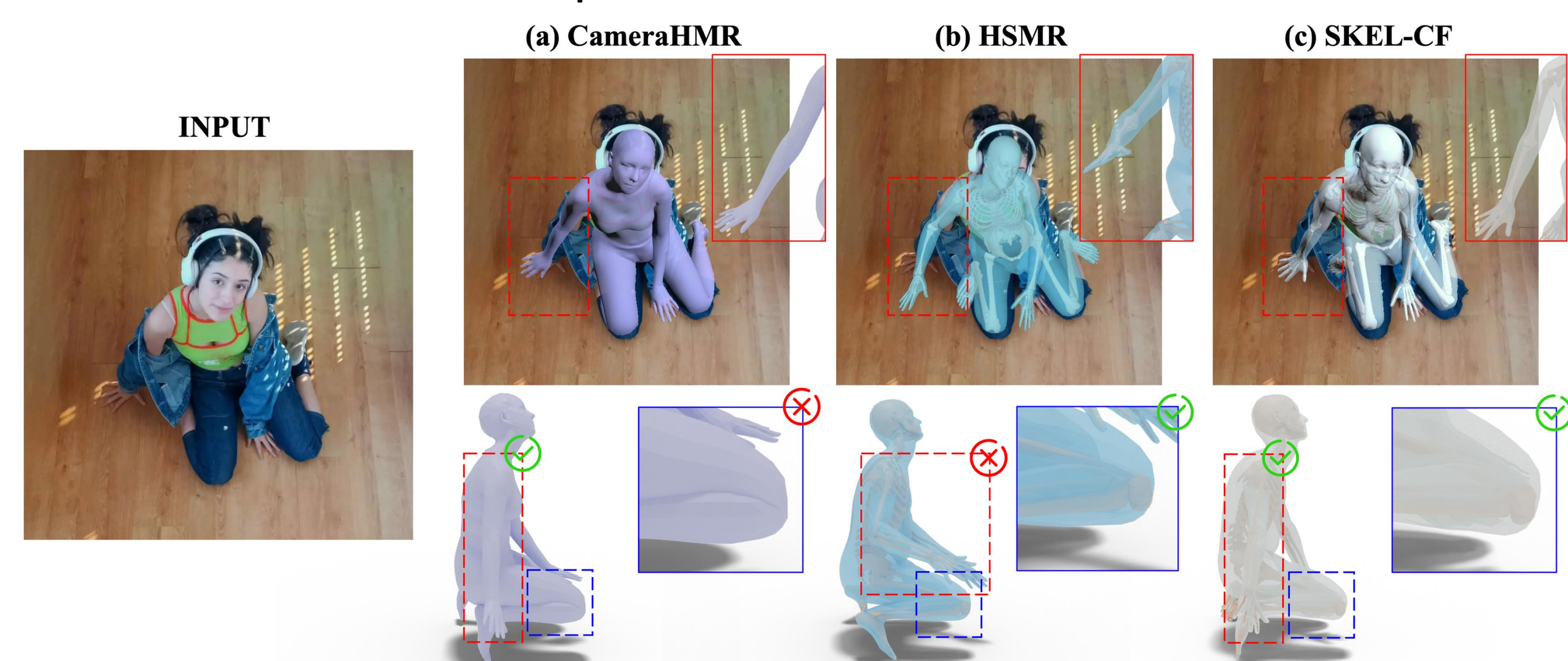


TL;DR

- Single RGB image
- SKEL skeleton + surface mesh
- SMPL-level accuracy
- Biomechanical motion

