of Modularization, Standardization, and Diversity. Modularization is a standardized form evolved on the basis of standardization. The size of modularization, the typical structure, and the general components are all the concrete manifestations of modularization. Standardization is a unified regulation and measure for building products of construction industrialization to be interchangeable and versatile. It usually includes: standardized product design in a unified modulus, building accessories, building parts, and building moulds need unified specifications. Engineering construction standards are documents that prescribe common and repeated rules [21], guidelines or characteristics for construction activities or their results for the best order in the field of engineering construction, developed by consensus and approved by a recognized body approved, based on the combined results of science, technology, and practical experience, with the aim of promoting the best social benefit [22]. At the same time, the construction method of the joints of the building is based on the standard of the building products, building structure, building mechanics, building physics, site design, residential area design, urban planning, landscape architecture, urban and rural resources, etc., [23]. Quantification should be formulated in a unified way, so that the prefabricated production technology of components, construction technology, and quality can be unified. The emergence of standardization makes large-scale industrial construction possible. Diversified design is an important part of further discussion and industrialization of industrial product design on the basis of standardization. Diversified

design is not an unreasonable-free design. It is based on standardized components and structures, and through diversified combination methods, the building has a certain spatial shape and personalized realization. In the facade design of assembled building, the standardization degree will be improved correspondingly if the number of components is small. At the same time, the combination of components can also achieve diversification. However, diversification and standardization are not contradictory. They interact with each other and cooperate with each other, which can achieve both standardization and diversification of design. Summarize and explain the relationship between the three: modularization is the core of standardization, standardization is the basis of industrialization, diversification is the driving force of industrialization upgrading, as shown in Figure 1.

(2) Comparison of Traditional Composite Buildings and Diversified Buildings. Traditional assembly building design gives priority to structural system and component labeling. Designers are more concerned about how to produce and build accurately and quickly, and how to meet a large number of housing needs. The creation of architectural image is not the key point. The facade is not designed separately. The facade form is the direct response of the architectural plane. It is the result of rigid stacking of prefabricated components. It lacks individualized creation and the thinking process of diversified design. Compared with the traditional fabricated facade design, diversified design requires that the facade design should be taken into account at the beginning of architectural design. When splitting components and prefabricating production, we should think about the role of components in shaping the opposite image, whether we can adapt to the diversified needs by choosing the appropriate structural system, whether we can enrich the elevation image through regional materials and architectural language with national personality, and whether we can achieve the diversified design through new construction technology and technology.

(3) Importance of Diversified Design of Facade of Assembled Buildings. Because architecture involves usage behavior, design behavior, materials and technology, etc., its development has been affected by related disciplines. It is precisely because of its wide relevance that it is affected and restricted by many factors. Successful elevation design can correctly represent the natural landscape, regional culture, scientific, and technological development of the city. The exterior facade of a building is the interface between the building and the external space, the skin of the building, and it can directly realize the inherent characteristics and characteristics of the building. Therefore, it is necessary to focus on the research and analysis of the facade design method of the assembled building.

2.1.2. Basic Principles for the Diversified Design of Facades of Assembled Buildings. Beauty itself is an abstract and complex thing. It has absolute rules and relative differences.

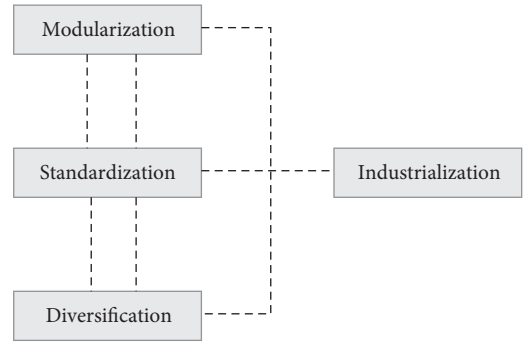


Figure 1: Diagram of industrialization, standardization, modularization, and diversification.

Regardless of the old and new buildings and the nature of the buildings, they all follow the law of formal beauty. Industrial architecture itself is the product of the times. It should embody its own personality and follow the steps of the times.

