Literature Survey

Wei-Yi Chang and Yu-Chiang Frank Wang proposed a novel framework for body shape and measurement estimation, which only requires 2D clothing images as input data. The proposed algorithm can be viewed as constructing a parametric model, which recovers body shape images using information observed across different camera views. More specifically, their method focuses on reconstructing the body shape with both multi-view image and measurement guarantees. Different from prior approaches, this method does not require the coefficients for image reconstruction to be the same across camera views, while they introduce additional constraints on the observed measurements for improved estimation. In their work, they consider five different measurements which are popular used in online shopping websites such as two vertical measurements (i.e., overall height and inside leg length) and three horizontal measurements (chest width, waist width, and hip width) are considered. Quantitative and qualitative experiments on a 2D clothing image dataset supported the use of approach, which was shown to perform favorably against single-view or baseline approaches.

Sahar Ashmawi et al. proposed an approach that aims to improve and facilitate the experience of online shopping through estimate the human body measurements from 2D images by photographing the body using a smartphone camera. The experiment was conducted on a sample of volunteers who were photographed, manually measured, their real clothing size were reported to compare the result with the model predict size. For implementations, they used one of the computer vision pre-trained algorithms (Haar Cascade classifier) to detect the human body in images. The detectors are designed to identify three parts of the human body: one detector used to detect the upper body, another detector used to detect the lower part from the body, and the last detector used to detect the full body. After detecting the body major parts, they extracted features by segmenting each image into 40 parts and determine two points as focal points of each body part to estimate the shoulder width, bust circumference, waist circumference, and hip circumference. After that, they used several machine learning models that are trained on a dataset consists of measurements for predicting the size of clothes depending on the estimated measurements. Each model was trained to predicate size a piece of clothing. The results showed that most of the sizes that were predicated are some differences to the real extent of participants.

They were unable to consider the side images which had a big toll on their model.

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| **PAPER NAME** | **YEAR OF**  **PUBLICATION** | **AUTHOR** | **PUBLICATION** | **PROPOSED**  **WORK** | **FINDINGS** |
| SEEING THROUGH THE APPEARANCE:BODY SHAPE ESTIMATION USING MULTI-VIEW CLOTHING IMAGES | 2015 | Wei-Yi Chang  Yu-Chiang Frank Wang | Research Center for Information Technology Innovation, Academia Sinica, Taipei, Taiwan | Estimates measurements of body from extracted features from silhouettes and image parsing using  multi-view Body Shape Modeling with Measurement Constraints. | Scope is limited to silhouettes. Had Satisfactory Accuracy |
| FITME: BODY MEASUREMENT ESTIMATIONS USING MACHINE LEARNING METHOD | 2019 | Sahar Ashmawia Maram Alharbi Ameerah Almaghrabi  Areej Alhothali | Elsevier B.V | Estimates human body measurements from human real-time pictures using Haar Cascade classifier and support vector machines | The side images of body were not considered resulting into some impact on accuracy |
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**References:**

[1] SEEING THROUGH THE APPEARANCE: BODY SHAPE ESTIMATION USING MULTI-VIEW CLOTHING IMAGES Wei-Yi Chang and Yu-Chiang Frank Wang Research Center for Information Technology Innovation, Academia Sinica, Taipei, Taiwan {webillchang, [ycwang}@citi.sinica.edu.tw](mailto:ycwang%7d@citi.sinica.edu.tw)

[2] 16th International Learning & Technology Conference 2019 FITME: BODY MEASUREMENT ESTIMATIONS USING MACHINE LEARNING METHOD