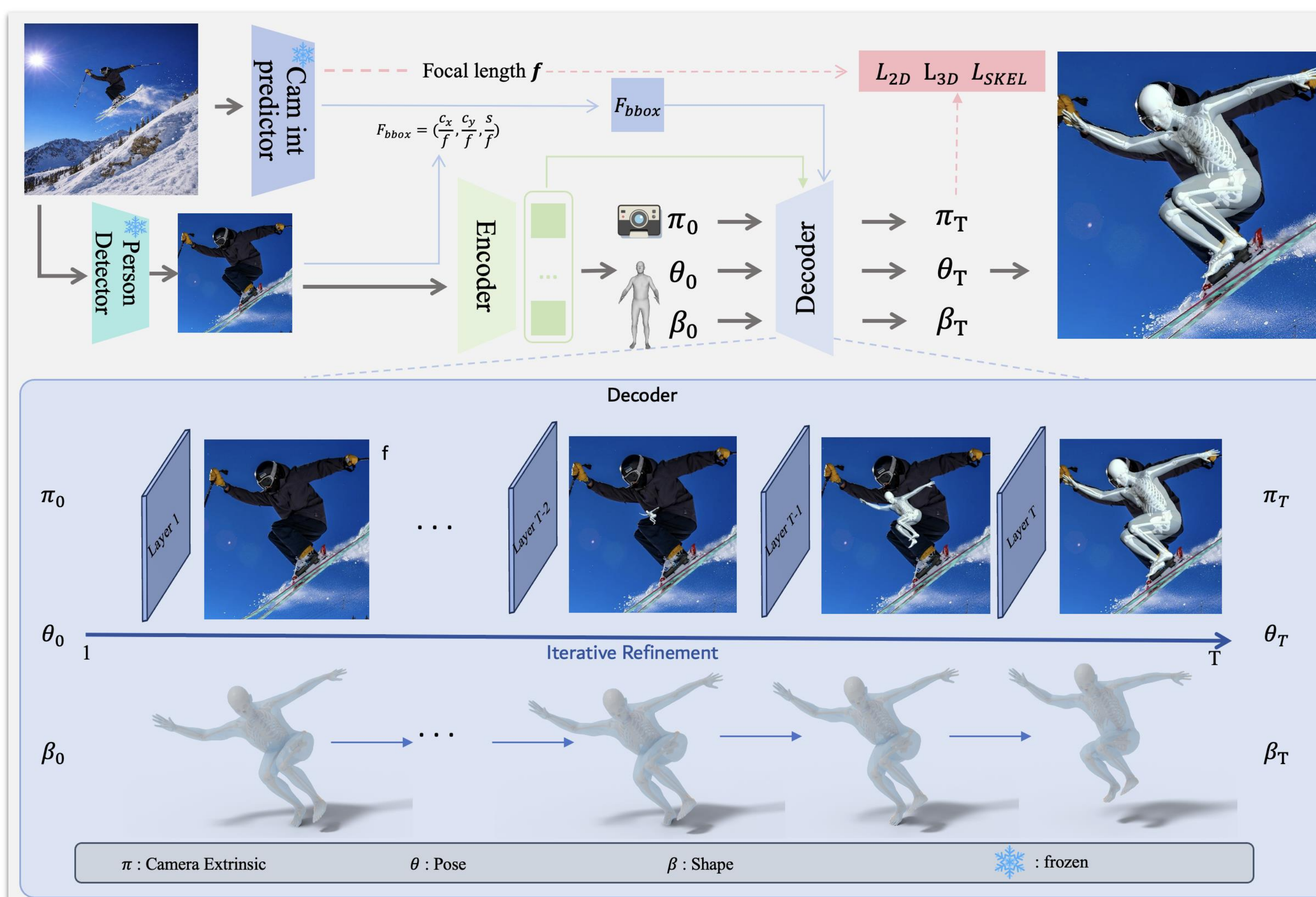
Motivation

- SMPL: accurate but unnatural
- HSMR: anatomical but noisy
- SKEL-CF: accurate + plausible

