

Application of Three-Dimensional Body Measurement Technology and Clothing Cad Technology in The Design of Cheongsam Model Structure

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Abstract

Cheongsam needs to have a well-fitting silhouette, which requires a high degree of fit and emphasizes the beauty of human curves. The loose design of cheongsam directly affects the gracefulness of its appearance and comfort. In clothing design, art and design creation techniques are increasingly used in education and social science research, which can be used as a means to supplement narrative qualitative research methods. Due to the fast-paced world of today, all information fields require clear graphic design. Therefore, cheongsam design came into being. And cheongsam design mainly involves clothing design and information design, in which clothing design includes functions such as the language of graphics, style and emotion of illustrations and information design mainly includes functions such as the accuracy and effectiveness of information transmission. A soulful cheongsam design should use a unique way of expression to ingeniously blend clothing design and information design and effectively and accurately convey the original intention of the design. Finally, the analysis results are verified and a cheongsam design pattern with a high degree of graceful appearance and good wearing comfort is found.

Keywords: Measurement, Cheongsam, Design;

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1. Introduction

The information conveyed by clothing design is perceivable through people's senses. This is also a process of information transmission. When people feel the information, the most direct thing is visual experience. Therefore, the quality of clothing design will affect the quality of graphic design. Visual perception is a physiological response of human beings. Under such physiological reflection conditions, humans can feel and perceive the development and occurrence of things. Only after they have the most direct experience of everything that occurs in social life can they analyze social

phenomena and explore human nature. aesthetics. Modern design pays attention to the display of graphic design, that is, cheongsam design and may lead cheongsam design to the trend of visual culture.

2. Analysis of anthropometric techniques

2.1. Application in ergonomic clothing design measurement

By using digital measurement technology in the measurement of ergonomic clothing design, it can reduce errors caused by manual measurement in the past, effectively reduce the engineering workload of workers and improve the quality and efficiency of

ergonomic clothing design measurement. Therefore, the application of digital measurement technology in ergonomic clothing design and measurement work requires the use of a complete set of measurement equipment, flexible use of electronic theodolites, total stations and automatic tracking total stations and other digital measurement equipment. In this way, accurate, dynamic and real-time positioning of the ergonomic measurement work can be carried out and the data collection, editing and processing in the ergonomic measurement work can be done more efficiently. The most important thing is to automatically draw based on the relevant data. Operation, this can effectively save the time used in the previous ergonomic clothing design and measurement work and greatly improve the efficiency of the ergonomic clothing design and measurement work. And compared with the traditional artificial clothing design measurement, the cost of applying digital measurement technology will also be reduced. With the continuous development of information technology, science technology and automation technology, the digital measurement technology used in ergonomics will become more and more automated and intelligent, thereby effectively improving the accuracy of ergonomic clothing design measurement and clothing design measurement work. Quality and efficiency. The CAD clothing design system is in the figure below.



Figure1.CAD clothing design system.

2.2. Application in human body deformation monitoring

The first field used in ergonomics measurement is clothing design measurement and a relatively ideal use effect has been obtained. With the continuous development of science and technology, digital measurement technology continues to improve and perfect. From the current use of digital measurement technology, digital measurement technology has also been widely used in human body deformation monitoring. To apply digital measurement technology to human body deformation monitoring, first obtain the human body engineering two-dimensional image data through the application of computer technology and then analyze the real-time human body deformation parameters according to the relevant calculation model, so that the Whether the human body has horizontal displacement, whether the human body is tilted, whether the human body has subsidence and other human body deformation problems, make an objective judgment. The application of digital measurement technology in human body engineering deformation monitoring can effectively improve the quality, efficiency and accuracy of human body deformation monitoring on the one hand. On the other hand, it can also detect human body deformation problems in time and adopt effective countermeasures to improve Ergonomic quality, safety and reliability^[1]. The CAD clothing design deformation is in the figure below.

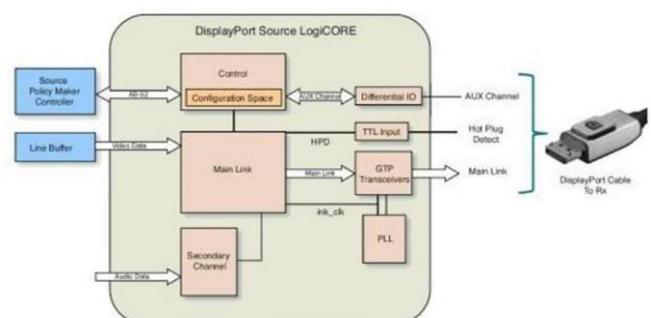


Figure2.CAD clothing design deformation.

