ISRG Journal of Arts, Humanities and Social Sciences (ISRGJAHSS)

ISRG PUBLISHERS
Abbreviated Key Title: ISRG J Arts Humanit Soc Sci
ISSN: 2583-7672 (Online)
Journal homepage: https://isrgpublishers.com/isrgjahss
Volume – III Issue -III (May-June) 2025
Frequency: Bimonthly

Customized Professional Clothing: Data Collection and Pattern Optimization for Special Body Types

Hongxia Zhang[1], Yuping Zhang2 Jing Jin[3*]

[1] Intermediate Process Artisan, Beijing Tongniu Fashion Technology Co., Ltd., Beijing, 100012

[2] Ningbo Kashion Fashion Co., Ltd.Technical Director , Technical Director Ningbo,315000

[3] Guangzhou Haizhu District Jin Cui Garment Factory, Ph.D., Intermediate Process Artisan, Guangdong Province, 510700

| **Received:** 31.05.2025 | **Accepted:** 05.06.2025 | **Published:** 11.06.2025

***Corresponding author:** Jing Jin

Guangzhou Haizhu District Jin Cui Garment Factory, Ph.D., Intermediate Process Artisan, Guangdong Province, 510700

Abstract

This paper aims to explore the methods of data collection and pattern optimization for special body types in customized professional clothing. By analyzing traditional and modern data collection techniques, the characteristics of the professional clothing customization production process, and the fitting methods of different body types to professional clothing styles, this study proposes optimized design solutions for special body types. The research finds that accurate data collection is the key to personalized customization, and rational pattern design can effectively enhance the comfort and aesthetics of professional clothing. The results of this study provide scientific theoretical support and practical guidance for the professional clothing customization industry, contributing to the technological progress and innovative development of the sector.

Keywords: *Customized professional clothing; Special body types; Data collection; Pattern optimization; Professional clothing design*

DOI: 10.5281/zenodo.15709935

1. Introduction

Customized professional clothing plays a significant role in modern enterprises. It not only enhances employees' comfort and work efficiency but also shapes a unique corporate image, meeting the diverse needs of different industries and employees. With the intensification of market competition, the demand for personalized professional clothing is increasing, especially for employees with special body types. However, data collection and pattern optimization for special body types have always been challenging issues in professional clothing customization. This paper will delve into this area to provide valuable references for the professional clothing customization industry.

2. Research Questions

i. How can accurate data collection be achieved for the personalized customization of professional clothing for special body types?
ii. What are the fitting methods of different special body types to professional clothing styles and patterns?
iii. How can the production process be optimized to reduce customization costs while meeting personalized needs?

3. Literature Review

1.1 Customized Professional Clothing

Customized professional clothing is increasingly important in modern professional environments. It enhances employees' comfort and work efficiency and shapes a unique corporate image. With the changing market demands and technological advancements, significant progress has been made in the field of professional clothing customization. Wang (2020) pointed out that professional clothing is an important reflection of a company's image. The design should comprehensively consider the company's business processes, product characteristics, corporate culture, service philosophy, and the needs of different employee groups. It should take into account factors such as age structure, clothing habits, fabric properties, and industry characteristics to reflect the company's image and connotations while showcasing personalized features and aesthetic taste.

Chang (2019) studied the optimization design of special body types for cheongsam (Qipao) by using statistical analysis to explore the evolution of its shape and structure. The research indicated that the innovative design of cheongsam should be tailored to individuals and body types, providing inspiration for the innovative design of traditional clothing elements in professional attire. Sun (2024) noted that under the background of China's modernization, the professional clothing industry is driven by policies, and market demands are shifting towards professionalization and high quality. The trend of scene-based design is emerging. However, the professional clothing design field still faces issues such as design homogenization, insufficient innovation, and functional practicality problems.