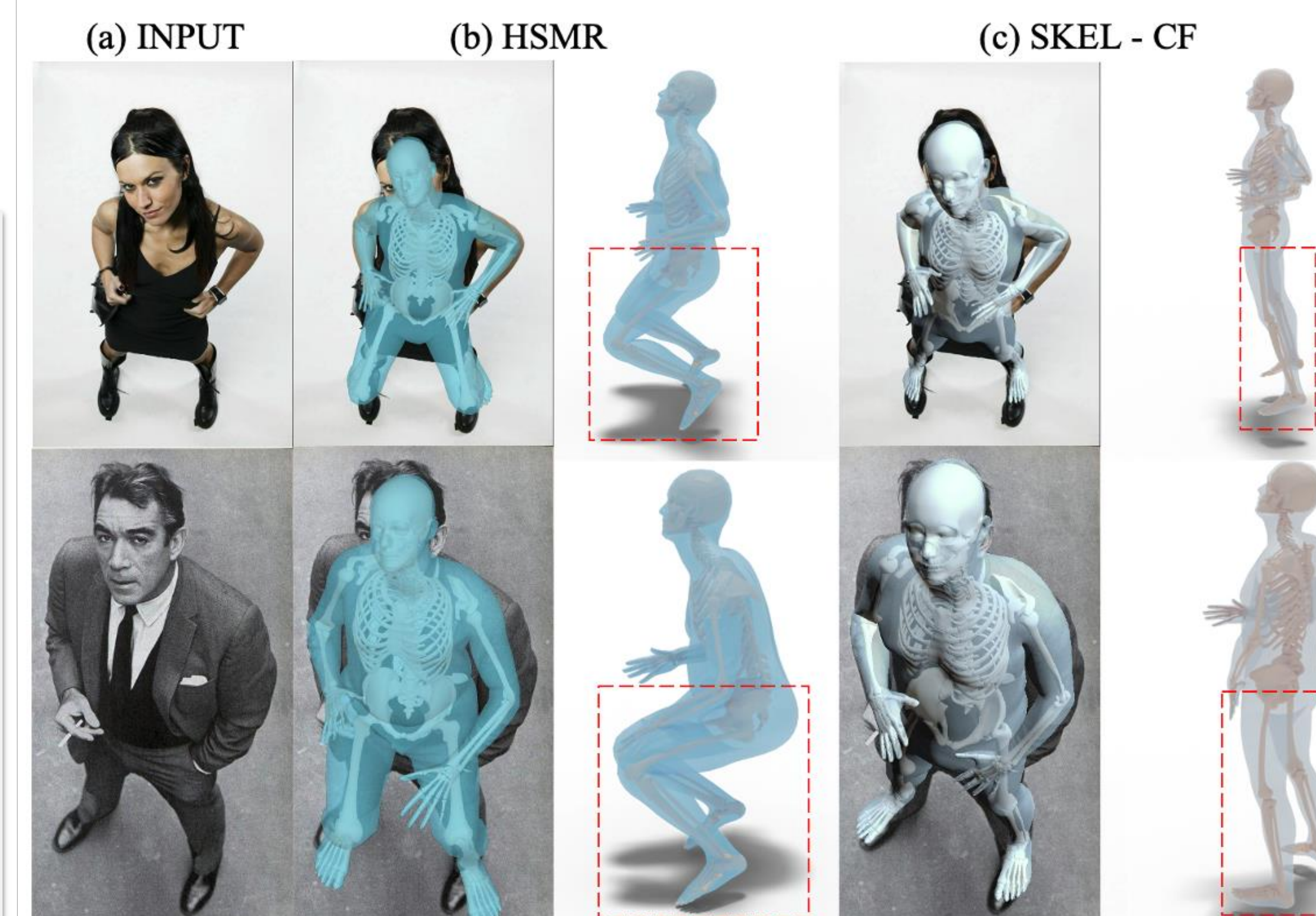


Pipeline Overview

- Camera-aware geometry
- Encoder coarse prediction
- Decoder residual refinement
- SKEL mesh + skeleton output

