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Retraction

Retracted: Architectural Interior Design and Space Layout Optimization Method Based on VR and 5G Technology

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Y. Wu, "Architectural Interior Design and Space Layout Optimization Method Based on VR and 5G Technology," *Journal of Sensors*, vol. 2022, Article ID 7396816, 10 pages, 2022.

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Research Article

Architectural Interior Design and Space Layout Optimization Method Based on VR and 5G Technology

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With the continuous optimization of the living environment, people's requirements for its comfort and cultural taste are also constantly improving, and their understanding and requirements for the appearance and style of the building and the layout of the building space have been further deepened, thus forming a situation of diversification and diversification of the style and form of the architectural appearance and interior design. There are a lot of layout problems in modern engineering and real life, and the indoor space layout is a very important branch. The indoor space layout focuses on the indoor scenes that people rely on for production and life. At the same time, indoor scene models are gradually applied to more and more fields. The urgent need for indoor scene modeling has also led to relevant research on indoor space layout. Because of its wide application prospects and great commercial value, indoor space layout has become an important research topic in the field of computer graphics and computer vision. As the computer-aided design is widely used in the field of intelligent design, indoor space layout has also become an important research field. Focusing on the automatic design and optimization of indoor space layout, this paper proposes an optimization method based on design constraints for the automatic generation of a layout plan based on the given layout boundary or layout space. The room units in the interior space layout are represented by polygons composed of multiple rectangles, and the constraints and rules in the layout design are transformed into constraints on related rectangles. Experimental results show that our scene redirection method is effective. Comparing with the results of uniform scaling further proves the effectiveness of our redirection algorithm.

1. Introduction

Generally speaking, layout design is about the reasonable arrangement and proper placement of objects. There are a lot of layout design problems in modern engineering and real life, such as the layout of VLSI, the container shipping of freight terminals, and the architectural layout design of the construction field. Because layout design has a wide range of application prospects and great commercial value, layout design problems everywhere make layout research have universal and profound practical significance [1]. Space layout design is the main content of layout design because most layout design problems are closely related to space, such as the cutting of one-dimensional space, the indoor layout plan design of two-dimensional space, and the cockpit layout of three-dimensional space. The so-called spatial layout design refers to dividing a given space into a combination of small spaces or reasonably arranging some objects to be laid out in the space under the constraint framework of some objective and subjective layout conventions and design criteria [2]. The research on spatial layout design stems from the fact that traditional methods cannot meet the current needs of efficient design. Traditional layout design is often designed manually by designers or aided by interactive modeling software. Due to the limitation of designers' professional ability and knowledge level, traditional layout design is mainly based on repeated trial and error and requires a lot of professional knowledge, design experience, and creative intuition [3]. The key points of interior design space layout are shown in Figure 1.

Because the traditional design mode mainly depends on manpower, the design process often consumes a lot of manpower and energy. Therefore, changing the traditional layout

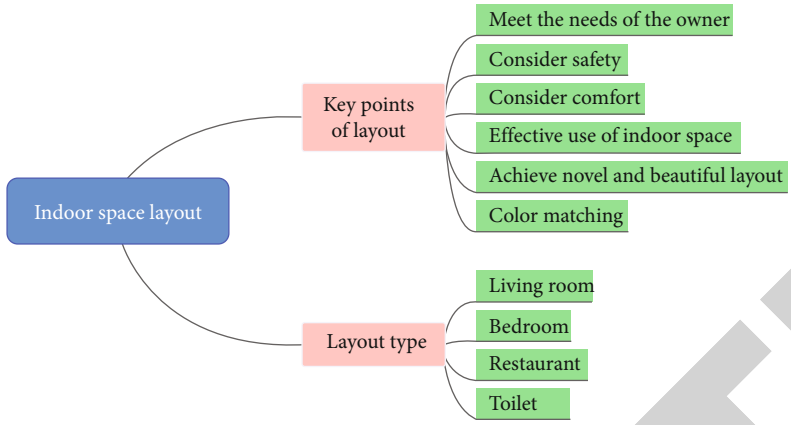

Figure 1: The key points of interior design space layout.

