Garmentor: Parametric Pose, Shape, and Clothes In-the-Wild

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15.09.2022

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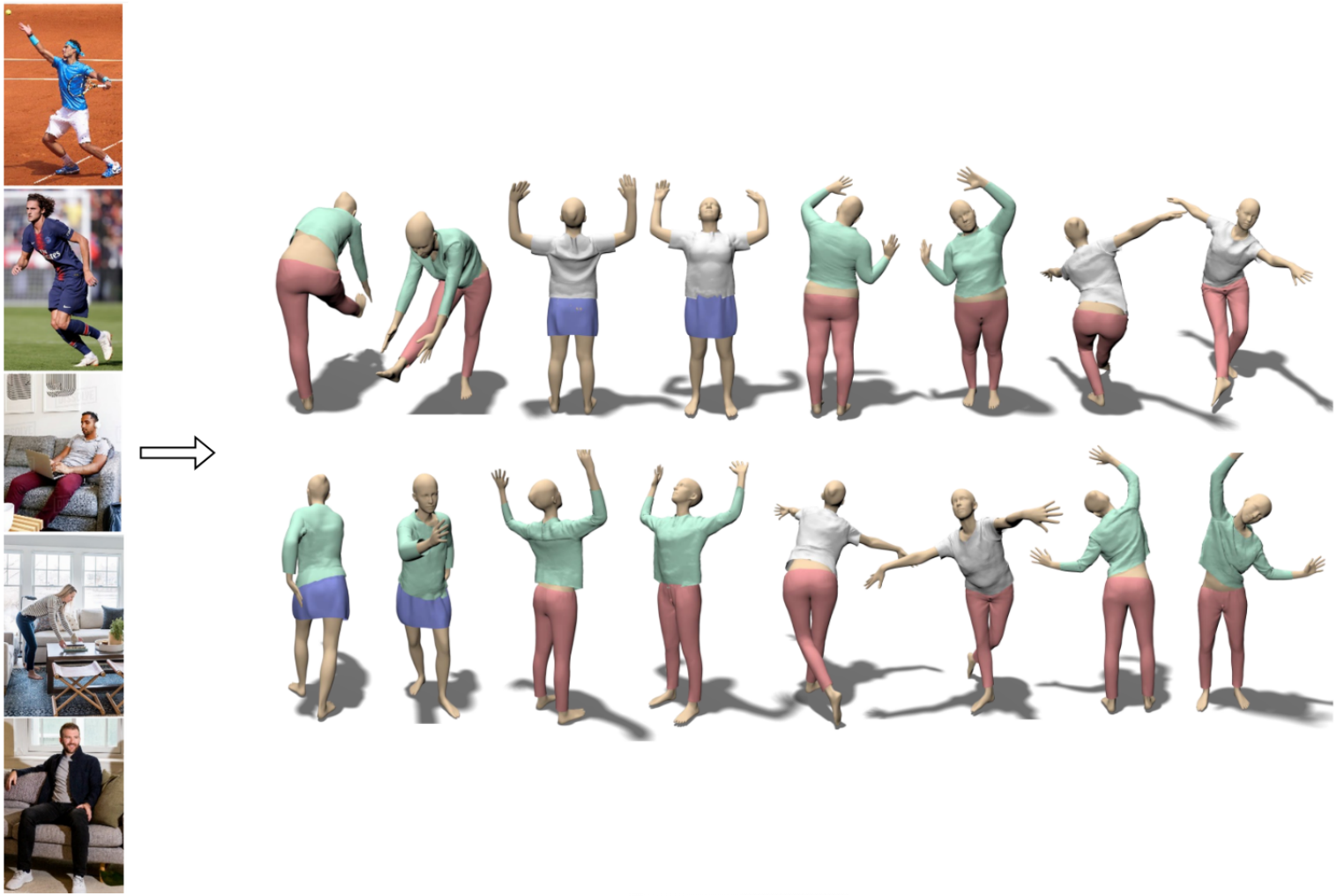
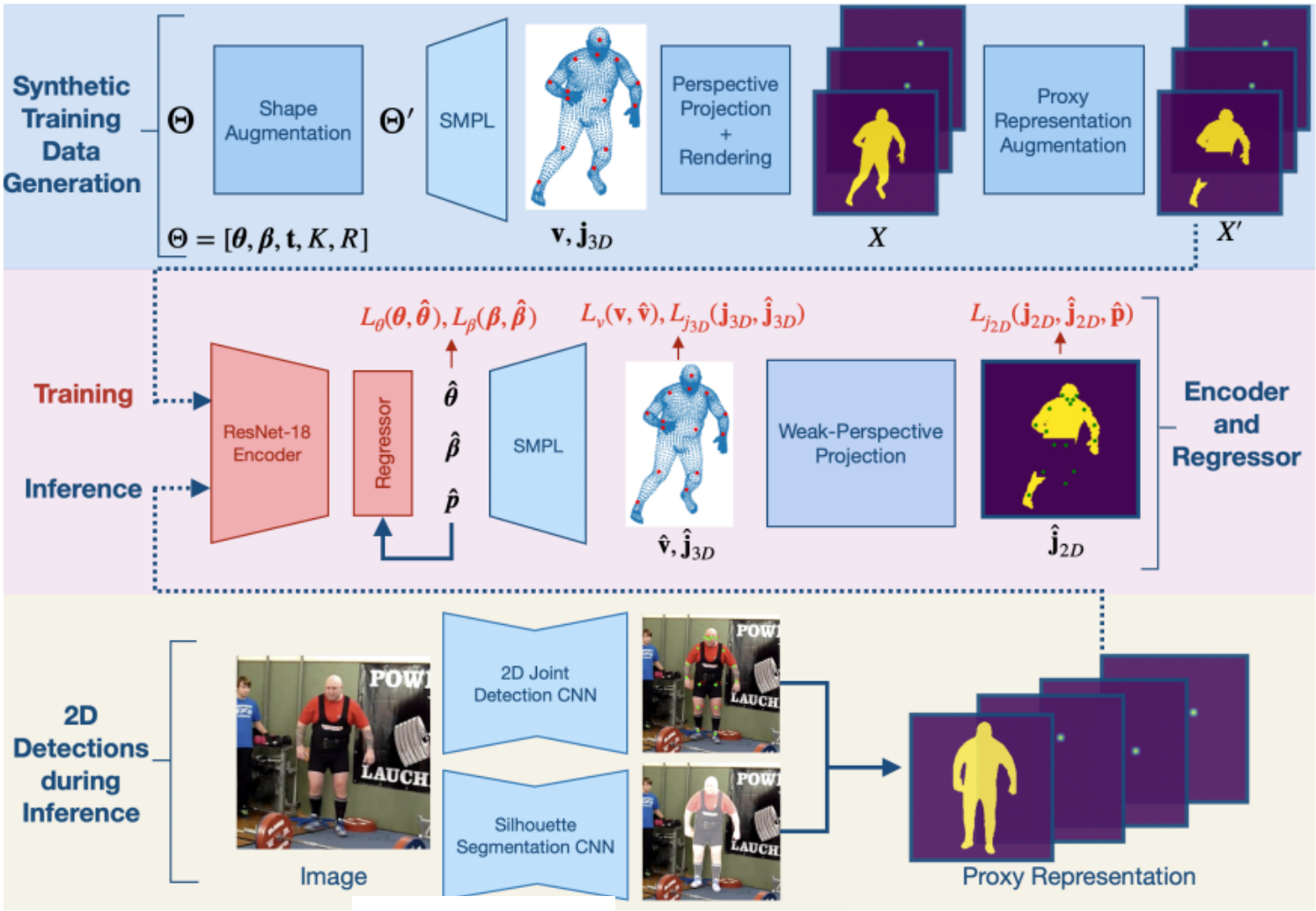
Introduction