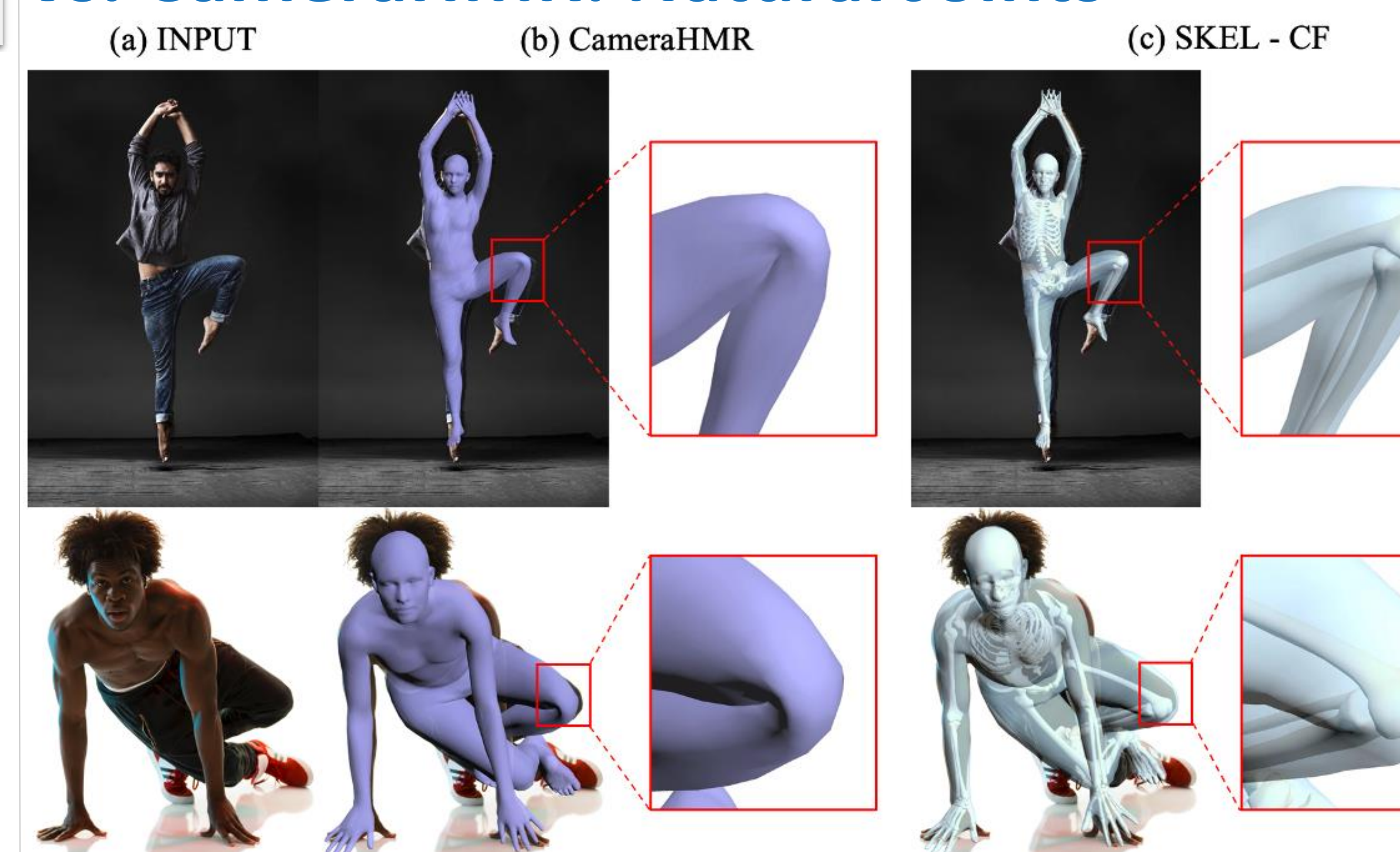


vs. HSMR: Accurate Pose



- Better body alignment
- Less pose drift under monocular ambiguity

vs. CameraHMR: Natural Joints



- Anatomically valid knee bending
- Skeleton-aware mesh recovery

Quantitative Results

Method	3DPW [35]			EMDB [13]			SPEC-SYN [16]		
	MPJPE↓	PA-MPJPE↓	PVE↓	MPJPE↓	PA-MPJPE↓	PVE↓	MPJPE↓	PA-MPJPE↓	PVE↓
SMPL-based Approaches									
SPEC [16]	96.5	53.2	118.5	138.9	87.7	161.3	83.5	56.9	98.9
CLIFF [21]	69.0	43.0	81.2	103.5	68.3	123.7	128.5	55.8	139.0
HMR2.0a [6]	69.8	44.4	82.2	97.8	61.5	120.0	133.3	55.8	153.0