design mode and realizing the automatic design of spatial layout have become an urgent research problem in the current industry and academia. Since the 1960s, computer-aided design has been widely used in the field of intelligent design, and computer-aided layout design has gradually formed [4]. This field involves mathematical modeling, modern optimization, artificial intelligence, graphic interaction, and other related technologies. With the development of computer-aided design and the rise of artificial intelligence, as an important research field of intelligent design, the application and research of spatial layout design have also entered a new stage. Indoor space layout focuses on indoor layout, which is not only an important research problem in interior design but also an important research direction in layout design [5]. Compared with other types of layout problems, indoor space layout has more research value. Indoor space layout is widely used in interior design, computer games, virtual reality, and other fields. Among them, in the field of architecture, indoor space layout includes the design of a layout plan and the layout optimization of indoor scenes. The traditional indoor space layout mode often costs a lot of manpower because it widely relies on labor. In the field of games, in order to reduce the cost, the scene design of large-scale computer games often reduces the indoor scene model as much as possible or reuses the existing scene model, which will weaken the diversity and authenticity of the game scene and seriously affect the user's game experience. In the field of virtual reality, indoor scenes are one of the most used scenes of VR or AR technology [6]. However, indoor scenes in virtual reality are often carefully designed by professional designers and need to adapt to the real physical environment where users live. Such strict design requirements make indoor space layouts more and more important in the field of virtual reality. The automatic design and optimization of indoor space layout can be applied to these fields: assist indoor scene modeling by automatically designing the layout plan of the indoor scene and optimizing the home layout of the indoor scene [7]. Through the automatic design of indoor space layout to achieve the efficient creation of large-scale indoor scenes in computer games and through the optimization of indoor space layout, virtual roaming can be realized in the actual physical space of various scales. With the increasing demand for indoor scene modeling, indoor space layout has aroused widespread interest in academia and has gradually become a research hotspot in the field of computer-aided design.

The automatic design and optimization of indoor space layout have important research significance. On the one hand, due to the important application background of indoor space layout in many fields; on the other hand, the traditional layout design relies heavily on labor and is inefficient [8]. The existing layout design methods are simple and immature, and there are a series of problems such as unsatisfactory effects and complex human interaction. The automatic design and optimization of indoor space layout can greatly reduce the workload of designers, and even directly serve users. The ultimate goal of automatic design and optimization of indoor space layout is to follow and simulate the designer's design thinking in the design process and strive to achieve automatic or intelligent design [9]. This can greatly reduce the workload of designers to improve the efficiency and quality of layout design, and even directly reduce the threshold of layout design, serve the majority of users, and let more ordinary users become designers. Focusing on the automatic design and optimization of indoor space layout, this paper proposes an optimization method based on design constraints for the automatic generation of a layout plan based on the given layout boundary or layout space. The room units in the interior space layout are represented by polygons composed of multiple rectangles, and the constraints and rules in the layout design are transformed into constraints on related rectangles.

2. Related Work

2.1. Research Status of VR Technology. VR technology is virtual reality technology, which enables real people to experience the same things and things as the real world in the virtual information world created by computers. It has the basic characteristics of multi-perception, immersion, interaction, and imagination. This virtual technology integrates many kinds of science and technology, such as computer graphics and image technology, reality simulation technology, and multimedia technology [10]. However, due to the

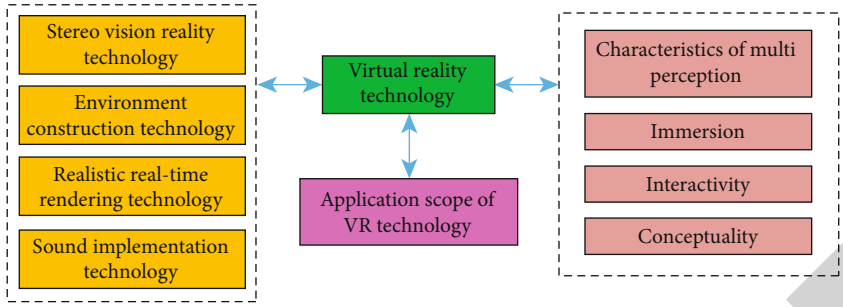

Figure 2: The introduction of virtual reality technology.

limitations of current technology and sensing technology, it can only simulate ordinary perception systems. Immersion, also known as immersion or telepresence, existence, etc., specifically refers to the real experience of people in the virtual world in the first person. Of course, the current technology has not reached the optimal level [11]. Conceivability, that is, in the virtual world, presents the things that the objects you want to do in the virtual world, what effect can be achieved by doing so, and even the things and things that cannot exist in the real world can be conceived in the virtual world. [12]. The information obtained by humans through vision is the most one of all human senses, so stereo display technology plays an indispensable role in virtual reality technology. The introduction of virtual reality technology is shown in Figure 2.

