Application of 3d Clothing Scanning Technology in Clothing Products Product Design

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Abstract: 3d Laser Scanning Measurement System is Composed of Terrestrial 3d Laser Scanning Measuring Instrument, Post Processing Software, Power Supply and Ancillary Equipment. When Measuring Distance by Laser Pulse Measurement Space; Then According to the Horizontal and Vertical Stepping Angle Values, Calculate the Scanning 3d Coordinates of the Points. Clothing Products Design Often Use the Following Design Methods: Subsection Method, Bionic Method, Retro Method, Series Method, Opposition Method, Change Method, Association Method, Combination Method, Limit Method and Addition and Subtraction Method. the Paper Presents Application of 3d Clothing Scanning Technology in Clothing Products Product Design.

1. Introduction

Ranging Method of Laser Scanner is Based on the Principle of Optical Triangulation, Using Laser as a Light Source, through the Transmitting Device within the Scanner, the Laser Beam is Projected Onto the Object Surface, and the Photoelectric Sensitive Element in the Reflection Energy Receiving Laser in Another Location, by Measuring Each Laser Pulse Emitted from the Surface of the Object to Be Measured Again the Instrument Returns the Elapsed Time or Phase Difference is Calculated between the Laser Scanner to Scan the Object Point Distance Value s and the Reflection Intensity of I, Alpha, Theta and s Are Used to Calculate the Laser in 3d Scanning Sit Measured Point on the Object, the Reflection Intensity of the Scanning Spot I is Used to Give the Reflection Point Matching Color. So We Can Obtain Three-Dimensional Coordinates of Measured Object Surface of Each Sampling Point, Resulting in a Collection of Discrete Sampling Points of the Measured Object, the Laser Point Cloud. Alpha Theta, the Size of the Module is Controlled by the Scanning Control, Reflects the Points Therefore, the Scanner Chooses the Distance s and the Angular Resolution According to Different Application Purposes. the Smaller the Corner Value is, the More the Point Cloud is, the Finer the Model is and the Clearer the Texture is It [1].

The Ministry of Labor and Social Security Disclosure, is Expected in the Next 10 Years Chinese Demand for Clothing Designers Will Reach 250 Thousand to 300 Thousand People. the Ministry of Labor and Social Security Recently Released the Seventh Batch of New Occupation Had This Occupation Clothing Designer, Clothing Products Designer Refers to the Clothing Type, Movement Mechanism and Aesthetic Principle, Combined with the Properties and Manufacturing Process the Design of Clothing Materials, All Kinds of Clothings Products.

At Present, the Market Has Initially Formed the Clothing Products Product Design Team, and Plays an Important Role in the Industry. with the Improvement of People's Living Standards, Consumer Demand Continues to Rise, the Domestic Market Demand for Clothing Products Designers

Creaform Inc is the world leader of 3D laser scanning and measurement of advanced technology, is currently the world's most advanced third-generation handheld, self positioning of the 3D scanning system manufacturers. For global users, Creaform can provide 3D scanning and measurement products, 3D digital scanning, design, modeling, product engineering and technical services, application support and complete 3D digital solutions, software configuration and measurement of the international most advanced CNC system and various functions are perfect, to meet the requirements of manufacturing quality assurance and production process of.Creaform and

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its partners. It is Chinese area company has a 3D scanning software and trained with regularity of technical service and application support team, can provide 3D digital technical support and service for customers, for any technical problem of customers, commitment to be a positive response within 2 hours, 24 hours to use Solve the problems on the spot.

At present, the Asian region provides more than 85% Clothing products products for the global market, is the center of the global Clothing products industry [2]. Especially Chinese Clothingmaking industry after decades of rapid development, has become the Clothing products production and consumption country worthy of the name, trade, but not the Clothing-making power. Because most of the domestic Clothing-making enterprises to independently design and product development a lot of problems, there is no reasonable cultivation and use of talents, making the product development and design level of Chinese Clothing products enterprises is far lower than the output growth level. In terms of product design, many enterprises are imitation and copy phenomenon, Clothing style single, lack of innovation, between the various brands of product homogeneity and similar phenomenon serious.