Wang et al. (2023) found that conventional men's suit sizes fail to meet the needs of special body types. They analyzed the common characteristics and fitting issues of five special body types in men's shoulders, backs, and chests and explored the structural design of men's suits for special body types, providing references for well-fitted patterns. Hu (2022) emphasized that the pandemic has pushed the clothing industry towards digital and intelligent transformation. Traditional mass production cannot meet the needs of non-standard body types, and intelligent customization has a broad prospect. This study takes the protruding abdomen body type as an example and investigates the special body type recognition and pattern generation technology based on two-dimensional images, forming a recognition method for protruding abdomen and a pattern drawing method for trousers. This provides a feasible solution for special body type recognition and pattern generation in large-scale intelligent customization, improving customization efficiency.

1.2 Data Collection and Pattern Optimization for Special Body Types

In terms of data collection and pattern optimization for special body types, Zuo (2022) indicated that 3D body measurement is widely used in clothing companies, especially for special body type consumers. Taking the pattern making of women's protruding abdomen dresses as an example, the study explored the allocation rules of allowance in key parts of clothing based on 3D body measurement data, solving the technical problems of pattern making for special body types and high-end customization. Luo (2022) completed the structural optimization and design of the upper prototype for young women's special body shapes by using three-dimensional body scanning and image processing software to obtain data, analyze different body characteristics, and optimize the patterns. They also innovated the design of styles using visual illusion methods, making the clothing pattern structure conform to the human body structure and improving the visual effect.

Chen & Hou (2022) pointed out that, with the improvement of living standards, the body shape of middle-aged and elderly women changes to form a special body type, and there are fewer garments suitable for this group in the market. Through the three-dimensional tailoring method of human platform correction, we can get the fitted body prototype, which provides an effective method for the structural design of the special body type of middle-aged and elderly women's occupational clothing and meets the demand of this group for fitted occupational clothing. Zhou (2021) found that the rear shape structure of men's suits is affected by special body types. Through an eye-tracking experiment, the affected parts and degrees of different special body types were identified, providing data support for the design of the rear shape structure of men's suits for special body types, making the suit's rear shape more in line with the human body structure and enhancing its aesthetics and comfort. Wang (2020) showed that the number of special body types is increasing, and the fit of market clothing is lacking. This study focused on the fit of special body type jeans patterns, conducting research on three-dimensional body data acquisition, digital mannequin construction, surface flattening, pattern generation, and fabric performance experiments, forming a method for generating well-fitted jeans patterns for different body characteristics, providing a new technical path and theoretical support for the design of lower garments in special body type professional clothing.

1.3 Personalized Professional Clothing for Special Body Types

Lan (2019) noted that the 2019 China Professional Clothing Industry Conference set new benchmarks and led the development direction of the industry. Professional clothing is gradually transforming into new professional attire with both fashion appeal and technological connotations under the guidance of innovation, cultural leadership, and responsibility. Zhang (2018) elaborated on the basic principles, difficulties, and solutions for the structural design of special body type professional women's clothing,

DOI: 10.5281/zenodo.15709935

emphasizing the importance of handling methods for special body types. Yuan (2018) took pear-shaped women as an example and explored the clothing matching rules suitable for them through questionnaires, sampling measurements, and data analysis. They also indicatively designed clothing using a combination of woven and knitted fabrics. Liu & Xu (2017) explored the manifestation of professionalization in modern professional women's clothing, analyzing personalized design methods from aspects such as fabric, style, and color, and conducting case analyses based on Fashion Week shows. Liu (2017) took three types of special body shapes as research objects, namely the chest body, the convex belly body and the hunchback body, and analyzed the changing law of the clothing body structure and the method of making up corrections through simulation experiments and three-dimensional tailoring. Miao (2016) researched on the pattern making technology of women's special body shapes tops, and optimally configured the various compositional factors from the considerations of structure, style and color, and converted the designer's conception into a specific planar structure drawing.

Wang & Wang (2016) studied the fitness of special body type top prototypes using three-dimensional tailoring and planar mapping methods with women with straight chests and hunchbacks as the research objects. Jia & Shang (2015) reviewed the research on the datum trajectory of taking human body based on the change of the body type, pointing out the application problems of three-dimensional anthropometric equipment in the production of MTM and the research status of the establishment of datum trajectory models. Zhou (2014) studied the fashionable design of business professional clothing, pointing out that professional clothing, as an important identification factor of corporate image, can convey a variety of corporate image. Zhou (2014) studied the fashionable design of business professional clothing, pointing out that professional clothing, as an important identification factor of corporate image, can convey a variety of corporate information.