The integration of digital technology into environmental space design can improve the humanization and appeal of the environment, so as to enhance people's participation in the environment and effectively improve the interaction between the environment and people. Although digital technology relies on the combination of science and technology and artistic elements, we need to recognize that digital technology is a way of expressing design, and the designer's thinking and design of the site is the basis for the implementation of the design scheme. One of the significant advantages of digital design compared with previous modeling design is its telepresence [13]. The key to creating telepresence is an immersive experience, and the immersive effect of VR digital technology depends on people's perception of it. When people perceive the visual, olfactory, gustatory, tactile, and other stimuli brought by the virtual world, the brain will receive the positive feedback of this information, forming psychological immersion, just like entering the real world and personally feeling the whole site. Digital design can also play an important role in the selection of design styles [14]. When designing a large-scale environmental space, the designer will integrate environmental psychology and the knowledge of various professional disciplines, and carry out the design according to the location conditions obtained from the analysis in the early stage of the design, combined with the historical and cultural background around the design area. The purpose of environmental space design is to coordinate the contradiction between the design coordinator and the site [15]. If the designer does not consider the surrounding environment, it is tantamount to designing an island in the city. In order to avoid this phenomenon, designers can choose a design style that is more suitable for the site through VR technology, so as to avoid the design being out of tune with the surrounding environment in urban planning.

This digital furniture has realistic lighting and shadows, which are coordinated with the surrounding real environment [16]. At the same time, users can also save the designed room image and share it with others. With the continuous development of modern environmental space design, the expression of design is gradually diversified, and the combination with technology is also increasingly close. VR technology is developing rapidly, which has changed the way people communicate with the digital world to a certain extent [17]. People expect to get a stronger sense of immersion, and VR will realize people's wishes and change the way people work, play, and communicate. At the same time, the characteristics of VR itself will bring changes in performance technology to environmental space design and help designers better display design blueprints. Display space technology is generally three-dimensional. Now with the development of urbanization and modernization, many display space technologies have shown a strong universality. On the basis of good three-dimensional embodiment, we have now developed many kinds of embodiment methods. On this basis, we choose to improve technology to ensure the efficiency of innovative technology and its affinity to the people to a certain extent. On this basis, we show that the application analysis of VR technology in space design is particularly critical.

2.2. Architectural Style and Spatial Layout. In the history of architectural development, people's design and aesthetics of architectural style are constantly changing. The design of building appearance is mainly dependent on the construction of the load-bearing structure. Generally speaking, it is the covering of the additional structural system [18]. It is closely related to the structure because the appearance design cannot exist independently beyond the structure. When it comes to the idea of architectural appearance design, it should be clear that the graphic design mainly depends on the overall idea, requiring that the design function, area, and environment can be combined with each other according to the shape and quantity of the geometric plane [19]. The design style of the outer eaves of the building should fully reflect the profound cultural heritage consistent with the local culture, the superior natural landscape

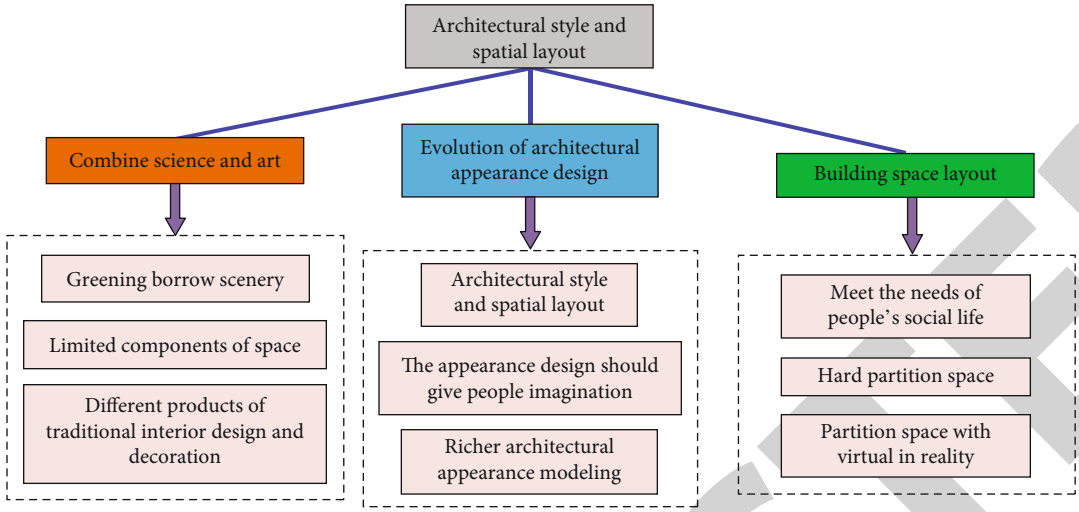

Figure 3: The architectural style and spatial layout.

