HS-Nets: Estimating Human Body Shape from Silhouettes with Convolutional Neural Networks

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Task Description

Goal: Human Shape Estimator for Garment Fitting with CNNs

Inputs Considered:
- Frontal binary fix scaled silhouette, neutral pose, unknown camera
- Frontal image with shading info, neutral pose, unknown camera
- Frontal binary silhouette, neutral pose, known camera calibration
- Frontal and Side binary silhouettes, neutral pose, known calibration

Contributions:
- First approach to human shape estimation from images with CNNs
- Training from scratch of a CNN regressor from binary images
- Demonstrate how to incorporate two views to improve prediction
- Thorough validation over 16 body measurements
- Improvements in accuracy and speed over state-of-the-art

Two View Architectures

(a) Fit views as separate channels
(b) Train Separate Nets and Merge through Concatenation
(c) Train Separate Nets and Merge through Max Pooling Layer

Silhouette Noise

Noise Parameters: 1, 5 and 9 pxl radius

HS-1-Net (One view silhouette)

HS-2-Net-CH (Two silhouette views)

References

[2] Blanz, V., Schölkopf, B., W此事， meals are processed 层 a CNN regressor from binary images
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