In the mode of production, or in processing trade and OEM production mainly rely on price competition to seek development and production. So, our country real The meaning of the Clothing products designers, first of all, we first understand what Clothing designer, Clothing designer refers to the human law of Clothing, movement mechanism and aesthetic principle, combined with the properties and manufacturing process of Clothing materials, design all kinds of Clothing products products. According to the definition of Clothing designer, and it is to talk about the present situation of Clothing design talent China's Clothing products industry now and in the future of design talent.1. Clothing industry analysis is an important part of China's light industry, China's exports of Clothing products products are the main products. To 2010, China's exports of Clothing products products to the world export accounted for about 65% of the total. The rise of the Clothing products industry, driven by rapid the development of related industries

The 3D measurement can be defined as “a detector has three direction movement, can move on the three rails perpendicular to each other, the detector is transmitted by contact or non-contact mode signal, three axis displacement measuring system by the data processor or computer to calculate the coordinates of each point of the work pieces (X Y, Z), and the measurement function. Measuring function of 3D measurement should include dimensional accuracy, positioning accuracy, geometric accuracy and contour accuracy.

Since 60s of last century has begun to laser technology, laser technology for its simplicity and high density in twentieth Century gained great development. Realized from one-dimensional to two-dimensional until today widely used in 3D measurement development, realize high precision measurement of non cooperative targets. And the digital earth, put forward a series of digital city the concept of information, we can see: the expression of transforming from two-dimensional to three-dimensional direction, is an important weapon to promote the construction of China's information society and the sustainable development of resources and environment from static to dynamic transition.

At present, a variety of 3D data acquisition tools and means emerge constantly, promote the 3D data acquired in real time, integrated, digital, the development of dynamic and intelligent direction, the application of 3D modeling and surface reconstruction are more and more widely in traditional measurement [3]. The painting technique is mainly for accurate measurement of single point, it is difficult to meet the need of modeling accuracy, quantity and speed. And the 3D laser scanning technology is used in modern high precision sensor technology, it can be used without any contact, can scan the site environment and air into the complex in 3D data can be directly. Access to a variety of entities or real, the measured object surface sampling point set “point cloud”, is fast, simple, and accurate characteristics. The three-dimensional model of point cloud model and data from image data can be reconfigured based on the target, and can obtain the three-dimensional space of the line, face, body and other experimental data, such as mapping, measurement, analysis, simulation, simulation, display, monitoring, virtual reality and so on.

2. Three Dimensional Scanning Data Processing Technology

3D laser scanning, as of mid 1990s began a new technology emerged, with fast speed, high efficiency, high real-time performance, is a very good solution to the bottle neck of the development of spatial information technology in real-time and accuracy. Therefore, it quickly became an important means of spatial data acquisition. In China in twenty-first Century at the beginning, the 3D laser has been applied in the field of Surveying and mapping of ancient buildings, such as the Imperial Palace for repair of Surveying and mapping, and digital camera combined with fast 3D reconstruction of ancient buildings, ancient architecture to realize digital archiving, provide important information for [4] studies in the Chinese ancient architecture history and theory of architecture, to carry forward the culture of ancient buildings with [5].

Social significance from the important research results can be seen, and other technical means of integration, more traditional 3D laser mapping method shows its unique relative to the protection of ancient buildings in The advantages can not be replaced. However, due to the limitation of the characteristics of the building itself and the technology itself, but also makes for 3D laser mapping of ancient architecture has some defects, so we need on the basis of previous studies, further research for the characteristics of 3D laser mapping of ancient architecture, and the existing problems, and puts forward the improvement preliminary, as is shown by equation(1).

$$\begin{Bmatrix} x_p^{\,1} \\ y_p^{\,1} \\ z_p^{\,1} \end{Bmatrix} = R \begin{Bmatrix} x_p^{\,2} \\ y_p^{\,2} \\ z_p^{\,2} \end{Bmatrix} + T \tag{1}$$

The appearance of product data obtained will inevitably introduce data error, especially the measurement data near the sharp edges and boundary point, measuring data, may make the surface point and its surrounding deviate from the original surface, so the original point cloud data should be preprocessed, usually go through the following steps:

1) Remove noise points, the common inspection method is to display the point cloud on the graphics terminal, or to generate curves and surfaces, using semi interactive and semi-automatic fairing method to check and adjust the point cloud data

2) data interpolation, for some three-dimensional scanner can not scan the region, its data can only be completed by data interpolation method, here we should consider two kinds of surface modeling technology, based on point - spline surface reverse modeling and point based surface fitting technology.