conditions, and the modernization of the new century. In the design and management of the building eaves, we should adhere to the first-class standard, reflect the urban positioning, highlight local characteristics, show the style of the times, and reflect the atmospheric, fresh, and beautiful architectural style. The design that highlights those flat shapes mostly uses the integrity of the plane as the main facade and pursues some changes of lines and doors and windows on its basis, so that the whole building can become bright in front of the eyes, giving people a simple and light feeling, and create a unique artistic conception [20]. Therefore, if the shape of the building is lively, there are no restrictions, which requires the designer not only to have rigorous ideas but also to have creative thinking, and constantly improve their own level while designing a richer architectural appearance shape.

When foreign-designed buildings appear around us, they not only change our thinking but also change our own living standards. There are great differences between different cultures in Europe and us. Now we are used to accepting these differences and ignoring the innovation and development of our traditional architectural design, which is worth thinking about [21]. If we want to change this mode, we must leave space for people to imagine the appearance design, so that each of us can feel the charm of the building. When it comes to the purpose of interior design, it is to adapt to the needs of people in today's rapidly changing modern society through a reasonable indoor and outdoor environment. Therefore, interior designers must put the needs of the objects to be served for spatial functions first [22]. Always adhere to the harmony and unity of architectural interior design and human life, which requires the use of knowledge of disciplines such as ergonomics, aesthetic psychology, and environmental science. With these, we can better understand and analyze the different feelings of human physiology, psychology, and vision, so as to make an interior design that meets the needs of different people. Designers naturally introduce the outdoors into the interior through design. This design technique is called the outdoors of interior design [23]. Through the hole in the wall or the transparent large glass curtain wall, the vivid outdoor natural scenery is directly introduced into the interior, so as to integrate the indoor and outdoor environment. This flowing open space allows users to directly feel the sun, fresh air, or lush plants so that they can experience the breath of nature and cultural artistic conception. The architectural style and spatial layout are shown in Figure 3.

Nowadays, when creating a reasonable indoor space, interior design should attach great importance to the combination of science and art. From the perspective of the development of architectural appearance design and indoor environment design, the rise of those innovative styles must correspond to the social productivity at that time. Among them, the application of science and technology is the fundamental requirement. There is no correct thinking in creation [24]. In principle, its unity with thought is a major problem. Therefore, interior design is a comprehensive balance between science and art, people's physiological and psychological needs, and spiritual and material. In the architectural style and spatial layout design, we should pay attention to the coordination between details to make the architectural style consistent with the layout design. The design should consider the comprehensive aesthetic, psychological, and other elements [25]. Architectural style and spatial layout are related to people's quality of life, safety, health, comfort, and other issues. In the face of rapid development today, we should divergently think and create an architectural style suitable for the development of the times.

2.3. Application of 5G Technology in Smart Building. In the process of smart building construction in China, driven by 5G technology, it can have a good development space. Therefore, in practical work, it is necessary to collect the status and equipment operation data of smart buildings according to 5G technology, integrate different functional modules, and comprehensively improve the implementation effect of 5G technology, so that smart buildings can achieve vigorous development in the new era and show modern innovative

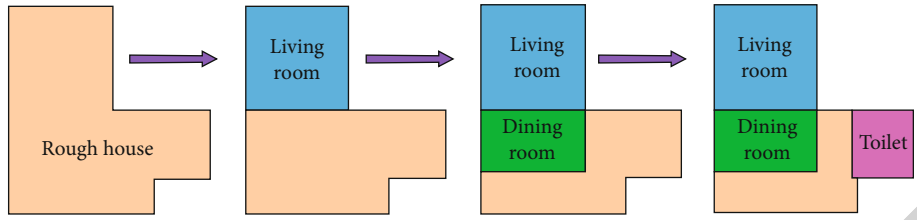

Figure 4: The process of indoor layout.