2.3. Application in data collection

With the continuous development of science and technology, in order to ensure the accuracy of ergonomic measurement, people have conducted in-depth research on digital measurement technology and achieved certain research results, especially in data collection. In the ergonomic measurement, the use of digital technologies such as photoelectric clothing design measurement and satellite positioning to ensure the smooth deployment of various clothing design measurements, especially in some cases where the geographical conditions are bad and human resources cannot be measured, the role of digital technology is even more significant. In ergonomic measurement, a complete set of digital measurement equipment such as backup batteries, GDS cameras and communication systems are often used. This will effectively improve the accuracy of the photoelectric clothing design and measurement system and it will not be easily affected by the outside world during measurement. Environmental impact. In addition, digital measurement technology can also be cross-used. The digital measurement technology used in the measurement is not isolated, but a combination of multiple digital technologies, which can effectively improve the accuracy of ergonomic measurement to a certain extent objectivity^[2]. The CAD clothing design mode is in the figure below.

collection has a great impact on the accuracy of information processing, so strict control should be done at the stage of information collection. Take the CNC cutting machine tool as an example. Its data collection is mainly based on all two-dimensional graphics. The accuracy of information collection should be controlled within the range of 0.0001. Information beyond this range will reduce the accuracy. The use of computer-aided technology can maximize The degree of realization of processing precision and automatic control efficiency, the application effect is very good. In the CNC cutting machine plus information collection, the information collection of computer-aided technology includes information collection and other auxiliary information collection. The design of the information collection workflow must also strictly abide by the corresponding standards, that is, graphics to be processed-scanning-utilization CAD drawing closed surface-graphics decomposition-production documents-coding-control of the executive body^[3]. The CAD clothing design control is in the figure below.

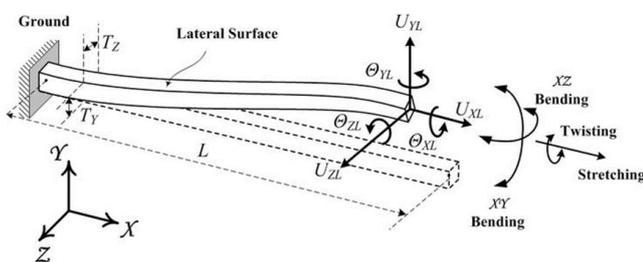


Figure3.CAD clothing design mode.

3. CAD data processing research

3.1. Information collection

Information collection plays the most basic role in the process of computer information processing and it is also the most important link. Information

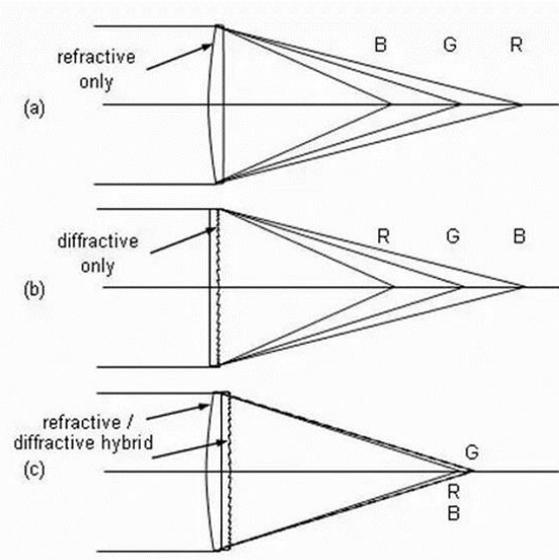


Figure4.CAD clothing design control.

3.2. Information processing

After the information collection is over, the next thing to be done is information processing, which is also an important part of computer-aided

technology. In the entire process of information processing, the applied operating platform is consistent with the design platform of computer-aided technology. Through the application of computer-aided technology, the obtained information is re-developed and the layout, automatic identification process and tool shift Customize with feed and you can customize in the selection of processing speed and delay function. Through the application of these two functions, the output of automatic machine tool processing codes can be realized and instructions can be given for the operation of the automatic control system. Compared with the previous control system, this method has higher practicability and higher application efficiency. However, it should be noted here that in the definition of tool shift and feed point, flexibility should be guaranteed to the greatest extent. The purpose of this is to enable technicians to be able to design different materials and compile different materials. The work path is simplified to the greatest extent, so as to better avoid friction and collisions between the upturned part of the workpiece and the moving tool and the cutting head^[4]. The CAD clothing design power is in the figure below.



Figure 5. CAD clothing design power.

4. Application of CAD technology in cheongsam design

4.1. Clothing design

Computer-aided design specifically refers to the use of computers and graphics equipment to help designers complete design work. Computer-aided design can be regarded as a tool, through the use of the tool, designers can quickly complete calculations, drawing and other tasks. At present, the more commonly used computer-aided design software includes the following types: Auto CAD, 3D MAX and Photoshop. The following is an analysis of the application of these kinds of software in environmental art design. The reason why Auto CAD has become a mainstream drawing tool is closely related to its many application advantages. As a drawing tool, Auto CAD has a simple and intuitive user interface that is its most prominent feature. The interface contains menus, toolbars, command windows, etc. The designer can complete related operations only through the interactive menu. In continuous use, designers can more proficiently apply various functions in the interface, which will help improve design efficiency^[5]. The CAD clothing design platform is in the figure below.