Leather class: leather which is made of soft leather from animal skin is collectively referred to as dermis Features: all natural leather has natural lines, and bending will produce slight irregular crease, softness, toughness, permeability is better

Type: press materials including: fetal calf, cow, goat, sheep skin, skin, snake skin, ostrich skin, skin and so on.

1) the skin of the head is made directly from the raw skin of various animals, or the thick skin of cattle, pigs, horses and other animal skin after hair removal is cut into two layers, the upper part of the fibrous tissue is processed into a variety of head skin.

2) the two layer is the loose two layer of fibrous tissue, which is processed by chemical material spraying or coated with PVC PU film [6].

3) two recycled leather, leather and leather scraps will waste all the animal after crushing, the deployment of chemical raw materials produced a leather embossed leather surface processing technique of leather, which is characterized by skin neat edge and high utilization rate of low price; but the skin is usually thicker, the strength is poor, only suitable for the production of cheap briefcase golf rod bag etc. setting process products and parity belt, its longitudinal fiber uniformity, identify solidification effect of liquid materials mixed fiber.

Clothing products design often use the following design methods: subsection method, bionic method, retro method, series method, opposition method, change method, association method, combination method, limit method and addition and subtraction method.

Fig.1 Cpc-400 Portable Three-Dimensional Optical Scanning System

Part design method. We know that the Clothing is composed of parts, components, components, accessories and parts, the design method is to segment each part of the Clothing of the segment design, then the reasonable composition creation method of forming the work according to the design requirements the use of aesthetic knowledge, this design method is often the first step from the beginning part, then is the element. The last parts of components, accessories.

For example, in the design of a Clothing cover type occupation female tongue theme, we firstly according to the consumption object and subject matter, each part of the planning of the Clothing, then according to each part of the parts, components, components, accessories for detail design parts of the order, the use of aesthetics of reasonable combination.

Because a Clothing has a variety of components, in order to determine the order between Clothing parts, the following rules are used for design:

According to the order of the main and subordinate parts, the first is the feature parts of the Clothing style, and then the auxiliary parts. This rule is mainly applied to the Clothings with larger feature parts, such as ear Clothings

CPC-400 portable three-dimensional optical scanning system is composed of a plurality of groups of grating generator grating is projected onto the object surface, two CCD cameras from different angles while shooting surface stripes, and the fringe image is input to the computer, according to the fringe curvature using phase method and triangular method to accurately calculate the space coordinates of the object surface a point (X, Y, Z) 3D point cloud data (Point Cloud).

1) portable design: hardware system of small size, less area, no noise, easy assembly and disassembly, convenient to on-site measurement, easy to carry.

2) “one button” mark point automatic stitching: automatic stitching multiple scanning data, the whole process is a key to complete, without manual intervention, without third party software, to ensure that the data does not appear layered phenomenon

3) non-contact scanning: the measurement does not contact with objects, it can be convenient to measure soft, deformable objects, and can scan large heavy objects when moving scanning equipment, no travel limit

4) noise processing and pruning point cloud: in the scanning process and after scanning noise pruning and culling; because of the high-end industrial lens and original software denoising module, can overcome the domestic similar products can not solve the noise and drift, saving you time and postprocessing of retouching.

5) a machine has 4 scanning mode, comprehensive standard and fine function, is a kind of universal machine, whether it is the requirements of delicate jade products or large automotive products can take time for it.

In the process of using 3D printer, a link is modeling. In general, the user to model with the support of the output format of STL software, and then send the corresponding data to the 3D printer. This design for professional people is not difficult, for ordinary PC users?

When the end of last year, Pan Hao presented a simple modeling method in the small front: use Autodesk's 123D Catch free software for 360 degree pictures, then the corresponding pictures uploaded to the cloud. After a while, the corresponding modeling code from the cloud feedback, can be used directly.