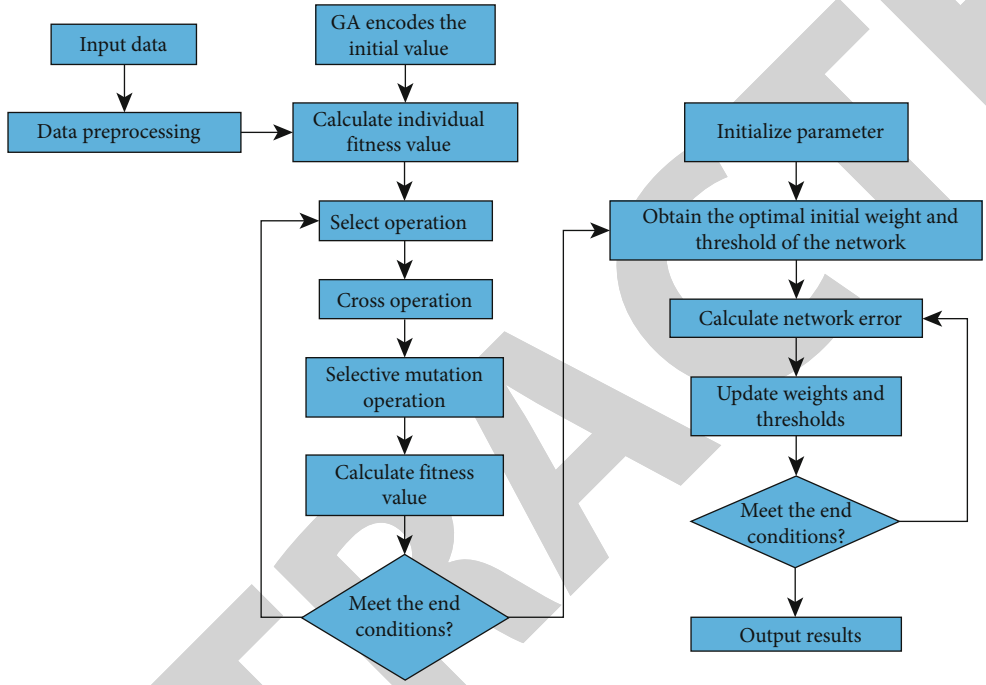

Figure 5: The flow chart of the multi-objective genetic algorithm.

ideas [26]. In the process of specific application, the technology mainly completes the data transmission at high speed, which has the advantages of reducing delay and saving energy consumption and effectively improves the overall construction effect [27]. At the same time, it also improves the carrying capacity of the network, meets the standards and requirements of different technical solutions, and also expands the technical support of vertical industries. In terms of technical composition, it optimizes the network slicing function through the service mode of automation architecture, so that the feasibility can be fully revealed.

In smart buildings, users' demand for information and communication is gradually increasing. For example, users' requirements for communication systems include network coverage and communication quality [28]. Therefore, according to the development status of smart buildings, we should optimize the current technical mode and solve the instability of signal acquisition in the past. During the implementation of 5G technology, it can provide users with a more stable and reliable communication experience and reduce the delay problem in the connection process. Therefore, the smart building industry needs to keep up with the development direction of the times and constantly expand the current development ideas [29]. In terms of the establishment of available reference signals, we should integrate the positioning function into the smart building, set the corresponding information reference signals according to the channel state of the smart building, and synchronize the corresponding information platform to transmit information in the form of wireless signals, and then cooperate with the positioning technology to provide reliable information, quickly find the source of the signal, and propose an effective smart building intelligent management scheme, and reduce the probability of unexpected problems in smart buildings [30]. In terms of the establishment of the actual system, it is necessary to provide multi-path information transmission channels after reducing the interference source of the signal according to the corresponding zero power and non-zero power according to the scientific setting of the communication frequency. This way can enrich people's experience in smart buildings and highlight the application advantages of mobile communication technology itself [31]. In the process of technology implementation, we should realize the mutual integration of different smart building systems and constantly expand the current business development platform.

