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PII: S0263-2241(18)30756-5
DOI: https://doi.org/10.1016/j.measurement.2018.08.019
Reference: MEASUR 5798

To appear in: *Measurement*

Please cite this article as: J. Serrat, F. Lumbreras, I. Ruiz, Learning to measure for preshipment garment sizing, *Measurement* (2018), doi: https://doi.org/10.1016/j.measurement.2018.08.019

# Learning to measure for preshipment garment sizing

Joan Serrat[a,*], Felipe Lumbreras[a], Idoia Ruiz[a]

[a] *Computer Vision Center and Dept. of Computer Science, Universitat Autònoma de Barcelona, 08193 Bellaterra, Spain.*

**Abstract**

Clothing is still manually manufactured for the most part nowadays, resulting in discrepancies between nominal and real dimensions, and potentially ill-fitting garments. Hence, it is common in the apparel industry to manually perform measures at preshipment time. We present an automatic method to obtain such measures from a single image of a garment that speeds up this task. It is generic and extensible in the sense that it does not depend explicitly on the garment shape or type. Instead, it learns through a probabilistic graphical model to identify the different contour parts. Subsequently, a set of Lasso regressors, one per desired measure, can predict the actual values of the measures. We present results on a dataset of 130 images of jackets and 98 of pants, of varying sizes and styles, obtaining obtaining 1.17 and 1.22 cm of mean absolute error, respectively.

*Keywords:* apparel, computer vision, structured prediction, regression

## 1. Introduction

Automatically measuring objects in order to check whether they conform to a certain tolerance with respect to nominal values is a problem that frequently occurs in the industry, for instance for quality control. Machine vision systems obtain these measures by analyzing images of the inspected objects. On them it is possible to assess not only the dimensional quality of objects but also to quantify their shape attributes, position, orientation, alignment etc. [1] both in two and three dimensions [2].

Many and diverse manufacturing processes have benefited from the design of problem-specific automatic visual measurement methods [3–7]. The difficulty of the problem such methods have to face is often correlated to the degree in which objects shape and pose vary: from objects always at a fixed position with respect

*Corresponding author.

*Email addresses:* joans@cvc.uab.es (Joan Serrat), felipe@cvc.uab.es (Felipe Lumbreras), iruiz@cvc.uab.es (Idoia Ruiz)