However, this software also has some shortcomings, such as can not guarantee the distance of iPad/iPhone shooting, the angle is exactly the same [7]. If in the process of shooting jitter situation, it may also affect the effect.

3. Three Dimensional Design Method Commonly Used in Clothing Products Design

DSynthetic leather, artificial leather also belongs to super fiber skin: it can be used in vamp or inside. Features: appearance, feel, performance are closer to leather, light weight, uniform material, tasteless, smooth surface, poor permeability, fold and bend produce the same crease. Type: PU, PVC, etc.

Textile materials: textile materials are widely used in the production of uppers and linings. Features: good ventilation, strong thermal retention, sweat absorption, no side effects on the skin. Types: cotton, canvas, khaki, nylon cloth, etc.

Two, leather Clothings composition: uppers, Clothings, soles, bottom, anti brain, hook heart, the main heel, seven parts. It is the entire Clothing vamp values, so that the whole Clothing is beautiful, comfortable, durable and resistant to the important parts of twists and turns, it has attract customers about the role of the market.

Characteristics of terrestrial 3D laser scanning technology:

(1) fast measurement, high efficiency, up to 5000 points / sec;

(2) the information content is rich, and a large number of point cloud coordinates represent the monitoring body, and the texture information of the building surface;

(3) the accuracy of the measurement is high, and the accuracy is different according to the instrument type, the distance and the reflection degree of the reflector, so that the accuracy of 10mm-0.003mm can be satisfied;

(4) non-contact measurement is beneficial to protect the object to be measured, without burying points, saving money and time, and reducing the hidden danger caused by the reflective signs;

The ground 3D laser scanning technology can quickly, continuously, automatically obtain high-precision, high-density three-dimensional data, and obtain the three-dimensional point cloud has a wide range of applications [8].

Fig.2 The Ground 3d Laser Scanning Technology

(1) the design of the upper, sole of the Clothing, and other structures; (2) the computer aided design and pattern making; (3) to carry out market research, collect pop elements, grasp the trend; (4) the development of new products, new technology of producing new materials, the introduction of new technologies; (5) processing process Clothing products; (6) of Clothing products production management and process management; (7) to develop, review and implementation of Clothing

products products enterprise standards; (8) to participate in or bear the raw material formulation, inspection, inspection work.

China is a traditional Clothing-making powers, but because of the deficiency in the industry independent design and product development, design talent and training did not keep up, making the product development and the design level is far lower than the output growth level, R & D ability at a disadvantage state. In terms of product design, many enterprises still remain in the imitation. Copy the product stage, a single style, between the various brands of product homogeneity and similar phenomenon. Because of these factors, it is difficult to become China's Clothing-making power [9]. The enterprise demand for design talent is very strong, the designer's role is highly valued, so there is an urgent need to standardize Clothing products designer occupation qualification, design personnel to provide a equality, science, health platform, to better promote the development of the industry.

Camera type scanning instrument based on the principle of need to capture image information clearly, to achieve high precision measurement, therefore, the common 3D scanner on special surface properties (such as reflective surface, the surface of the deep black, black and white contrast surface) were measured before, the need for these surface spraying white developer to realize scanning.

Special reflective surface measurement technology Tieniu technology independent research and development, the developer spraying conditions, the strong reflective surface, deep black direct measurement, and get higher. Quality point cloud data

The direct measurement module without spraying can be realized:

(1) The working steps of spraying and cleaning the developer are omitted, and the measuring efficiency is improved;

(2) The cost of purchasing developer is saved and the scanning cost is reduced;

(3) Protect the surface of the workpiece from the corrosion of developer

Innovation of all art is an eternal topic, because there is no innovation no development, the so-called innovation is new in order to be different, based on inheriting the past design creation achievement, explore new ideas, explore new design forms, find new themes, new technology / new material / new color collocation and so on.

Clothing products designers have two meanings in the independent innovation of Clothing money: first, they can improve their own survival and development space; two, it is to enhance the design innovation ability of enterprises, so as to improve the competitiveness of enterprise products, thereby reflecting their self-worth. Clothing products designers to enhance the ability of independent innovation, I think we need to have five basic conditions.