Xu (2013) explored the internationalization of Chinese national style clothing and apparel, analyzing the application of national clothing elements in professional clothing. Zhang (2013) studied the small-batch customization design method of professional clothing based on the CIS system, pointing out that in small-batch customization mode, professional clothing design should reflect more personalized identification components and corporate image. Wang (2011) discussed how professional clothing design can reflect professionalization from aspects such as style, color, fabric, and production design. Wan (2007) studied the fashion characteristics and design methods of professional women's clothing, analyzing the relationship between professional women's clothing, professional clothing, and fashion, as well as the development history and fashion trends of domestic and international professional women's clothing. Yan (2002) proposed the design positioning direction and development trends of the professional clothing market through market analysis.

4. Research Methods

This paper adopts the method of combining literature analysis and case study. By analyzing the existing literature, it combs through the data collection process of vocational clothing customization, production characteristics, and the design method of adapting to different body types. The research object is a group of employees with special body type characteristics, and through the analysis of their actual needs, an optimized design scheme is proposed.

5. Case Study

In the research on customized professional clothing for special body types, several key links are involved, including human body data collection, body type classification, pattern optimization, and the application of digital technology.

5.1 Data Collection Technology for Special Body Types

Data collection for special body types is the foundation of customized professional clothing. In recent years, 3D body scanning technology has been widely used, which can non-contently obtain human body contour data and provide accurate data support for the design of special body type clothing. For example, studies have shown that 3D body scanners can efficiently measure the body data of special occupational groups such as construction workers and assess and adjust clothing sizes based on these data (Mielicka et al., 2017). In addition, digital correction methods based on skeletal rotation and Dirichlet free deformation algorithms have been proposed to correct special body types such as flat shoulders, drooping shoulders, and O-shaped legs, thereby improving the fit and comfort of clothing (Fang, 2010).

Modern intelligent technology has significant advantages in data collection, but traditional measurement methods should not be ignored. Hu (2022) found that special body type recognition technology based on two-dimensional images can effectively identify protruding abdomen and generate optimized trouser patterns. However, this method may have limited recognition effects on other special body types. In Zuo's (2022) study, the application of 3D body measurement technology in data collection for special body types provided more accurate data support for professional clothing customization. Future research can further explore how to combine traditional measurement methods with modern intelligent technology to achieve more efficient and accurate data collection.

From 3D scanning technology to digital design tools, and then to machine learning and big data analysis, these technologies have jointly promoted the development of customized professional clothing. Future research should further explore how to improve customization efficiency and user experience through technological innovation to meet the personalized needs of more consumers (see Table 1).

Table 1: **Matching of Different Body Types and Styles**

Body Type	Example Image	Feature Description	Style Requirements	Pattern Requirements
Standard Body Type		Proportions of all body parts are harmonious, with similar shoulder and hip widths, a slim waist with a distinct waistline, and smooth overall lines.	A variety of styles can be chosen, such as classic suit sets and fitted dresses.	Fitted and tailored cuts that follow the body lines without being overly tight.

DOI: 10.5281/zenodo.15709935

Pear Shape		Narrow shoulders, slim waist, wide hips, and thick thighs, with a relatively slender upper body and a fuller lower body, forming a pear-shaped contour.	Choose A-line skirts, wide-leg trousers, and other styles that can cover the hips and thighs, paired with fitted tops.	Slightly loose tops that cover the hips; for bottoms, choose straight-leg trousers, flared pants, and A-line or umbrella skirts.
Apple Shape		Wide shoulders, full chest, and a lot of abdominal fat, with an indistinct waistline and relatively slender hips and legs, forming an upper-wide and lower-narrow shape.	Choose V-neck tops, straight dresses, and H-shaped suit jackets, avoiding overly loose or tight tops.	Choose loose H-shaped or straight styles for tops, avoiding tight or overly loose fits; for bottoms, choose straight-leg trousers and wide-leg pants.
Inverted Triangle Shape		Wide shoulders, thick back, full chest, relatively slim waist, and narrow hips and thighs, forming an upper-wide and lower-narrow shape.	Choose umbrella skirts, mermaid skirts, and flared pants that can expand the lower body lines, paired with simple tops.	Choose simple styles for tops, such as round or V-necks; for bottoms, choose wide-legged trousers and full skirts.
Rectangle Shape		Similar shoulder, waist, and hip widths, lacking a distinct waistline, with straight overall lines, giving a strong and sturdy appearance.	Choose waist styles of professional clothing, such as waist suits and corseted dresses, using different materials or colors of the patchwork design.	Choose tops with waist-cinching designs or three-dimensional cuts; for bottoms, choose straight-leg trousers and flared pants, and A-line skirts for dresses.