- The goal: Estimate human pose, shape, and clothes parameters from images (separate meshes)



Method - Synthetic training

- Using only the extracted features from RGB images (Sengupta et al., BMVC '20)



Method - Body and garment model (the "backbone")

- TailorNet jointly models poses, shapes, and clothes parameters
- Each garment type (T-shirt, pant, skirt, ...) is modeled separately

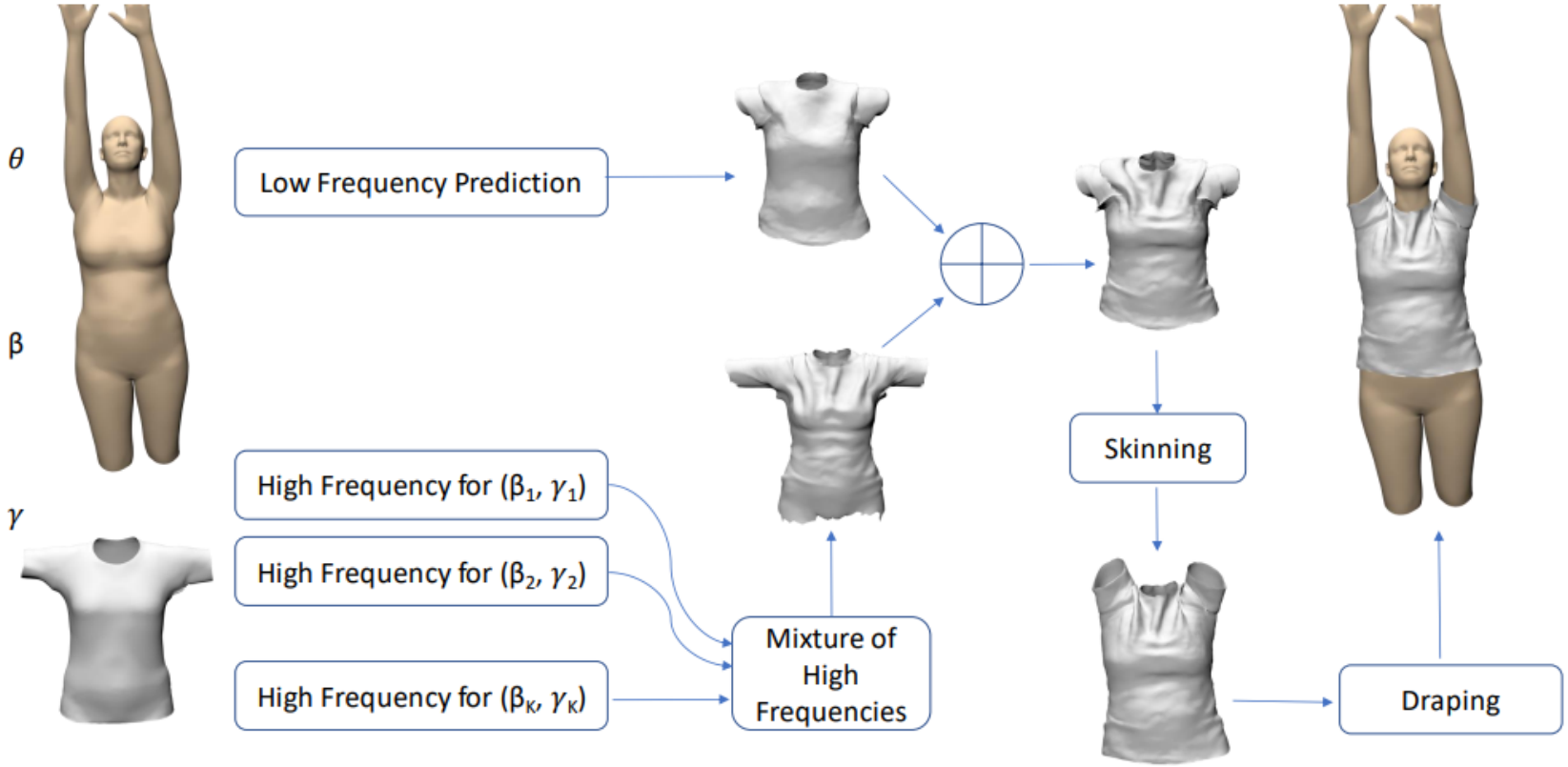
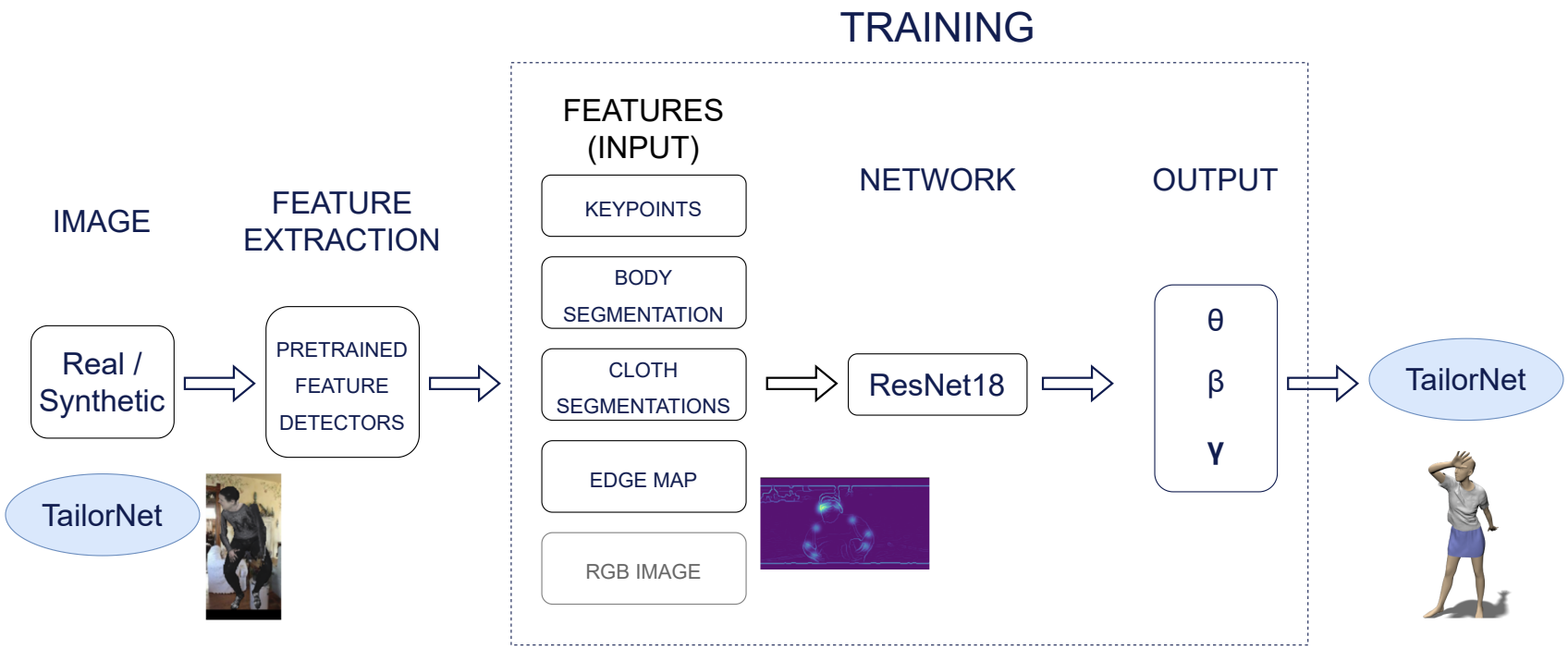