Mechanical, automotive, aerospace, military, furniture, tool prototypes, such as measuring high-precision geometric components and measuring complex shapes of mechanical components

Application fields of 3D measurement technology:

In recent years, 3D laser scanning technology and the continuous development of increasingly mature, the 3D scanning equipment has gradually commercialized, great advantages of 3D laser scanner that can quickly scan the object to be measured, without reflecting prism can be directly obtained high precision scanning point cloud data. As a result of 3D modeling and virtual is reconstruction of the real world efficiently. Therefore, it has become one of the focuses of current research, and in the digital preservation of cultural relics, civil engineering, industrial measurement, natural disaster investigation, digital city terrain visualization, urban planning and other fields are widely used.

(1) surveying and Mapping Engineering: dam and power station foundation topographic survey, highway surveying and mapping, railway surveying and mapping, river surveying and mapping, bridge, building foundation surveying and mapping, tunnel detection and deformation monitoring, dam deformation monitoring, tunnel underground engineering structure, surveying mine and volume calculation

(2) the structure of measurement: bridge expansion project, bridge structure detection, measurement, monitoring, measurement of geometric size, spatial location conflict measurement,

space, volume measurement, high fidelity 3D modelling, offshore platform, measuring shipyard, power plant, chemical plant and other large industrial measuring internal equipment; pipe line measurement various types of machinery, manufacture and installation.

With the 3D laser scanning technology in the research field of expanding production scanners are more and more. The main business of the Swiss Leica company, America FARO company and 3D DIGITAL company, Austria RIGEL, Canada OpTech, France MENSI company, China Beijing viscan technological development company. These scanners in the scan scanning distance, accuracy, spacing and number, size and other indicators of the different spot.

HDS high definition 3D laser scanning measurement system is the solution supplier, she is the worldwide application of 3D laser scanning technology in reconstruction engineering, detailed surveying, engineering design and consulting and topographic surveying project leader. The advanced high resolution measurement scanner software and “turnkey” system is a high precision sure, the return of investment, the perfect combination of easy to use and flexible means. In addition to these products, Leica is to provide customers with the most complete

Customer service and support, and introduce customers to the industry's largest and most experienced service provider network. Leica measuring system of the HDS family of products include: HDS3000 and ScanStationc10 measurement system based on time measurement, HDS6000. ultra high speed system based on phase measurement with this product combined with the Cyclone software and the CAD Cloudworx plugin, we provide complete engineering solutions for the user, the user can get in line with the measurement results of the quality of Leica, CAD tools complete, high precision deliverables and massive engineering scanning data management capabilities.

The ground 3D laser scanning measurement system is composed of terrestrial 3D laser scanning measuring instrument, postprocessing software, power supply and ancillary equipment. When measuring distance by laser pulse measurement space; then according to the horizontal and vertical stepping angle values, calculate three dimensional coordinate scanning point. By scanning transmission device and according to the scanning range set, complete the full scan of the object; then analyze the data, get the point cloud data of the target surface through a series of treatment.

At the same time, color photo color CCD camera of the measured object, the recorded object color information by mapping techniques to the intake of the color of the object information matching to each measured point, get the 3D color information of objects. The 3D laser scanning measurement principle is shown in Figure 1 [10]. The 3D laser scanning technology based on laser point cloud target acquisition, The traditional industry measurement more digitally transferred to the interior, significantly reduces the measurement work difficulty and workload. The data mining is good, with good, greatly reducing the time and the number of [3] field measurement, the 3D laser technology can conveniently, accurately and rapidly for obtaining the building information.

$$\begin{bmatrix} x_i \\ y_i \\ z_i \end{bmatrix} = R(\alpha, \beta, \lambda) \begin{bmatrix} X_i \\ Y_i \\ Z_i \end{bmatrix} + \begin{bmatrix} x_0 \\ y_0 \\ z_0 \end{bmatrix} \tag{2}$$

(3) Data smoothing, the purpose of data smoothing is to eliminate noise points, get accurate model and good feature extraction effect, using smoothing method, should strive to maintain the information provided by the parameters can remain unchanged.