Source: Authors' own creation

5.2 Pattern Optimization

Based on data collection, pattern optimization is the core step in customized professional clothing. Studies have shown that a parametric garment pattern generation system based on geometric constraints can quickly respond to input human body parameters and special body types, generating garment patterns that meet individual needs (Xu et al., 2012). In addition, using MATLAB parametric settings and formula methods can achieve diversified and personalized garment pattern making (Zhang & Zhang, 2016). At the same time, big data and machine learning methods also play an important role in pattern optimization. For example, machine learning models can generate design solutions and combine genetic algorithms and linear models to calculate the looseness of garments, thereby optimizing the pattern (Wang et al., 2023).

Digital technology holds an important position in customized professional clothing. CAD technology and 3D digital simulation technology are widely used in garment design and pattern optimization. For example, CAD technology can achieve non-contact measurement and quick layout for custom-made professional clothing (Zhang, 2011), while 3D digital simulation can verify the satisfaction of garment design through virtual fitting and simulation display (Wang et al., 2023). In addition, a web-based body type recognition system can classify and recognize individual feature parameters through the SVM algorithm and generate personalized garment pattern diagrams (Zhang, 2011).

DOI: 10.5281/zenodo.15709935

5.3 Pattern Adjustment for Special Body Types

Pattern adjustment for special body types is an important part of customized professional clothing. For example, in the customization of professional clothing for pear-shaped women, it is necessary to pay special attention to the design of the waistline, hip circumference, and thigh line (Zhang & Liu, 2020). In addition, for special body types such as protruding abdomen and hunchback, the pattern can be optimized by adjusting the allowance distribution rules in key parts of the clothing (Zuo, 2022). As shown in Table 2, these adjustments not only improve the aesthetics of the clothing but also enhance its functionality.

Table 2: Pattern Adjustment for Special Body Types in Professional Clothing

Special Body Type	Pattern Adjustment
Upper Body Pattern Adjustment	
Hunchback	Add 1 cm to the back piece, subtract 9 cm from the front piece, and increase the back center seam allowance.
Protruding Chest	Lengthen the front piece by 2–3 cm and shorten the back piece.
Drooping Shoulders	Reduce the sleeve cap height by 1–2 cm and increase the pad shoulder thickness.
Broad Shoulders	Avoid horizontal stripes and pad shoulders, use narrow V-necks or vertical lines.
Waist and Abdomen Pattern Adjustment	
Protruding Abdomen (Male)	Increase the front abdominal ease by 4–6 cm, raise the front garment hem, add a horizontal split line to the front piece.
Protruding Abdomen (Female)	Use high-waist trousers or A-line skirts, choose straight-cut tops.
Pear Shape	Widen the shoulder width of the upper garment by 2–3 cm, use V-necks; for lower garments, increase the hip circumference ease by 10%–15%.
Lower Limb and Overall Proportion Pattern Adjustment	
Short Legs/Long Torso	For trousers, raise the waistline by 3 cm, shorten the pant length, and reduce the pant leg width; for skirts, choose knee-length pencil skirts that are 10 cm above the knee.
Wheelchair Users	For trousers, shorten the front crotch by 2 cm, lengthen the back crotch by 4 cm, and use elastic fabric at the waist.