Figure 1: The modeling of T-shirt.

Method - Overview

- The training part only sees image features



Dataset Proposal

- Compared to POSA (below) which uses high-quality 3D scans, we generate clothed parametric people in realistic 3D scenes

Dataset Proposal

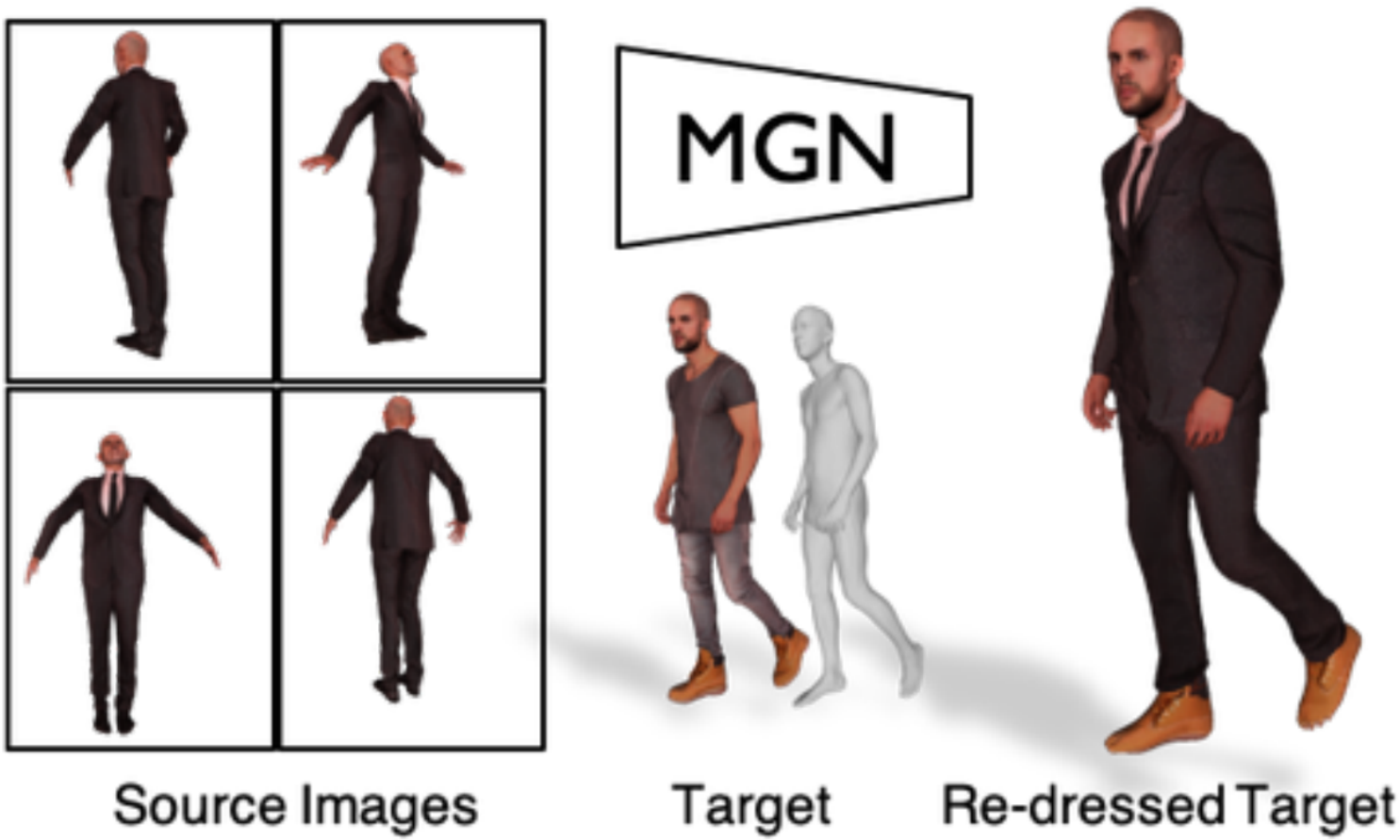
- Currently, we tried using PROX dataset to place people in the scene more realistically, depending on the given pose (POSA approach)