(1) Principles of Holistic and Dynamic Design. The principle of holistic design requires that elevation design be considered and studied as a part of architectural system design, rather than an isolated design process. Different component combinations form a complete assembly building. It can be seen that the study of the interaction and mutual restriction between component parts is helpful to create a rich and colorful facade of assembly building. The dynamic principle requires architects to have keen insight and foresight, to discover the inherent law of development and development direction of assembly building design, and to find the driving force of the times based on the basis of industrialization. Facade design requires designers to always pay attention to the development of building structure and the change of construction method system, study more advanced construction technology, and explore better design methods.

(2) Regional and Sustainable Design Principles. Building facade design needs to reflect regional characteristics because of its direct contact with urban cultural space. In different urban environments, due to the construction materials produced by the city and the aesthetics of the urban residents, the regional climate characteristics are different, and the structural forms of the buildings also produce different formal characteristics. For example, because of the drought in the north, there is no outer corridor at the bottom of the house, while in the south, when the temperature is changeable and rainy, the bottom overhead is often chosen. In the life cycle of buildings, the principle of sustainable design is to save resources, reduce pollution and create a harmonious, comfortable, healthy, and efficient living environment. The purpose of sustainable architecture is to reduce and control the consumption of resources in the whole life cycle of construction process and operation. The concept of sustainability is a new dimension of human thought. This paper examines the decisive role of the overall concept of ecology and the development of environmental ethics on the emergence of sustainable thinking, which has a post-modern ecological spirit.

Facade design should follow the principles of green, ecological, and sustainable. It is bound to be a resource-saving and environment-friendly building in order to achieve the balance of energy and resources in nature.

(3) Basic Principles of Facade Composition. Unification and change are widely used in architectural design. Architecture can be divided into whole and part by space analysis. There is a relationship of unity and change between architecture and details. In the elevation design, we should fully coordinate the overall and local change factors, deal with the relationship between them, and achieve unity and change. Equilibrium and stability are also an important principle in the construction of three-dimensional space. Equilibrium is mainly to study the relationship between the front and back of each part of the building, which should form a stable feeling after some combination. Stability refers to the overall importance of the relationship between the whole building, which should give people a safe and reliable effect. Equilibrium and stability are interdependent in the principle of formal beauty. Asymmetric equilibrium is to use the balance of volume, texture, color, and weight to achieve the purpose of asymmetric equilibrium, which is smart and lively compared with symmetric equilibrium. Because of the influence of structural technology and building products, there are many repetitive expressions in assembly building. In the architectural space composition, the component elements are used repeatedly or gradually to produce a sense of rhythm and rhythm. The contrast in architecture is shown in various spaces, such as the size and height of space, the smoothness and roughness of material, and so on. The proportion of buildings mainly refers to the relationship between the various parts of the building form. For example, the ratio of the whole building to the length, width, and height of space, the ratio of the area of windows and walls in the facade, etc.,

The artistry of architecture lies in its materiality, which is one of the important symbols distinguished from other plastic arts, but the content of architecture without form does not exist. Therefore, the plastic arts of architecture cannot be understood as the facade processing in the later stage, but should be carefully considered from the beginning of the design to the final construction. Designers should explore a series of aesthetic principles in space organization, structure, and material application in the relationship between function and production technology. The diversity design method of fabricated facade can integrate the use function and aesthetic function of the building. Therefore, it is necessary to study the design method of facade of assembled building.

2.2. Image Binarization

2.2.1. Binary Principle. In the process of digital image processing, firstly, the image should be converted into discrete digital form. For gray image, it is a two-dimensional matrix. Each element in the matrix represents a pixel point. The element value is the gray value of the image at that pixel point, and the range of the value is chosen. Binarization is to divide the whole image into two parts, foreground and background. The gray value of foreground part (i.e., the corresponding element value in matrix) is set to 255, and the gray value of background part is set to 0, so that the image contains only two gray values 0 and 255, thus showing obvious black-and-white effect. The threshold method is usually used to separate the foreground and background of the image, that is, the gray image with 256 brightness levels is separated from the target and background by appropriate threshold selection. After resetting the gray values of the two parts as described above, the binarization process can be completed, and the binarized image can be obtained. The key of threshold method is the method used to select the threshold. If the threshold method is used properly, the image can be segmented more accurately, so that the obtained binary image can still better reflect the overall and local features of the image.