(4) Data smoothing, smoothing a smooth, pleasing to the eye, but the precision is not allowed for the measurement data on Application of modified large quantity to meet the requirements of fairness, on the other hand, the diversity of physical boundary surfaces, some feature points on the boundary (border fold inflection point) must be retained however, can not be regarded as “bad points”.

(5) reposition of point cloud data to form multiple scans of reposition in re clamping, the current CAD software general have this function, need other manual suture, select the reference points twice in the location state in the measurement part, in the process of positioning twice the measurement of the coordinates of fiducial points twice positioning conditions were measured, and

then determine the measure precision of each reference point to determine certain rules, and finally display the measurement data under localization in the CAD system, and a mobile position of the data, so that all the measurement data under the orientation of integration the other one.

The surface reconstruction can be said is another core of reverse engineering and the main purpose is to obtain the point cloud data, the 3D scanner as input data to re construct the surface model. To obtain the product data, based on reverse engineering software for processing data, divided by categories, group separation, comparison the point and the real error, re construct surface model, CAD data processing, manufacturing or NC or RP, this part is the postprocessing. At present in the process of point cloud surfaces, there are mainly three kinds of surface construction scheme: one is the surface construction scheme based on B-Spline or NURBS surfaces the second is the foundation; surface construction scheme with triangular Bezier surface based; third is to describe the curved objects. In polyhedron.

1) Clothing lining - refers to the Clothing lining, it has moisture absorption, perspiration, wear resistance, bending resistance role, where exposed, must pay attention to beauty

2) sole - it touches the ground position, bear the impact and friction of different ground, it not only protects the bottom of leather Clothings, but also plays a buffer role on the human body

3) the bottom - it is located in the bottom of the Clothing, contact the Clothing position, the first half suffer from the sweat and sweat erosion, the second half in the overhead position, play a role in protecting toes

4) the anti brain - it between the toe and the Clothing lining vamp, Clothing type maintenance support type appearance, part of Clothings with metal sheet, play a protective role.

5) hook heart - it has played a supporting role of stereotypes, the bending steel hard fixture in the arch part of the Clothing, make the Clothing after stress collapse

This design thinking method is very suitable for beginners, because beginners lack of Clothings design materials and design experience, and part design method involves many details of Clothing products problems, accumulation of design materials, rich design experience can play a positive role

Retro method Clothing design refers to the style of the ancient clothing Clothing products reference, decorative style, using some classical style patterns in the Clothings decoration, according to the characteristics of modern Clothing, Clothing style Clothings made of re planning, reflect a kind of design method of a kind of classical charm. Application of this design method in Clothing products in the following two points.

4. Application of 3d Clothing Scanning Technology in Clothing Products Product Design

The system uses the international advanced LED blue light source, the surface has diffuse reflection of the object to be measured, the surface does not need special treatment, such as surface spraying, etc., can be used in indoor and natural light environment

The system is based on the grating full field fringe projection technology, using blue light grating and LED light source to reduce the thermal deformation and thermal stress caused by the light source, meanwhile, the light source has long service life and the light source life is up to one hundred thousand hours

System lens group (a projection lens, the two lenses) can be easily replaced, large objects, small objects, fine object scanning. The system can be equipped with up to five groups of fifteen high precision lens, can realize the scanning field, scanning accuracy and resolution to achieve exchange, large, and small objects fine scanning objects.

Features of Clothing easy 3D scanner:

1) fast scanning speed: less than 5 seconds can get about 1000000 points, high efficiency

2) third generation of surface scanning method: each scan a three-dimensional feature surface, get the entire object surface three-dimensional data, measurement

The point distribution density is very high and very regular

3) non-contact scanning: non-contact optical scanning using the principle of photography to obtain three-dimensional data of the object surface

The measurement requirements for soft, deformable objects should be given

4) high precision: using unique measurement technology, single scanning accuracy of 0.01 ~ 0.03mm (depending on different models)

5) large depth of field: not only to meet the general object scanning, but also suitable for large depth of field object scanning, as is shown by equation(2).

