Introduction

Goal: Robust 3D reconstruction from single RGB images of segmented clothed humans with challenging and unconstrained poses

Method

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

Quantitative Results

Application

Number of features

Chamfer Dis (cm)

PIFu

PIFuHD

ICON

ICON+BR

Chamfer Dis (cm)

0

1.25

2.5

3.75

5

PIFu

PIFuHD

ICON

SMPL refinement

Body Refinement

Rendered

Predicted

SMPL refinement

Body Refinement

Rendered

Predicted

SMPL refinement

Body Refinement

Rendered

Predicted

SCANimate

ICON vs PIFu

ICON vs PIFuHD

ICON vs PaMIR

ICON vs ARCH vs ARCH++

ICON vs ARCH vs ARCH++

× Global Features

✓ Local Features