2.2.2. Image Binarization Method. The most commonly used method of image binarization is threshold method, which can be divided into global binarization method and local binarization method according to the different methods of threshold selection. Global binarization methods include bimodal method, iteration method, and OTSU method. Among them, the OTSU law (Otsu law) put forward by the Japanese scholar Otsu is the most famous. Local binarization methods include locally fixed threshold method and locally adaptive threshold method.

2.3. Building Elevation Design Based on the Plane Binary Image. The application of plane binary image in building facade is divided into three steps: the first step is to select the skeleton form (regularity or irregularity) of the elevation binary image according to the nature of the building; the second step is to adjust the binary image according to the components of the building facade, including the proportion relationship between the black and white parts, the relationship between the part and the whole, and the relationship between the black and white parts; the third step is to select the binary image skeleton form (regularity or irregularity). The image is mapped to the building facade, and the shadows produced by the facade components are taken into account as black.

The elevation form of high-rise residential buildings generally consists of more than two kinds of detail components, which are combined and connected according to the relative position, direction, or gravity transfer relationship to form an organizational framework with a certain pattern, which is called formal structure.

2.3.1. Proportion and Scale. The so-called proportion is defined in the French Architectural Dictionary as follows: "proportion means the relationship between the whole and the part—it is logical and necessary, at the same time, proportion has the characteristics of meeting the requirements of reason and vision." Proportion is the building's

own property. It studies the relationship between the part and the whole in the construction, and this relationship is usually a mathematical relationship, such as multiple, cardinal, or function. Proportion is different from size. Dimensions represent specific quantities, not relationships. For example, the size of windows and balconies are all specific values. Proportion represents the relationship between values, and the relationship between dimensions is proportion.

Controlling and coordinating the proportion in the facade design of high-rise residential buildings is the basis of producing the beauty of facade form. At present, the proportion of facade design of high-rise residential buildings is not enough. The proportion of facade components in the whole wall is studied. In order to achieve the proportion coordination of facades, the concept of "ratio" is introduced. Ratio is a mathematical concept. Theoretically, it is the reaction of multiple relation. The value obtained by dividing two variables is the ratio between the two variables. The so-called proportion means that when there is a constant ratio between the two groups, the two groups can be said to be proportional to each other. The regular recurrence of the same ratio forms the proportion coordination, which brings people a good feeling. Throughout the development of architectural history, we can find that the golden rectangle [24] has a perfect ratio. The application of golden rectangle (Figure 2) and the proportion of human body in high-rise residential design make the elevation form design more in line with the aesthetic requirements of art.

Because of the complexity and contradiction of the building, while pursuing the harmonious proportional relationship, we should ensure the function, fire prevention, environmental factors, and so on. Harmonious proportion is not achieved in one move, nor is it a complete mathematical proportion. Instead, we need to grasp the dominant elements of elevation form design under the premise of ensuring reasonable function and make repeated deliberations on detail components. The mastery of perfect proportion will help us find the proportion of elevation form in design, speed up our design time and improve our design. Design quality. Scale in architecture, as its name implies, is the measurement of building size, which refers to the concept of building size by reference. Scale is different from proportion. Scale is subjective, and it is a kind of visual feeling through reference. In general, the design of high-rise residential buildings adopts real scale, which means that the visual scale sense is consistent with or basically consistent with the actual scale sense. The design of elevation form of high-rise residential buildings should take human scale as reference, fully consider the changes of human visual angle and visual distance when people are near and away from the residential buildings, and find a good sense of scale. Generally speaking, we can consider the elevation form scale of high-rise residential buildings from three aspects.

(1) Detailed Dimensions of Facade Members. The facade form of high-rise residential buildings is an indispensable part of the formation of real size. People's long-term life experience has made a deep impression on building components or

Figure 2: Analysis of facade of golden section building of Marseille apartment.

familiarity with the size, and formed a customary cognitive scale, such as the size of balconies, doors, and windows, and wall materials such as bricks, logs, stone sizes. Through reasonable design of these common dimensions, the true dimension of elevation can be achieved.

