

Body Size Predictions Based on Features and Estimating 3D Morphotype Mannequin for Virtual Try-on

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Abstract

The current dynamics of globalization trade such as mass customization, rapid change in fashion new technologies of communication, the morphological evolution of populations and the growth of Web-based environment sales, involve a revolution in traditional retail methods of apparel industry [1]

For fashion companies which want to gain competitiveness, they need to increase their level of service as well as consumer's satisfaction. One of the main difficulties standing in the way of garment retail is the lack of an efficient try-on process. In a remote environment, the body shape of an individual consumer couldn't be measured physically in order to be matched with a specific size of a garment and ensure the proper garment fit. For solving this problem, in this paper, a new and innovative non-contact method is proposed in order to estimate the individual consumer's body dimensions according to their height and weight.

Before defining consumer measurements, we need to define the morphotypes of a given 3D database of anthropometric measurements. To accomplish this, we used the method of human body morphology shape detection proposed by Hamad M. and al [2].

Based on this methodology, from the given database of 3D anthropometric measurements and 3D scans, we selected n clusters and n representative 3D morphotypes (centroids of morphological clusters). Then, we defined an intelligent system to estimate consumer measurement. To match morphological description consumer to 3D morphotype, we developed a method based on comparison between 2D images of the consumer with those projected from the 3D morphotypes.

Finally, a geometrical model associated with reverse engineering techniques has been used to generate the 3D virtual parametric mannequins from the 3D body scanned of the morphotypes [3]. This 3D virtual parametric mannequins associated to customer measurement can be used as a 3D consumer avatar.

This concept is used for Web-based environment or in market and verifies its applicability and by applying it to an experimental use-case concerning size garments recommendation in a Web-based environment and it can be implemented in virtual fitting rooms.

Keywords: 3d body scanning, 3D morphotypes, virtual try-on, 3D shape, 3D virtual parametric mannequins

References

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