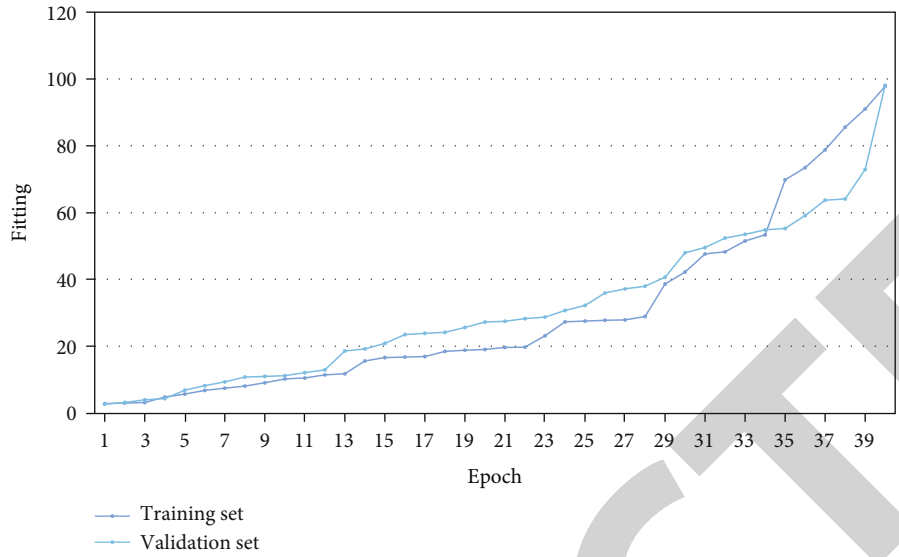

Figure 6: Schematic diagram of training process performance improvement.

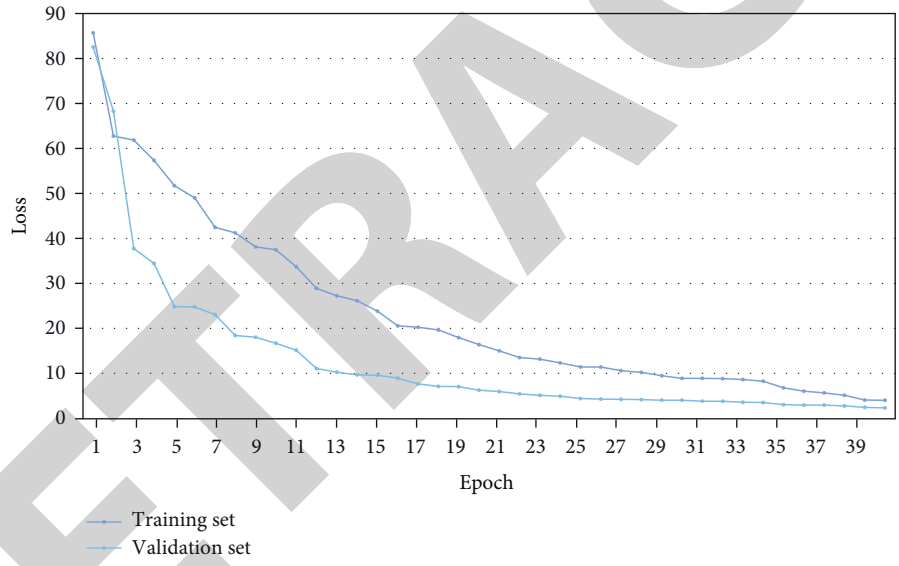

Figure 7: The training process loss convergence schematic.

3. Design of Application Model

3.1. Basis of Interior Space Layout. Compared with flexible curves, geometric forms show more rational beauty, and different polygons and their combinations in different indoor space layouts will have different expression effects and psychological effects on users. Therefore, people should pay attention to the role of geometric form in indoor space layout, carefully appreciate the value of space layout shown by the combination of geometric form and other attributes, and let geometric form always appear as the protagonist in indoor space layout. For example, residential buildings can be regarded as the spatial division of fixed areas according to specific design constraints and conditions, forming different functional areas and rooms. Creating real and rich indoor scenes is an important part of 3D modeling technology, and indoor scenes are also the basis of some important applications. Indoor space layout design is the core content of indoor scene modeling and the basis of indoor scene generation. Focusing on the automatic design and optimization of indoor space layout, this section mainly introduces some basic concepts related to indoor space layout.

Table 1: Optimized layout parameter results of the same furniture.

Number	Furniture name	Length	Width	Layout optimization results	
				X	*Y*
1	Bed-1	2000	900	450	1000
2	Bed-2	2000	900	2550	1000
3	Bed-3	2000	900	450	3800

Table 2: Optimized layout parameter results of the different.

Number	Furniture name	Length	Width	Layout optimization results	
				X	Y
1	Bookcase	1650	600	150	500
2	Bed	600	500	600	500
3	Desk	500	850	450	1500

Figure 8: Histogram of optimization results.