(2) Close-to-Human Scale of Elevation Form. Close-to-person dimension of facade form refers to the place at the bottom of the building where people most intuitively touch. It often sets up residential entrance here. This part tends to be friendly to the sense of scale and can adopt the technique of fine design of warm-colored material details. Especially, in the design of residential unit entrance, the scale should be carefully pinched. For example, outdoor step height, railing handrail height, etc.,

(3) Overall Scale of Elevation Form. The overall scale is the overall grasp of the opposite form, through the horizontal and vertical division. The number and height of building floors are determined horizontally and vertically. Vertical division determines the division of the room. Even composite partition, a large number of partitions highlight the details of the building facade, providing more reference for the real scale judgment of the building.

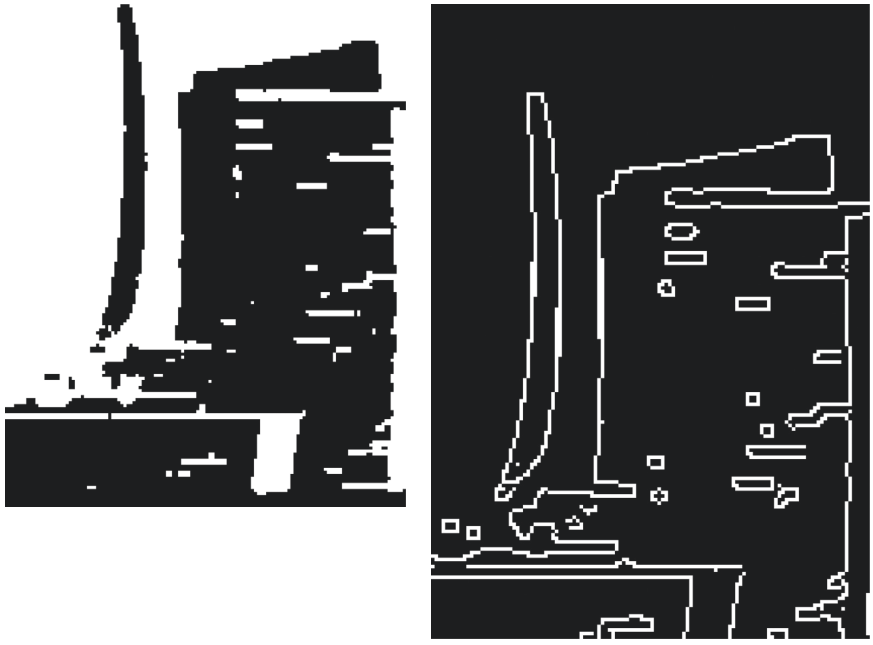
2.3.2. Rhymes and Rhythms. In the design of the elevation form of high-rise residential buildings, the rational and appropriate grasp of proportion and scale makes the elevation form full of rational and rigorous sense of order, while rhythm and rhythm are full of emotional consciousness, which adds interest to the composition of the shape. Rhythm and rhythm mainly refer to the appearance of the elements of detail components with regularization, patterning, repetition, or gradual change, showing a visual sense of motion or sequence (as shown in Figure 3). Windows and balconies are the first choice for rhythm and rhythm. Window, balcony in the high-rise residential facade presents a relatively small scale, in the facade form of the composition of the "point" visual effect. In the design of elevation form of high-rise residential buildings, through the grouping and faceting of windows and balconies, the points arranged continuously can produce linearization effect. They can be aligned vertically or horizontally along a straight line, or they can form a sense of rhythm by regularly crossing horizontally and vertically, or even form a linear texture of grid by arranging in patches. Intuitively speaking, rhythm cannot be separated

Figure 3: The presentation of rhythm in architecture.

from repetition. With the repetition of elements in composition, people's eyes bring different feelings in the way of repetition. The use of repetition is a common means in architectural design. Facade decoration components can use gradual rhythm to enrich the facade effect. Gradual rhythm can be divided into spacing gradual change, size gradual change, and color gradual change. Gradual spacing is often used in the design of elevation of high-rise residential buildings in the form of door and window openings, wall partition, and even floor height partition. Gradual rhythm obtains the effect of picture movement. Dimensional gradient components can be formed by different sizes of windows. Gradient of color can be achieved by gradient of color brightness.