Source: Authors' own creation

6. Research Results and Findings

6.1 Fitting Design Methods for Special Body Types

In the customization of professional clothing for special body types, specific fitting design methods have been proposed for different body part characteristics. For upper body types, the design for hunchback body types requires lengthening the back piece by 1 cm, shortening the front piece by 9 cm, and increasing the back center seam allowance to better fit the curvature of the back. For protruding chest types, the front piece should be lengthened by 2–3 cm and the back piece shortened to balance the protrusion of the chest. For drooping shoulder types, reducing the sleeve cap height by 1–2 cm and increasing the pad shoulder thickness can better balance the shoulder lines. For broad shoulder types, horizontal stripes or pad shoulders should be avoided, and narrow V-necks or vertical lines should be used to visually narrow the shoulder width.

In terms of waist and abdomen fitting, for male protruding abdomen types, the front abdominal ease should be increased by 4–6 cm, the front garment hem raised to avoid tightness, and a horizontal split line added to the front piece to distribute the abdominal protrusion. For female protruding abdomen types, high-waist trousers or A-line skirts can be used to cover the abdomen, and straight-cut tops should be chosen to avoid waist-cinching designs. For pear-shaped types, the shoulder width of the upper garment should be widened by 2–3 cm, and the neckline exposure increased (e.g., V-necks) to shift attention; for lower garments, dark-colored high-waist straight-leg trousers or umbrella skirts should be chosen, and the hip circumference ease increased by 10%–15% to better modify the fuller lower body.

For lower limb and overall proportion fitting, for short leg and long torso types, the waistline of trousers should be raised by 3 cm, the pant length shortened, and the pant leg width reduced; for skirts, knee-length pencil skirts that are 10 cm above the knee should be chosen to elongate the leg lines. For wheelchair users, the front crotch of trousers should be shortened by 2 cm, the back crotch lengthened by 4 cm, and elastic fabric used at the waist to enhance comfort.

6.2 Balancing Rationalization and Scalability

How to reduce production costs while meeting personalized needs is an important challenge facing the professional clothing customization industry. By optimizing production processes and introducing intelligent production technologies, production efficiency can be effectively improved and costs reduced. For example, digital technologies such as 3D scanning and CAD systems can achieve accurate data collection and rapid pattern optimization, thereby shortening production cycles and reducing labor costs. In industry practice, for special body type needs of different regions and groups, such as the need to adjust hip and thigh allowances for African women with A-shaped figures and increase the back piece length by 12% for Nordic hunchback men, these adjustments need to be flexibly applied in scaled production. Future research can further explore how to use technological innovation, such as the application of AI algorithms, to achieve dynamic adjustment and real-time fitting of individual data, thereby better balancing the relationship between professionalization and scalability.

6.3 Technological Application and Innovation

The application of digital and intelligent technologies in customized professional clothing for special body types has brought new opportunities for the development of the industry. 3D scanning technology can quickly and accurately obtain human body data, providing a solid foundation for personalized customization. CAD technology and 3D digital simulation technology are widely used in garment design and pattern optimization. Through virtual fitting and simulation display, the satisfaction of garment design can be verified in advance, reducing design errors and modification costs. In addition, intelligent customization technologies based on machine learning and big data

DOI: 10.5281/zenodo.15709935

can generate optimized design solutions based on individual human body data, achieving personalized design. In the future, with the continuous development of AI algorithms, it is expected to achieve dynamic adjustment and real-time fitting of individual data, further improving customization efficiency and user experience. The application and innovation of these technologies not only improve the fit and comfort of professional clothing but also provide strong support for the sustainable development of the industry.

7. Discussion

7.1 Future Development Directions

Future research can further explore how to more deeply apply artificial intelligence, big data, and machine learning technologies to customized professional clothing (Ji & Jiang, 2020). For example, by constructing a more accurate human body model prediction system, more efficient personalized customization services can be realized. In addition, research can also focus on how to use Kansei engineering theory and PSO-BP neural network models to transform users' emotional needs into specific quantitative data, thereby improving user experience in the design process (Chen & Cheng, 2023).