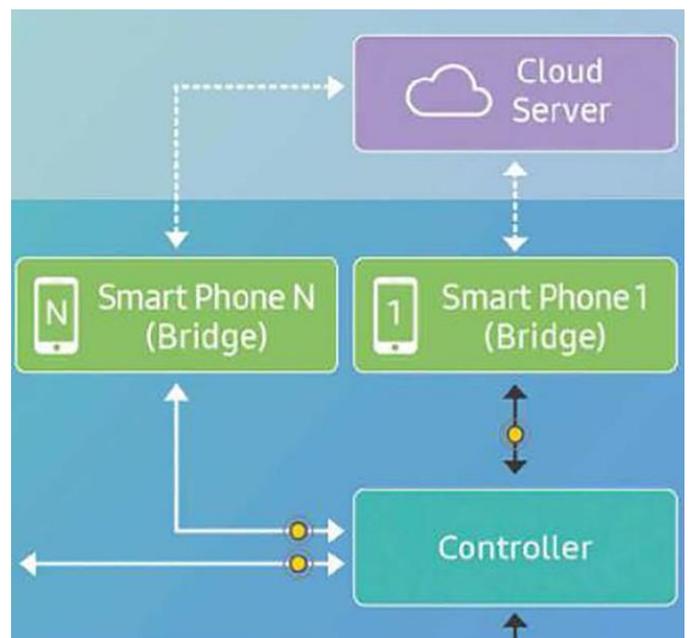


Figure 6. CAD clothing design platform.

4.2. Cheongsam design

Cheongsam art design covers relatively more content and cheongsam design design is one of the more important branches. When doing this kind of design, designers can apply Auto CAD. Cheongsam design is the process of creating the internal environment of a building. The design needs to be based on specific use functions and environmental characteristics and refer to relevant norms and standards to ensure the rationality of the design. Cheongsam design belongs to the category of space environment. It not only has all the characteristics of space environment, but also has its own particularity, namely use value, functional value, etc. In addition, the cheongsam design can also reflect certain spiritual factors, such as the overall style of the building structure and the atmosphere. In the cheongsam design and decoration design, the designer can make reasonable use of Auto CAD to create the original structure drawing. After the designer obtains the complete structure drawing of the cheongsam through Auto CAD, the layout can be carried out and the specific functions of the cheongsam can be divided. This can form a rough design. Before implementing the design plan, the designer can use Auto CAD to draw the design drawings to ensure the accuracy of the design dimensions. If you use manual methods to draw the design drawings of the cheongsam design scheme, not only will the workload be large, but the designer must carefully analyze the space ratio. Once a certain link goes wrong, it will cause serious impact. However, the application of Auto CAD will not have a similar situation, because when CAD drawing, all input is the actual value, such as the living room space of $4.5\text{m} \times 5.5\text{m}$. When CAD drawing, the input value is also 4.5m and 5.5m. Proportion conversion simplifies the steps and improves work efficiency. Auto CAD comes with tools such as rulers and measurements to ensure the accuracy of drawing drawings. Designers can make the design of cheongsam design drawings easier by using these tools^[6].

5. Conclusion

At the same time, in design, when designers are carrying out related design tasks, the accuracy of drawing drawings is directly related to work efficiency and design quality. If the drawing is inaccurate, rework is required, which will waste time. The more prominent feature of Auto CAD is its powerful drawing function, which provides a guarantee for the accurate drawing of drawings. Auto CAD can not only modify all existing objects, but also selectively modify any of them according to the actual needs of the designer, which makes it easier to correct errors and is more suitable for cheongsam. design.

References

- [1] Yang Jianye, Teng Bin, Gou Ying. Comparative study on numerical computation methods for radiation forces on a three-dimensional body with edge in the time domain[J]. Journal of Offshore Mechanics and Arctic Engineering, 2020, 142(4).
- [2] Vladimir S. Kublanov, Vasilii I. Borisov, Mikhail V. Babich. Simulation the distribution of thermodynamic temperatures and microwave radiation of the human head[J]. Computer Methods and Programs in Biomedicine, 2020, 190.
- [3] Wenjing Chu, Sanghyeok Han, Xiaowei Luo, Zhenhua Zhu. Monocular vision - based framework for biomechanical analysis or ergonomic posture assessment in modular construction[J]. Journal of Computing in Civil Engineering, 2020, 34(4).
- [4] Gang Wang, Yixin Liu, Jiang Xu. Anisotropic characteristics of post sheared fracture surface[J]. International Journal of Geomechanics, 2020, 20(7).
- [5] Damien Oliver Gleadall-Siddall, Richard Lincoln Turpin, Caroline Clare Douglas, Lee Ingle, Andrew Thomas Garrett. Test - retest repeatability of the NX-16: a

three-dimensional (3D) body scanner in a male cohort[J]. *Sport sciences for health: founded by the faculty of exercise science - university of milan, official journal of the Italian Society of Exercise and Sport Sciences*,2020,16(4).

- [6] Dialynas Georgios,de Haan Jelle W,Schouten Alfred C,Happee riender,schwab arend l. the dynamic response of the bicycle rider's body to vertical, fore-and-aft, and lateral perturbations[J]. *Proceedings of the Institution of Mechanical Engineers*,2020,234(7)