2.3.3. Equilibrium and Stability. One of the most obvious characteristics of residential buildings which are different from other types of buildings is the sense of security. To achieve a sense of security, we must follow the design principles of stability and balance. Balance and stability are more about people's visual perception and stability, which is a kind of visual habit and aesthetic concept formed naturally by people's long-term experience of understanding things. All plastic arts that conform to stability are considered to have aesthetic feeling. Equilibrium is also an important aspect in elevation design. Once buildings lose balance, especially residential buildings, it is possible to produce a sense of discomfort. Equilibrium can be divided into two categories: symmetric and asymmetric equilibrium. High-rise residential buildings are mostly symmetrical, so the shape is mostly symmetrical. Symmetrical technique has been widely used since ancient times. The emergence of symmetrical technique is not only the cause of the aesthetic sense of composition, but also related to the structural needs and functions and space needs. The most common limitation of ancient architectural technology is the symmetrical structure, because the symmetrical structure is the most easiest to achieve the static effect of the structural form. Today, with the rapid development of construction technology, symmetrical structure is still the first choice for structural design. Equilibrium is a pattern corresponding to symmetry, and the form of stability and incomplete symmetry is called equilibrium. Symmetry theoretically belongs to a special strict sense of equilibrium, which requires homogeneity, isomorphism, and quantity and is an absolute equilibrium. Equilibrium is a common natural equilibrium that exists universally. It can be isomorphic or even isomorphic. The upper and lower parts of the body or the left and right parts of the body need not be isomorphic. However, the balance of power must be balanced in human visual psychology. Asymmetric balance is more lively than strictly symmetrical balance. Contemporary architecture cannot meet the symmetrical balance. Motion is used to achieve balance. The main factors affecting the sense of visual balance are quality, color, quantity, distance, and volume. Formally, equilibrium is the opposition and destruction of symmetry. However, the two sides of the axis or fulcrum are not equal in shape, but equal in quantity and force. This special-shaped but equal-force relationship implies the principle of equilibrium. Equilibrium in the elevation form of high-rise residential buildings needs to be felt by visual psychology, which is essentially the balance relationship among visual psychology, shape, quantity, and force:

(1) High-rise residential buildings are mostly symmetrical slab or tower buildings in volume. When several buildings are connected together, they can also be balanced through asymmetry. At this time, we need



(a) (b)

Figure 4: (a) Image preprocessing. (b) Binary image bone architecture construction.

to start from the volume. There are big differences in morphology, but the volume is basically the same from the visual perception. Residential buildings often deal with the top and bottom, such as setting lightweight structures, sloping roofs, retreating platforms on the top, while deepening the color of the wall at the bottom, relaxing the columns, and increasing the volume to achieve stability.

(2) Visual perception of quality mainly comes from materials and colors. The second section of the previous chapter introduces that different colors bring different psychological feelings to people. The differences of color phase and intensity give people different perceptions of quality. Material also has a visual sense of quality, high-rise residential facade component selection of different materials will produce different effects, general metal material than stone more quality, stone more quality than wood, wood more quality than glass. It is just a visual experience, not the actual density of the material.

3. Experiments

3.1. Simulation Environment and Parameter Settings

3.1.1. Skeleton Extraction of Planar Binary Images. The edge of the image provides a large part of the visual information of the image. There are two advantages in extracting gray image skeleton from image edge: (1) partial contour information is applied while avoiding image segmentation; (2) mature skeleton method of binary image can be used to the maximum extent. Starting from the edge of the object, the skeleton strength diagram can be obtained by denoising [25], distance transformation [26], and isotropic diffusion of the edge of the object [27]. The skeleton strength diagram has a good feature: in the position of skeleton point, the value of skeleton strength diagram is much larger than that of nonskeleton point. This advantage makes it suitable for skeleton extraction of binary image and gray scale image.

Figure 5: Binary introduction to building facade.