Indoor scenes cannot be simply regarded as a collection of three-dimensional models. A high-quality indoor scene needs to fully reflect the semantic functions and layout structure of three-dimensional scenes. Therefore, indoor space layout design is the core of indoor scene modeling, and it is also the basis of indoor scene modeling. Indoor space layout includes space, furniture, and their interrelationships and requirements. These relationships and requirements are the constraints of the layout. The convenience of personnel activities and environmental comfort should be comprehensively considered from the perspectives of furniture configuration, furniture placement, and personnel psychological needs. There is no interference between dormitory furniture, and the greater the distance between them, the better. It is expressed by the following objective function.

$$F_1(x) = \sum_{\substack{i=1 \\ j=1}}^{n} \left(x_i - x_j\right)^2. \tag{1}$$

When the area, number, and size of furniture are certain, the area occupied by furniture and activity area is certain. In order to maximize the utilization of the central area of personnel activities in the design, this paper uses the following function to describe the distance of this activity.

$$F_2(x) = \sum_{i=1}^{n} w_i (x_i - x_a)^2. \tag{2}$$

In this paper, the design variable is defined as the position parameter of furniture, and the mathematical expression is as follows.

$$\boldsymbol{X} = \&\{\boldsymbol{X}_1, \boldsymbol{X}_2, \cdots, \boldsymbol{X}_n\} = \{(x_1, y_1), (x_2, y_2), \cdots, (x_n, y_n)\}. \tag{3}$$

The constraints of the optimal layout of dormitory interior space mainly involve the following three categories. Furniture layout is mainly constrained by the dormitory space, which cannot exceed the boundary of the dormitory, but also meet the positional relationship between adjacent furniture with distance requirements. Its mathematical expression is as follows.

$$\begin{aligned} \frac{s_i}{2} &\leqslant x_i \leqslant L - \frac{s_i}{2}, \\ \frac{q_i}{2} &\leqslant y_i \leqslant W - \frac{q_i}{2}, \\ \left|x_i - x_j\right| &= d_{xij}, \\ \left|y_i - y_j\right| &= d_{yij}. \end{aligned} \tag{4}$$

Secondly, the furniture in the dormitory does not interfere with each other and cannot be staggered. Its mathematical expression is as follows.

$$\begin{aligned} \left|x_i - x_j\right| &\geqslant \frac{s_i + s_j}{2}, \\ \left|y_i - y_j\right| &\geqslant \frac{q_i + q_j}{2}. \end{aligned} \tag{5}$$

To ensure that all furniture will not affect personnel access, the mathematical expression of this constraint is as follows.

$$\begin{aligned} \left|x_i - x_d\right| &\geqslant \frac{s_i + L_d}{2}, \\ \left|y_i - y_d\right| &\geqslant \frac{q_i + W_d}{2}. \end{aligned} \tag{6}$$

The above optimization design model of indoor space layout aims to maximize the utilization of indoor effective activity space while considering the convenience of personnel activities, environmental comfort, and facility support, combined with appropriate optimization algorithms, the optimization design of indoor space layout can be carried out. The process of indoor layout is shown in Figure 4.

The interior space consists of a living space and a balcony. The living space is the main activity area of members, and the space layout is flexible, while the balcony is mostly used to stack sundries and dry clothes, which is a living auxiliary space and less responsible for personnel activities. In the interior space layout design, space division belongs to a higher level of layout design. The result of space division is

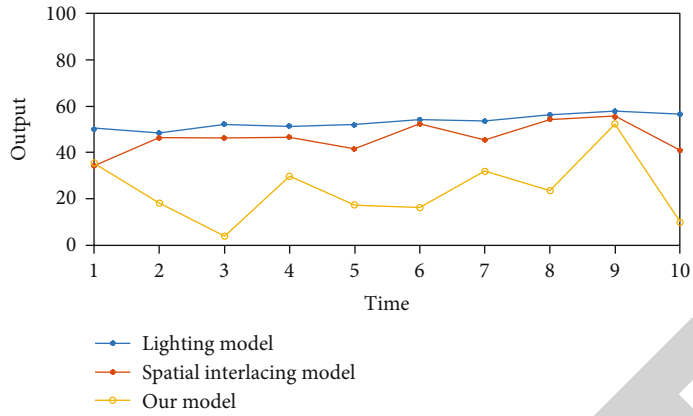

Figure 9: The test results of the consumption coefficient.

usually the planning blueprint in the construction industry, which can reflect the construction and space allocation of buildings in three-dimensional space. The layout plan is usually used as the representation method, and the layout plan also provides guidance for the generation of indoor scenes, which is convenient for the design and modeling of indoor scenes. Space division is mainly used in the early stage of design. On the basis of the above space division, the furniture in each room unit is arranged in the room unit according to specific layout rules and functional requirements.