7.2 Balancing Technological Innovation and Cost Control

While promoting technological innovation, achieving cost control is the key to the sustainable development of the professional clothing customization industry. By optimizing production processes and introducing intelligent production technologies, production efficiency can be significantly improved and customization costs reduced. For example, using 3D scanning technology and CAD systems can achieve accurate data collection and rapid pattern optimization, thereby shortening production cycles and reducing labor costs. In addition, intelligent customization technologies based on machine learning can generate optimized design solutions based on individual data, further improving customization efficiency. Future research can explore how to use technological innovation, such as the application of AI algorithms, to achieve dynamic adjustment and real-time fitting of individual data, thereby better balancing the relationship between professionalization and scalability.

7.2 Industry Practice and Market Demand

In actual industry applications, customized professional clothing needs to be closely integrated with market demand and user feedback. For example, for special body type needs of different regions and groups, such as the need to adjust hip and thigh allowances for African women with A-shaped figures and increase the back piece length by 12% for Nordic hunchback men, these adjustments need to be flexibly applied in scaled production. In addition, with the intensification of market competition, enterprises' demand for professional clothing customization is increasing, especially in brand image building and employee satisfaction improvement. Future research can further explore how to use technological innovation and design optimization to better meet the diverse needs of enterprises and employees and promote the sustainable development of the industry.

8. Conclusion

This study, through an in-depth analysis of data collection and pattern optimization methods for special body types, has reached several important conclusions. First, accurate data collection is the key to customized professional clothing, as it provides accurate human body data support for garment design. Second, rational pattern design can effectively enhance the comfort and aesthetics of professional clothing. By adjusting the patterns for different special body types, personalized needs can be better met. In addition, the application of digital and intelligent technologies has brought new development opportunities to the professional clothing customization industry. Through technological innovation, more efficient customization services and better user experiences can be achieved. These research results not only provide scientific theoretical support and practical guidance for the professional clothing customization industry but also offer important references for the industry's technological progress and innovative development.

References

1. Chen, D., & Cheng, P. (2023). A perceptual image prediction model of professional dress style based on PSO-BP neural network. Journal of Engineered Fibers and Fabrics, 18, 1–10. https://doi.org/10.1177/15589250231189816
2. Chen, Z. T., & Hou, K. H. (2022). Research on clothing structure design for special body types of middle-aged and elderly women—Taking protruding abdomen and thick waist body type as an example. Light Industry Science and Technology, 38(1), 85–88+166.
3. Chang, X. (2019). Optimization design of special body type cheongsam. (Master's thesis, Beijing Institute of Fashion Technology). Retrieved from https://link.cnki.net/doi/10.26932/d.cnki.gbjfc.2019.000104
4. Fang, J. (2010). Digital correction of special body types for personalized clothing customization. (Master's thesis, Donghua University).
5. Hu, X. W. (2022). Research on large-scale personalized intelligent customization of clothing based on human body shape recognition. (Master's thesis, Beijing Institute of Fashion Technology). Retrieved from https://link.cnki.net/doi/10.26932/d.cnki.gbjfc.2022.000199
6. Ji, Y., & Jiang, G. (2020). Garment customization big data processing and analysis in optimization design. Journal of Engineered Fibers and Fabrics, 15, 1–7. https://doi.org/10.1177/1558925020925405
7. Lan, L. (2019). Professional clothing is in the right time. China Fashion, (10), 26–32.
8. Li, L. Y. (2024). Research and practice on professional clothing design from the perspective of scene. (Master's thesis, Zhongyuan University of Technology). Retrieved from https://link.cnki.net/doi/10.27774/d.cnki.gzygx.2024.000492
9. Liu, L. H., & Xu, H. Y. (2017). The manifestation of personalization in modern professional women's clothing. Journal of Chengdu Textile College, 34(3), 159–167.
10. Liu, X. X. (2017). Research on clothing body structure design and handling skills for special body types. (Master's thesis, Tianjin University of Science & Technology).
11. Luo, S. Q. (2022). Structural optimization and design application of upper prototype based on special body

DOI: 10.5281/zenodo.15709935

surface morphology of young women. (Master's thesis, Wuhan Textile University). Retrieved from https://link.cnki.net/doi/10.27698/d.cnki.gwhxj.2022.000468

