ICON: Implicit Clothed humans Obtained from Normals

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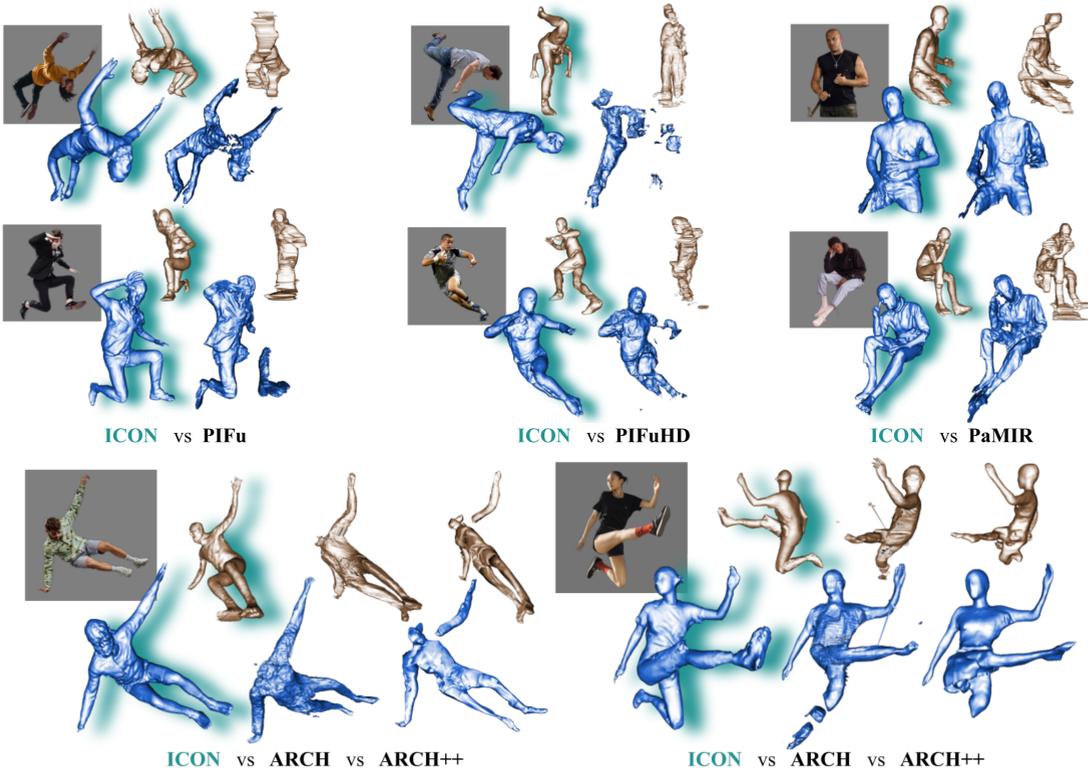
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clipe — *clipe-itn.eu*

Introduction

Goal: **Robust 3D reconstruction** from single RGB images of segmented clothed humans with various or unconstrained poses.

ICON vs PIFu   ICON vs PIFuHD   ICON vs PaMIR

ICON vs ARCH vs ARCH++   ICON vs ARCH vs ARCH++

Problem: Current implicit human reconstructors are not robust to challenging poses and often produce 3D surfaces with **broken or disembodied limbs, missing details, or non-human shapes.**
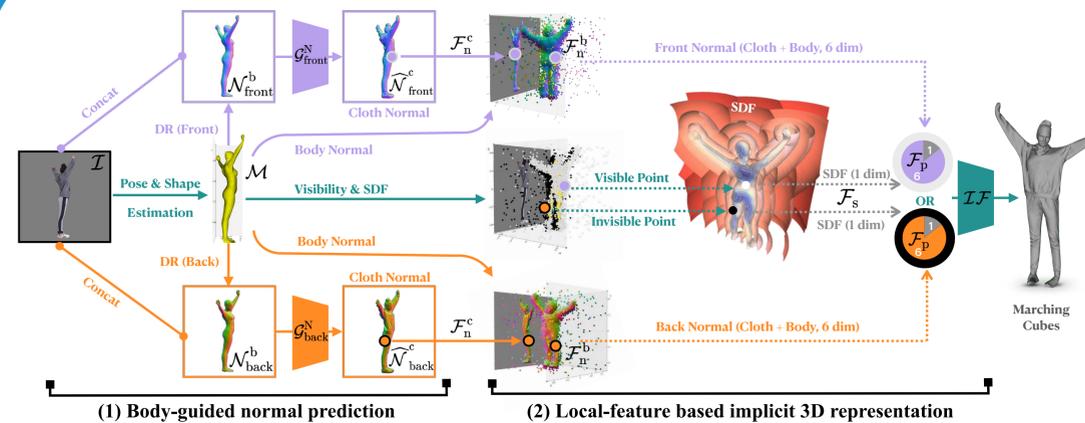
Key Insights

