DISSERTATION INFORMATION

Dissertation's title: **A Study on the Human Body Dimensions Measuring Process Automation in The Garment Industries.**

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ABSTRACT

The size chart system table is researched based on the anthropometric characteristics of each country, each region in order to supply for the garment industries in general and for the personalized in especially. The ready to wear clothes has the advantages of making sure about the fitting to the human body, but this does not waste much time to sew. This is a great issue for the person who live in big cities. In the packaging of every company, there always has the size chart system table to help customers to choose the most suitable size for them. However, there is no one who has the exact size or nearly the same size with the size in the package. Therefore, they normally waste quite much time to choose the suitable clothes size for them. Besides, each product line has the different type of form, then this situation also effects to the chosen size process of customers. Therefore, the customers normally waste a lot of time and have to try the sample clothes many times.

The size chart system table introduced in this dissertation will represent for the body dimension of the men with the ages from 18 to 25 years old who are studying, living and working in the South of Viet Nam. There are totally 24 sizes for 5 heigh groups with respect to 4 groups of body shapes. This table is carried out based on the factor analysis, main components, ANOVA accreditation. From the analytical results, the cost function is decided to find the dimensions among different sizes following the linear regression method and to make the data for the size chart system table.

The size extracting algorithm, the body shape from the size chart system table, the size system of the ready to wear clothes are carried out by the linear programming method and Fuzzy logic. The input variables are the vertical principle dimension (inseam dimension) and horizontal principle dimension (neck girth dimension). The results of this algorithm will propose the suitable size for customers. Besides, the input values for this algorithm can be the 3D shape of the body from the 3D scanner method or these 2 principles dimension values. This has the great advantages for the trend of developing the online shopping in Viet Nam and in the world.

For the automatic algorithm to extract the neck girth and inseam measurements, which is based on the optimal method, the interpolating method using 3D scans of the body, is the suitable trend in the

digital technology at present. Besides, the automatic algorithm resulting the sizes results, the shapes are more precise and more accurate because of it can measure the hidden dimensions, the sensitive dimensions and also help customers not to shy when measured by tailors.

The results of the proposed algorithms in this dissertation have been evaluated on the applications of theoretical and also practical. In the future, the solutions of this dissertation can be applied at the garment or merchandise companies. This will help reduce the cost for companies because of the damages of sample clothes, reduce the production times, etc. The customers also do not spend much time for the samples trying process.

With the above positive results, the result research of this dissertation has greater scientific results and also the practical results.

CONTRIBUTIONS OF DISSERTATION

- Propose the automatic algorithms for extracting the human sizes, body shapes. These algorithms are satisfied the online shopping for the garment industries. The customers will supply the body shape dimension represented by 3D scans or the 2 values of the principle measurements.
- To create a new trend to choose the garment sizes with respect to body shape. After the principle dimensions are input to the algorithms, the suitable size will be proposed.
- To open an application for industrial garment field. The customer sizes are the data base for the industries to decide the parameters and then do the stamping process and then make the finished products.
- The industries easy to make the statistical values of the sizes which the customers mostly prefer to make the correct quantity of these products with these sizes to meet the requirement of the market.
- Build the database to consult for choosing the suitable clothes with respect to the body shapes. Based on the result of the size extracting process, the decoration on the clothes are also being suggested.
- Improve the chance for online merchandise for the garment industries.

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