12. Miao, X. Y. (2016). Key technology research on pattern making of women's upper clothing for special body types. Jiangsu Silk, (05), 28–30+27.
13. Mielicka, E., Napieralska, L., Jasińska, I., & Jarzyna, V. (2017). Individual 3D measurements of end users to personalize work wear clothing. IOP Conference Series: Materials Science and Engineering, 254(17), 172017. https://doi.org/10.1088/1757-899X/254/17/172017
14. Sun, L. Y. (2024). Research and practice on professional clothing design from the perspective of scene. (Master's thesis, Zhongyuan University of Technology). Retrieved from https://link.cnki.net/doi/10.27774/d.cnki.gzygx.2024.000492
15. Wang, H. H. (2020). Personalized design of professional clothing and its influencing factors. Leather Making and Environmental Science and Technology, 1(10), 17–23.
16. Wang, R. H., Chen, N., & Chen, L. Q. (2023). Structural design and optimization of men's suits for special body types. Tianjin Textile Science and Technology, (03), 34–37. https://doi.org/10.13518/j.cnki.tjtst.2023.03.007
17. Wang, Z., Tao, X., Zeng, X., Xing, Y., Xu, Z., & Bruniaux, P. (2023). Design of customized garments towards sustainable fashion using 3D digital simulation and machine learning-supported human-product interactions. International Journal of Computational Intelligence Systems, 16(1), 16. https://doi.org/10.1007/s44196-023-00189-7
18. Wang, L., & Liu, Y. C. (2020). Body perception and professional clothing style preferences of pear-shaped women. Fashion Guide, 9(6), 45–50.
19. Wang, Y. H., Chen, N., & Chen, L. Q. (2023). Structural design and optimization of men's suits for special body types. Tianjin Textile Science and Technology, (03), 34–37. https://doi.org/10.13518/j.cnki.tjtst.2023.03.007
20. Xu, W. (2013). Research on the internationalization of Chinese national style clothing and apparel—Professional clothing design. (Master's thesis, Tianjin University of Science & Technology). Retrieved from https://kns.cnki.net/kcms2/article/abstract?v=m17bUIR54SNhUsOoFmcj43kfNSKfR6vk1f0dEgCwfdRbRmxl7PsUq_tfpn8v7owKx__2nkJnqurYtPcwAdSnPQb6EEX8lSMK48YqcrooZU6UPcaXBi0auOmGnBvOO67LF4N034uaoeRcaFZhLDAknm75BZuqsEmggWFGuUORdWbZs5K5u7dVF60Q_2QRsI1V&uniplatform=NZKPT&language=CHS
21. Yan, Y. N. (2002). Positioning analysis of the professional clothing market. Textile Guide, (06), 43–44+46.
22. Yuan, Y. (2018). Research on clothing matching rules suitable for pear-shaped women. (Master's thesis, Dalian Polytechnic University). Retrieved from https://link.cnki.net/doi/10.26992/d.cnki.gdlqc.2018.000025
23. Zhang, L., & Liu, Y. C. (2020). Body perception and professional clothing style preferences of pear-shaped women. Fashion Guide, 9(6), 45–50.
24. Zhang, L. L., & Zhang, G. P. (2016). Application of MATLAB polymerization in personalized garment customization. West Leather, 38(22), 25–27.
25. Zhang, S. Y. (2011). Female body shape recognition and application based on Web. Journal of Wenzhou Vocational & Technical College, 11(2), 40–43.
26. Zhang, W. Y. (2011). Application of CAD technology in personalized garment design. Shanghai Textile Science & Technology, 39(6), 12–14.
27. Zhang, X. H. (2011). CAD Application of CAD technology in personalized garment design. Shanghai Textile Science & Technology, 39(6), 12–14.
28. Zhou, Y. (2021). Research on the rear shape structure design of men's suits for special body types. (Master's thesis, Soochow University). Retrieved from https://link.cnki.net/doi/10.27351/d.cnki.gszhu.2021.004085
29. Zhou, W. (2014). Research on the fashionable design of business professional clothing. Fine Arts Observation, (07), 98–101.
30. Zuo, J. X. (2022). Application of 3D body measurement data in special body type garment pattern making. Textile Reports, 41(3), 55–58.

DOI: 10.5281/zenodo.15709935