- The pixel/voxel-aligned features extracted from **global encoder** are pose sensitive
- SDF (Body) + Normals (Body, Cloth) + Visibility, these **locally queried features** are adequate to recover the details of 3D clothed human
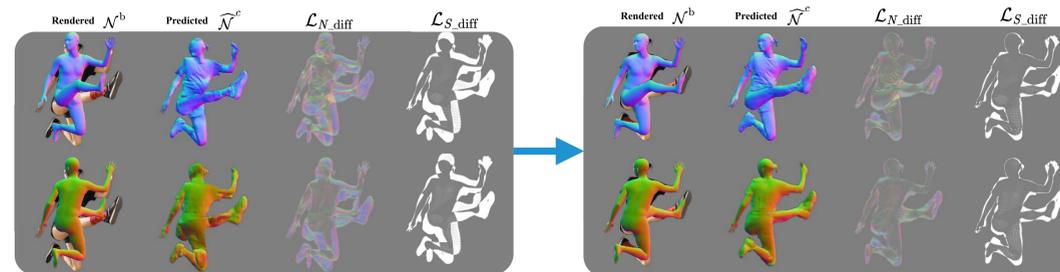
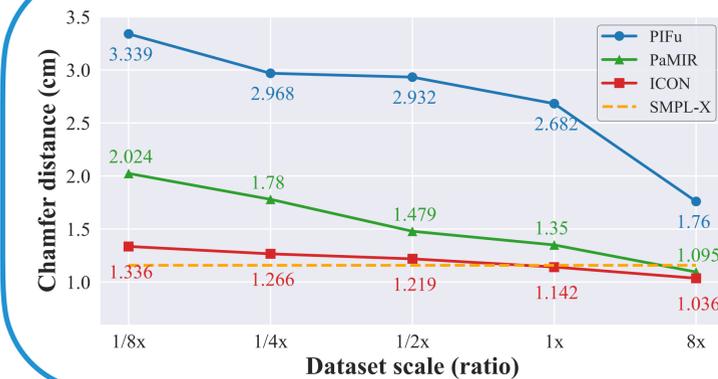✗ **Global Features**   ✓ **Local Features**
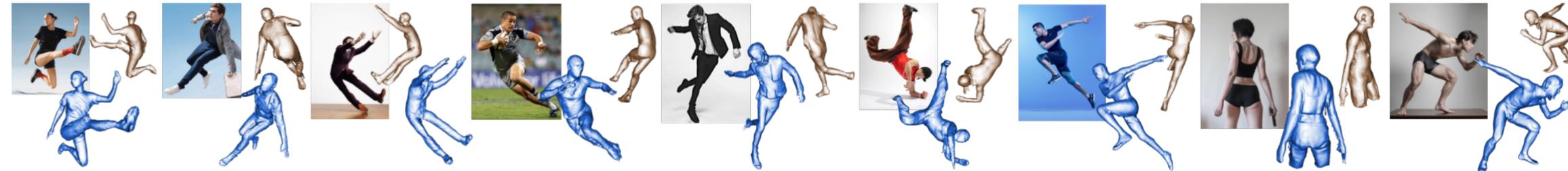
Method

(1) Body-guided normal prediction

ICON's pipeline: (1) normal...
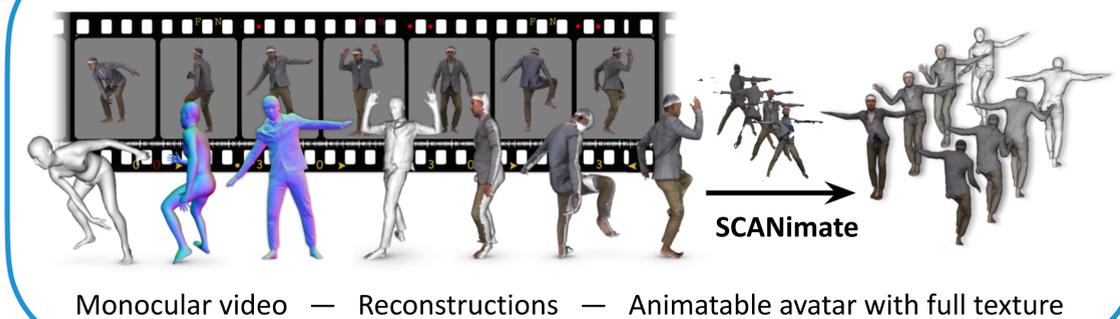
Quantitative Results

- More data-efficient than other SOTAs
- ICON trained on 1/8 data still outperform others trained on full data

2.682   2.682
1.35
1.142

1.76
1.095
1.036

1x   8x

SCANimate — Animatable avatar with full texture

PyTorch Lightning   GitHub   CO