Then, according to the building facade construction and adjustment of binary image, through different binarization methods to deal with and adjust plane objects, lay a good foundation for building facade design; finally, the binary image is mapped into the building facade to form a design scheme.

4. Analysis

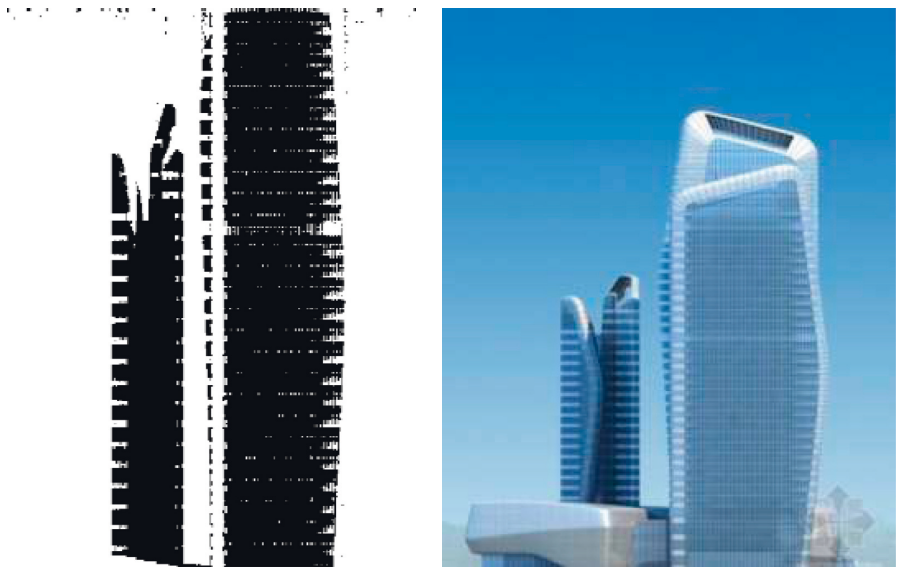
4.1. Simulation Analysis. Before feature extraction of image, in order to highlight the features of binary image, this paper needs to preprocess the image, gray-scale processing first, then binarize the image. Finally, edge detection is carried out

(a) (b)

Figure 6: Binary construction of OTSU.

	MSE	SSIM
Algorithm in this paper	0.1358	0.9959
OTSU	0.4258	0.9741

Figure 7: Comparison of two binarization methods.



(a) (b)

Figure 8: The application of binarization method in a building design.

for binarization. Under the binarization skeleton, simulation shows that the preprocessing of this paper is conducive to subsequent image feature extraction. The binary skeleton of plane image is constructed, as shown in Figure 4.

After the construction of the binary skeleton structure, the binarization is introduced into the building facade to form a design prototype directly. As shown in Figure 5, this method is the result of the ordinary binarization treatment introduced into the building facade.

For comparison, this paper also uses OTSU binarization treatment as the same analogy to import building facades. The results of OTSU binarization method are shown in Figure 6.

Comparing the two binarization methods, Figure 7 shows the comparison results of the two methods.

As can be seen from the figure above, the algorithm in this paper is more practical, so we choose the algorithm in this paper to design a unit building. The effect is shown in Figure 8.

5. Conclusion

Image binarization is a common method that can identify objects and separate their foreground and background regions. It is very important to accurately analyze the information contained in the image. Binarization is a new method for processing grayscale images. Binary is to convert a grayscale image of 0–255 into a black and white image (binary image) with 0, 255 grayscale. Binary is a grayscale conversion operation. Binarization is a widely used method, which is an important image processing method. The study of binary is very interesting. Based on the characteristics of plane binarization, the skeleton of plane image is obtained by binarization image preprocessing, i.e., feature extraction and edge detection. Then, the binarized image is adjusted, and then, the adjusted image is mapped into the building facade. A design method of building facade based on plane binary image is proposed. In the design process, the building is opposite. The construction dimension of the facet is grasped to control the appearance and shape of the building. By comparing the introduction of OTSU binarization method, the practicability of the proposed method is verified, and it has played a very good effect on a building design.

Data Availability

This article does not cover data research. No data were used to support this study.

Conflicts of Interest

The author declares no conflicts of interest.

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