TokenHMR [4]	70.5	43.8	86.0	88.1	49.8	104.2	110.5	51.8	127.6
WHAM [30]	57.8	35.9	68.7	79.7	50.4	94.4	-	-	-
ReFit [36]	57.6	38.2	67.6	91.7	55.5	106.2	103.6	51.3	116.3
CLIFF [21]	72.0	46.6	85.0	97.1	61.3	113.2	109.9	55.6	124.6
HMR2.0b [6]	81.3	54.3	93.1	118.5	79.2	140.6	150.7	67.6	172.9
CameraHMR [27]	62.7	38.7	73.4	73.2	43.9	85.6	66.0	37.0	79.1
SKEL-based Approaches									
HSMR [39]	81.5	54.8	-	-	-	-	-	-	-
SKEL-CF (Ours)	61.5	38.7	73.5	72.0	44.5	84.7	69.4	37.1	83.4

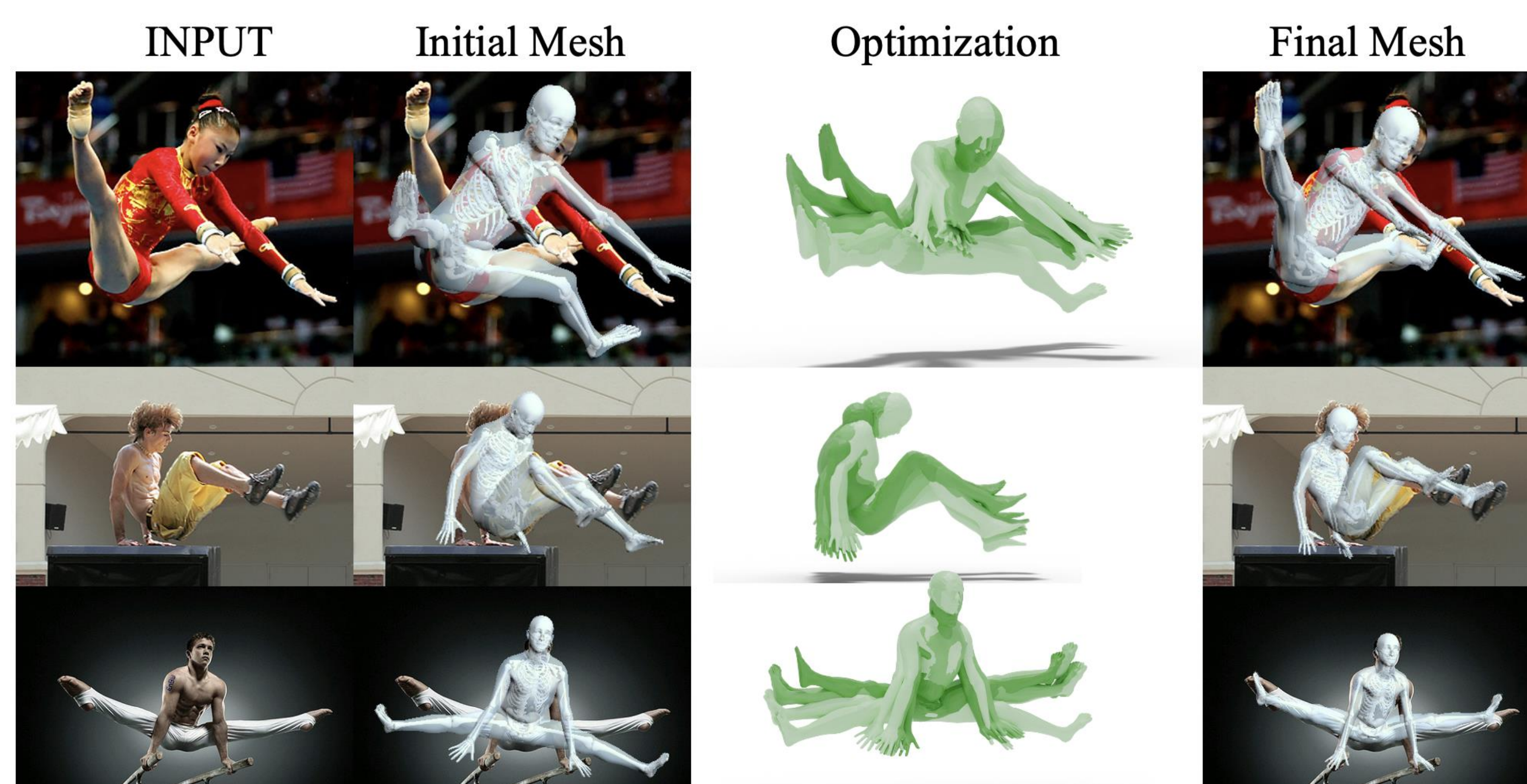
- Competitive across benchmarks
- Stronger SKEL recovery

