



Products Introduction

This rattan chair combines natural elements and digital-generative assistance. This recliner is rounded and smooth with beautiful curves. The circular closed-loop structure with eye-catching and symbolic features on the side is the highlight of the styling design of this rattan chair, and it also plays a role as supporting structure. The overall rattan chair is built with a broad arc and lengthy curve, which emphasizes the flexible yet tough nature of the material. The chair's back curvature is ergonomically designed, which would give the customers a comfortable and pleasant experience.

This recliner adopts the topological optimization technology based on the two-way progressive structure optimization (BESO) method in the process of modeling iterative derivation. It brings the

material characteristics and physical characteristics of rattan into the design modeling and generates the stress points and support points of the rattan chair. To create a nice and clean form, the designer get to redesign the form and shape based on the generated structure. Thus, functionality and aesthetics are brought together in a harmonious whole.

This design can be used in scenarios such as home, seaside, resorts, and environments with relaxing vibe. Resting on a recliner like this, will bring the user a touch of comfort and chill especially during summer days.

Dimensions:
L 850 mm, W 640 mm, H 870 mm



Inspiration

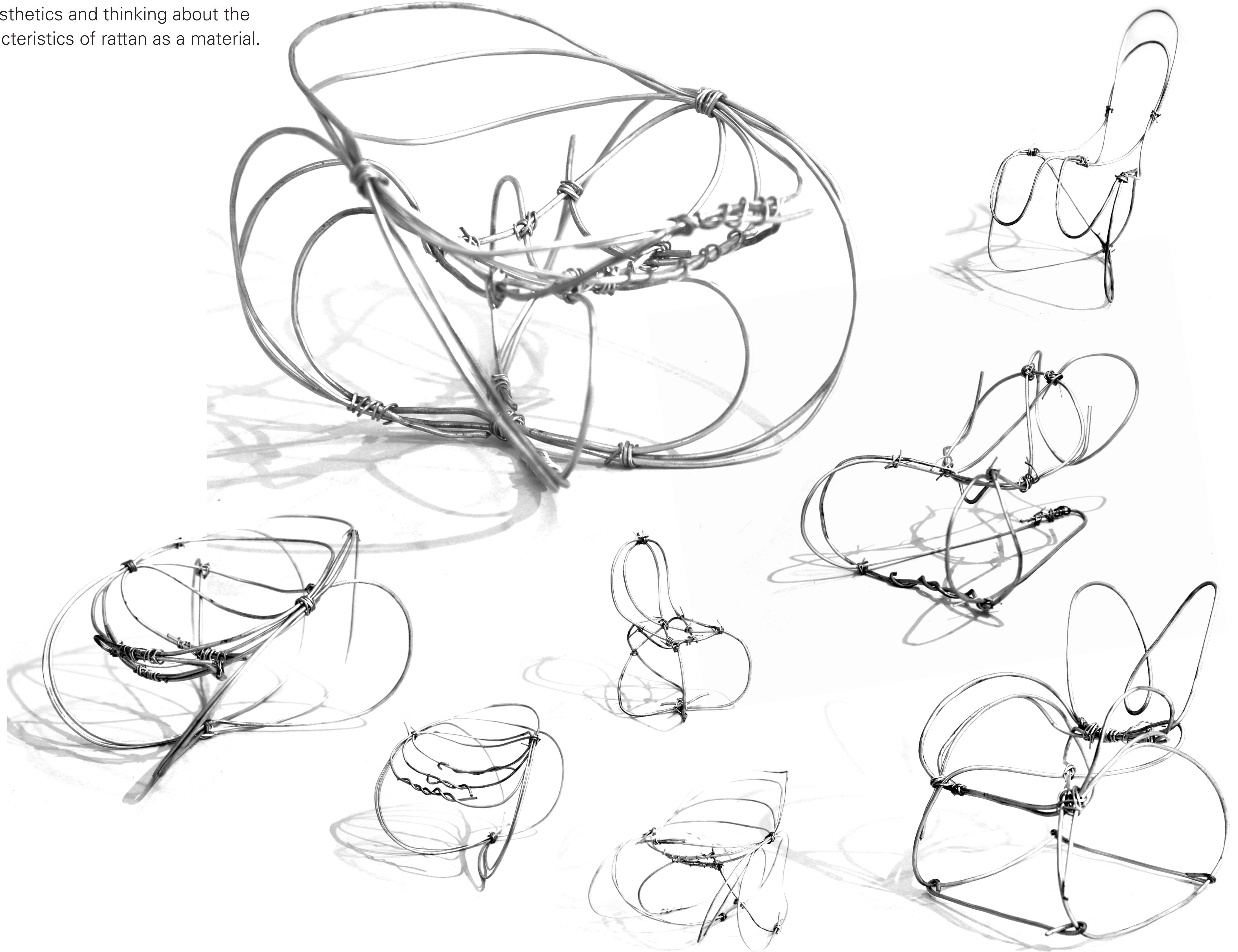
Background

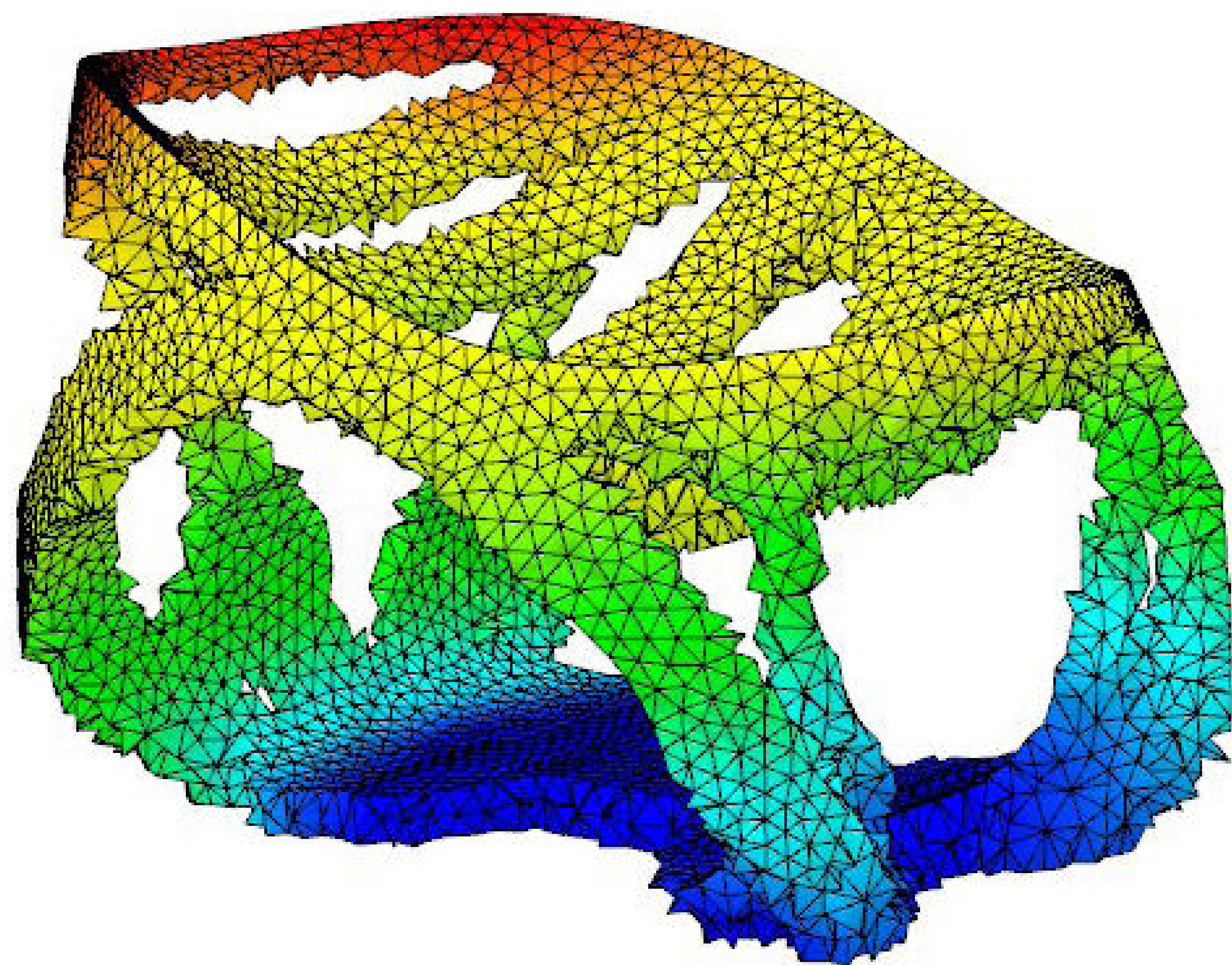
Rattan is a highly productive and sustainable green raw material for furniture products. It grows rapidly, with a single plant growing about 30 meters per year, and the growth cycle takes only 5-7 years. Compared with wood, which is one of the raw materials for furniture, it has the advantage of growth cycle. Compared with bamboo, which is also one of the raw materials for furniture, it has the great advantage of processing method. In conclusion, rattan has many advantages, such as green, environmental protection, easy processing.