$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} x_0 \\ y_0 \\ z_0 \end{bmatrix} + \begin{bmatrix} 0 & \lambda & -\beta \\ -\lambda & 0 & \alpha \\ \beta & -\alpha & 0 \end{bmatrix} \begin{bmatrix} X \\ Y \\ Z \end{bmatrix} \tag{3}$$

6) automatic stitching points: the results can be automatically stitching multiple measurements, the object can be arbitrarily flip and move during scanning

The stitching of the mark points is generated to measure the data several times so as to realize the large area scanning and reduce the dead angle of the measurement.

As business casual Clothings with a soft, lightweight, stylish, comfortable, in the promotion of healthy lifestyle today, especially favored, so Huang Zhichao every day in the study business casual Clothings style, material, color and craft, he wanted to put the modern leisure life concept into the design of Clothings. After several attempts and so the introduction of a variety of business research, softness and comfort are very high Clothings, the market after the product launch, reacted strongly, and attracted many well-known brands to join the “proud Clothing company” to do OEM production. After several years of hard work, Huang Zhichao's “proud” steady development of enterprises, get customers and market recognition in the field of business casual Clothings, become the Heshan area has a great influence and reputation of the Clothing enterprises to create a Clothing Clothing products world, truly become the “pride”.

The new concept of “should be not the past, epoch, or fresh, new Clothings design. All we cannot ask is epoch-making, this is not possible. But you must take this time to consider” a new step, try to do a new design, and meet the market demand. The process of innovation, we must be good at study and learn widely from others'strong points, and excellence. Any industry, any development of a Clothing designer, can not be satisfied with the school or the field itself, its own enterprise should pay attention to the global market, market demand and development trend of using more eye light, focus on diversification the structure of knowledge.

1) the object is placed on the three coordinate measuring space, can obtain the measured object of each measuring point coordinates, this technique is three coordinate measuring machine. The principle of three coordinate measuring machine is one of the most effective methods for measurement and the size of the data, can replace a variety of surface measurement tools, reducing the required measurement the complexity of the task time, provide useful information about the state of production process for the operator.

2) 3D laser scanner is through the laser to scan the measured object, to obtain the measured three-dimensional coordinates of the object surface. The 3D laser scanning technology is also known as the real replication technology, with high efficiency, high accuracy measurement. Some people say that the three-dimensional laser scanning is the GPS technology since the field of surveying and mapping again technology revolution. 3D laser scanner is widely used in building structure measurement, measurement, shipbuilding and Engineering in recent years, railway construction and other fields, and the 3D laser scanner has fixed from moving towards the direction of development, is the most representative of the vehicle 3D laser scanner and airborne laser radar.

Series design method is the designer of a Clothing or some design elements using divergent thinking series deformation form of the expanded design elements, design a variety of styles to produce the same theme. Application of series design method in the design of the main Clothing with three points:

1) last body series. Last body series is realized through the change of last size and whole head shape, which is the last body type last one type, a fat, semi, type two, type two, type three, as a result, they formed a variety of fat, adapt to different consumer demand. Similarly, last body first tip

type, square, round, in the head shape series often performed a series of deformation on some potential, such as the tip of a nail shaped pointed tip, knife type and so on. In the last series, is often the model together with changes in potential. We will discuss the specific method in the Clothing color design.

2) the series color. The series color is through a series of applications of the Clothing color, resulting in a variety of styles of Clothing color collocation scheme. Clothing color collocation method and the corresponding series of methods generally have the following two kinds of circumstances, we will discuss the specific method in the Clothing color design.

5. Conclusion

In the manufacturing industry, the rapid prototyping method based on 3D laser scanner data provides another way for product design and development model, shorten the design and manufacturing cycle, reduce development costs, greatly satisfy the needs of industrial production, and virtual manufacturing technology (Virtual Manufacturing), known as the two pillars of technology the future of the manufacturing industry, at present has become a frontier subject of scientific research and manufacturing research focus. 3D data reconstruction. modelling for 3D model reconstruction based on 3D laser scanner using 3D laser scanning technology in orthodontics and skull repair and other medical fields, can be directly applied to national security units, law enforcement agencies and government agencies etc. identify.

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