3.2. Improve the Optimization Layout Method. A home layout is a low-level layout design in indoor space layout design, and the result of a home layout is usually the indoor environment that people rely on for production and life. For newly designed houses, the layout of rooms may be an important factor affecting the floor area and facade appearance. Therefore, there is no given contour to follow. The reconstruction of the existing building does not allow the interior architect to have such freedom and takes the floor area, some columns, and walls as fixed geometric constraints. In view of the fuzziness and polymorphism of the evaluation indicators of the spatial layout itself, the current evaluation of the spatial layout scheme mainly depends on the field investigation, the experience of designers, and the feedback of residents. At the same time, combined with the characteristics of the space environment, it adopts a multi-objective genetic algorithm to optimize the indoor space layout and solve it. This method can provide theoretical support for the research of space layout and space utilization design. The flow chart of the multi-objective genetic algorithm is shown in Figure 5.

On the basis of the above space division, the furniture in each room unit is arranged in the room unit according to specific layout rules and functional requirements. The home layout is a low-level layout design in indoor space layout design. For the design work, a reasonable and objective evaluation standard is very important. However, for our research work, because there is no reasonable evaluation standard, in most cases, we can only obtain the evaluation of the method by comparing it with other design methods, or by means of user research.

4. Experiments and Results

An excellent interior space layout design algorithm should be able to extract constraints from the existing layout and reconstruct similar results, so we hope to evaluate our algorithm through reconstruction. We only extract dimensional constraints and adjacent constraints from a given design. Apply our algorithm to the defined area of the layout, take the generated layout as a division of sub-areas, and then continue to generate new layouts on each sub-area. The experiments in this paper were conducted on a Dell T7920 workstation with an NVIDIA RTX1080TI graphics card and 32G RAM. In the experiments, the Adam optimization method is used as the optimizer, the initial value of the learning rate is 0.001, and the training period is 120. Our art image data is downloaded from Artlib world art appreciation library and other websites, and professional art students are invited to clean and screen the data. The training process performance enhancement and loss convergence are shown in Figures 6 and 7.

Given the layout area and design constraints, we apply the hierarchical algorithm framework to generate the indoor space layout, and the polygon layout area can be generated in a course to fine way. In the MATLAB environment, based on the improved multi-objective genetic algorithm, the indoor space layout of the dormitory is optimized, and the results are shown in Tables 1 and 2 and Figure 8.

In the space layout optimization scheme, beds and desks are arranged along the dormitory wall and placed at the four corners of the room, which reduces the interference of the external environment on the sleeping space and learning space, and ensures the relative independence of personal activity space. Among them, sleep space has the strongest demand for privacy, so the combination of going to bed and off the table can provide users with a better privacy environment. In order to verify the performance of the indoor environment spatial layout optimization system of the algorithm, the energy consumption coefficient day of indoor environment spatial layout optimization is introduced. The test results of the consumption coefficient are shown in Figure 9.

The communication space is the shared activity space of dormitory members. The optimization plan will set it centrally in the indoor central area to facilitate the daily access of personnel and the development of communication activities. The dormitory furniture adopts the combination of going to bed and getting off the table, which can reduce the floor area of the furniture, and is placed in the four corners of the room, ensuring the centralization and maximization of the indoor effective activity space. A personal wardrobe and bookcase are set under the bed for convenient use.

5. Conclusion

Traditional layout plan design usually requires interior designers to go through repeated experiments and explorations, and requires a lot of professional knowledge and design experience, so layout plan design is a very time-consuming process. The purpose of our research is to automate this design process and design a reasonable indoor space layout for residential buildings automatically and efficiently. Focusing on the automatic design and optimization of indoor space layout, this paper proposes an optimization method based on design constraints for the automatic generation of a layout plan based on the given layout boundary or layout space. The room units in the interior space layout are represented by polygons composed of multiple rectangles, and the constraints and rules in the layout design are transformed into constraints on related rectangles. Experimental results show that our scene redirection method is effective. Comparing with the results of uniform scaling further proves the effectiveness of our redirection algorithm.

For the problem of text research, we can do further in-depth mining from the following aspects. For layout design, we need to consider as many design constraints as possible to meet the diversified and personalized needs of users. Therefore, whether there is a better method or mathematical model so that more design constraints and criteria can be considered a problem worthy of consideration in the future. We hope to apply these methods and ideas to the home layout design of indoor scenes, which will be a very promising research work. In addition, our research work mainly focuses on the indoor space layout design of residential buildings. How to extend our method to other layout design problems is also a director of research value. In the future, we plan to carry out the method of architectural interior design and space layout optimization based on recurrent neural network technology.

Data Availability

The datasets used during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

The author declares that he has no conflict of interest.

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