Related Work - Shape Estimation In-the-Wild

- SMPLify-X, Ex-Pose, ProHMR, Sengupta et al., LVD, ...

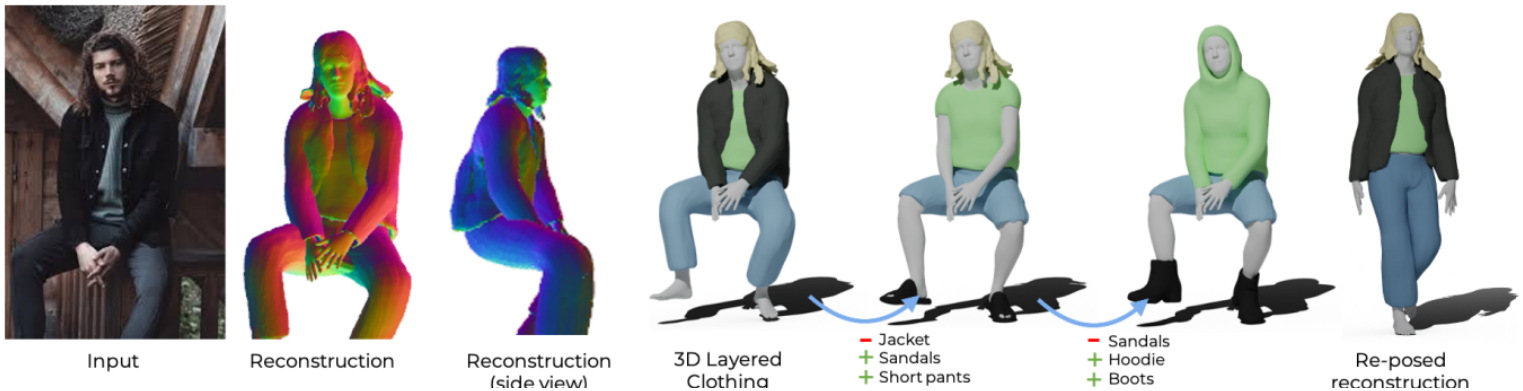
Previous Work - Multi-Garment Network (Single Mesh)

- Multi-Garment Network reconstructs people in diverse clothing from images in a controlled image setup



Previous Work - SMPLicit

- SMPLicit is similar to TailorNet as both model people in clothing using pose, shape, and clothes parameters
- SMPLicit is able to estimate clothed people from images, but does not learn end-to-end



Contributions, Pros, and Cons

- **Contribution**: First to estimate (fit) joint (θ, β, γ) parameters for body-clothes model from images
- **Contribution**: First to train joint (θ, β, γ) parametric model end-to-end
- **Contribution**: Proposing the tools and the synthetic data of parametric clothed people in realistic 3D scenes

- **Pro**: Estimating separate body and clothes meshes, convenient for retargeting and parameter changes

- **Con**: The architecture is currently based on TailorNet - separate clothing models, non-layered clothes, clothing not diverse