Although rattan as a raw material in the production of furniture has many advantages, its disadvantages are also obvious. First, rattan furniture is basically handmade by craftsmen. As the premium for rattan furniture is low, it is difficult to obtain high economic benefits for the work involved, and the production process has a certain technical threshold for handicrafts, so many young people are reluctant to learn rattan craft and enter rattan furniture industry. The result is that the artisans are older and there is a serious age gap. The inheritance of rattan weaving is in a

difficult situation.

Second, in the design of traditional rattan furniture, functionality and practicality are the only criteria that artisans consider when making rattan furniture. The craftsmen are influenced by years of processing experience, and their thinking about the shape of the furniture and the way it is supported is relatively solid, although the practicality is high, but always lack of aesthetics and thinking about the characteristics of rattan as a material.





Styling & topology optimization calculation process demonstration

Just as the emergence of the automobile overthrew the carriage industry, the emergence of digital cameras overthrew the traditional film, synthetic music overthrew the Sony walkman, the iPhone smartphone overthrew the Nokia traditional cell phone, and the Internet e-commerce overthrew the offline wholesale format. New models based on AI algorithms have begun to penetrate the various industries that mankind was once proud of, such as AI music arranging, AI painting, AI driving, and also AI design. AI is trying to replace the unique human creativity. So, how to deal with AI design? What role do AI algorithms play in the design process? In the design of this recliner, we tried to balance the relationship between the human designers and AI algorithms, The human aesthetic concept and human-computer comfort decided by the designer is the leading and binding principle, and the AI algorithm is strictly limited to secondary design on this basis. to ensure that the

mechanics of the system to build a stable premise, to achieve the most economical use of materials. In the design process, human designers and AI algorithms perform their respective roles and complement each other.

So, based on the above advantages and disadvantages of rattan, I tried to find a way to balance the two.

In the modeling conception stage, We used wire to simulate the softness of rattan. We mostly use a circular closed loop structure, for the robustness of the system (at this time is only a design intuition, does not have rigor). On this basis, a large number of modeling attempts were made, and after arriving at a more satisfactory basic shape, iterative derivation of the shape was carried out.

In the iterative derivation process, a topology optimization technique based on the bi-directional progressive structure optimization (BESO) technique was used to bring the material and physical properties

of the rattan into the design modeling, and use the algorithm to simulate. After a lot of modeling attempts, we got the final design, which has a simple structure and strong support, thus achieving a high degree of unity between mechanics and aesthetics.

Unlike some foreign home furnishing brands that can sell rattan furniture with thousands of dollars, the domestic rattan furniture industry is not optimistic, one is that most rattan furniture factories are low value-added OEMs, and the other is that the industry is unreasonable in its calculation of rattan furniture, with the weight of raw materials to determine the price of rattan furniture. Out of this current situation, we need to think about more possibilities for domestic rattan furniture production, like enhancing the added value of rattan furniture design, to enhance the value and vitality of the rattan furniture industry, and attract young blood to join, so that give new life to this traditional industries