Component Ablation

Method	Components			MOYO-HARD			COCO [22]		
	Cam	C2F	Refine	Dataset	MPJPE↓	PA-MPJPE↓	PVE↓	PCK@0.05↑	PCK@0.1↑
Baseline (HSMR [39])	×	×	×	HMR2.0 + SKELify	120.0	97.7	140.5	0.86	0.96
Baseline w. HMR-SKEL	×	×	×	HMR-SKEL	103.6	67.4	121.4	0.76	0.91
Ours w.o Cam	×	✓	✓	HMR-SKEL	98.8	66.1	113.7	0.79	0.93
Ours w.o C2F	✓	×	✓	HMR-SKEL	91.5	63.1	105.6	0.67	0.91
Ours w.o Refine	✓	✓	×	HMR-SKEL	92.7	65.4	107.7	0.77	0.92
Only Cam	✓	×	×	HMR-SKEL	92.7	66.4	107.4	0.77	0.92
Ours	✓	✓	✓	HMR-SKEL	90.0	61.5	102.5	0.80	0.93

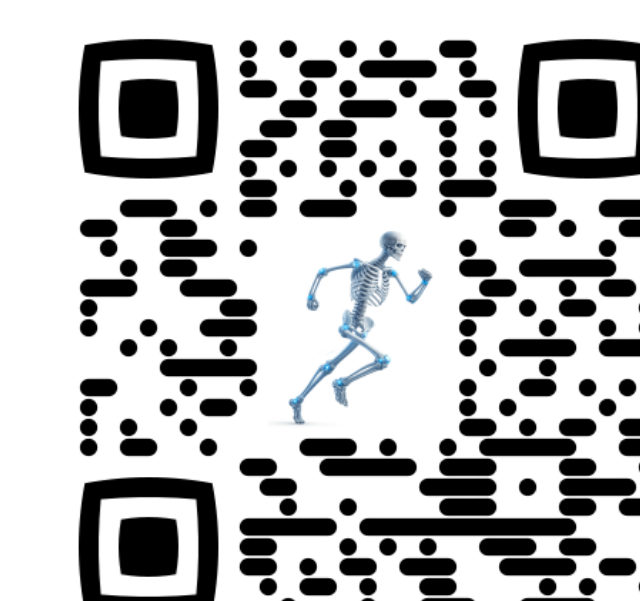
SKEL-CF: Camera-Aware Coarse-to-Fine Regression

Iterative Refinement



- Light green: initial mesh
- Dark green: final mesh
- Coarse → refined
- Better pose alignment

Scan to Explore



- Left: SKEL-CF Project
- Right: More Projects from Intellindust AI Lab

