



# POCO: 3D Pose and Shape Estimation with Confidence

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## Motivation



CLIFF, ECCV 2022

PARE, ICCV 2021

CLIFF, ECCV 2022

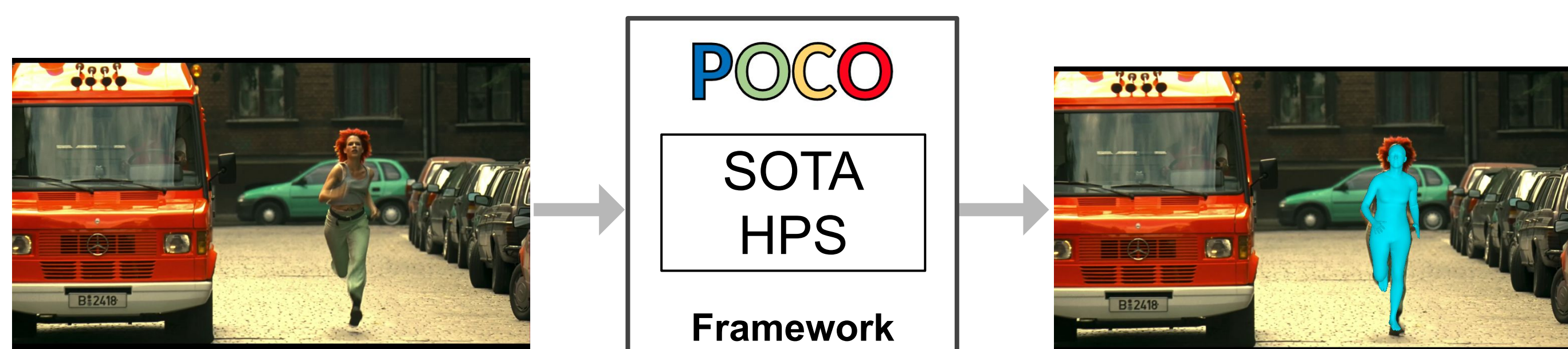
PARE, ICCV 2021

Methods are quite accurate

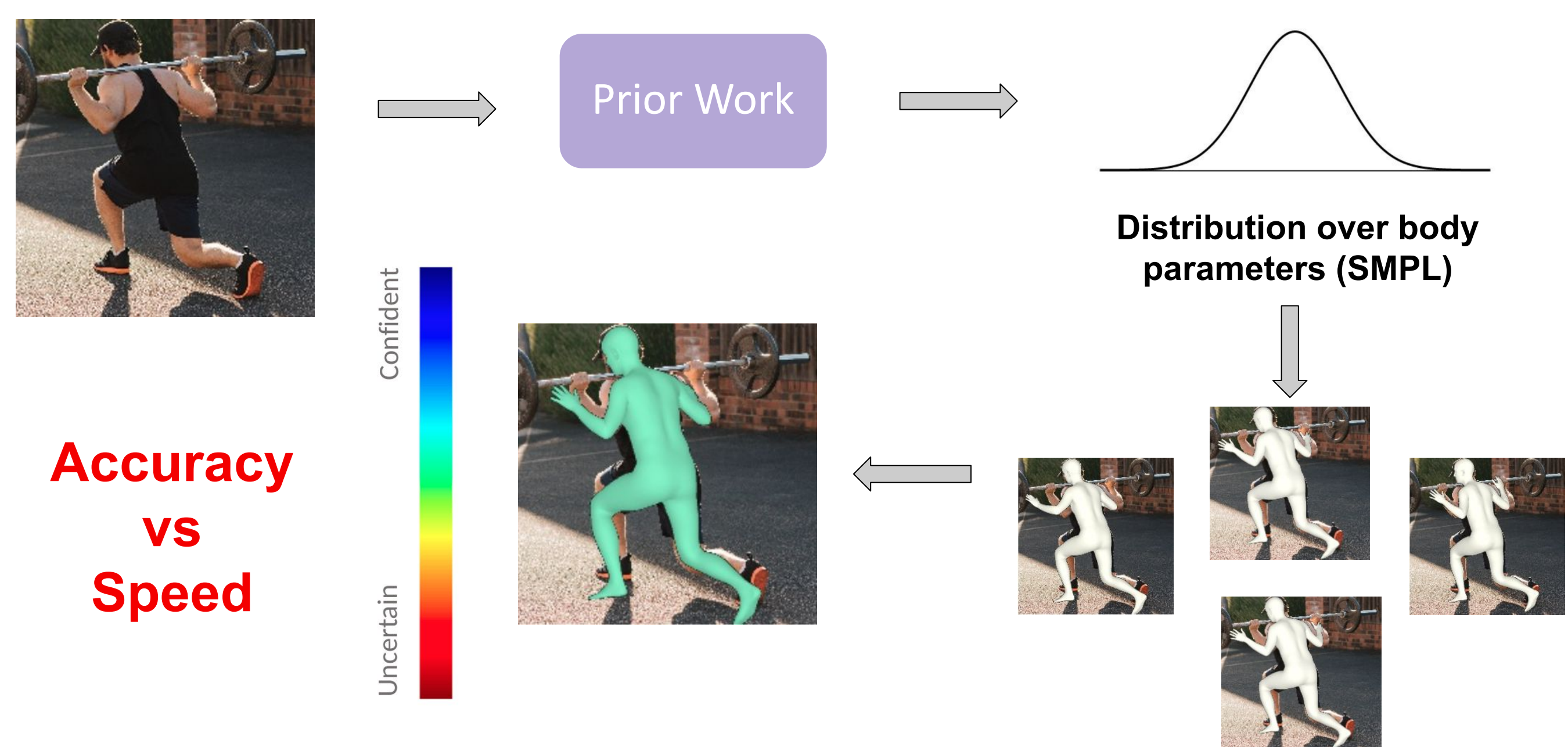
Yet, they are not perfect

As most HPS regressors do not report the confidence, downstream tasks can not differentiate accurate estimates from inaccurate ones.

## Goal



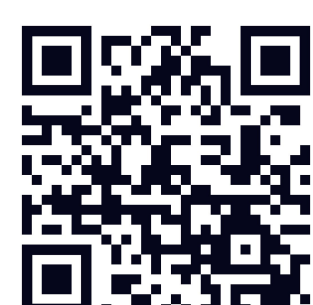
## Problem



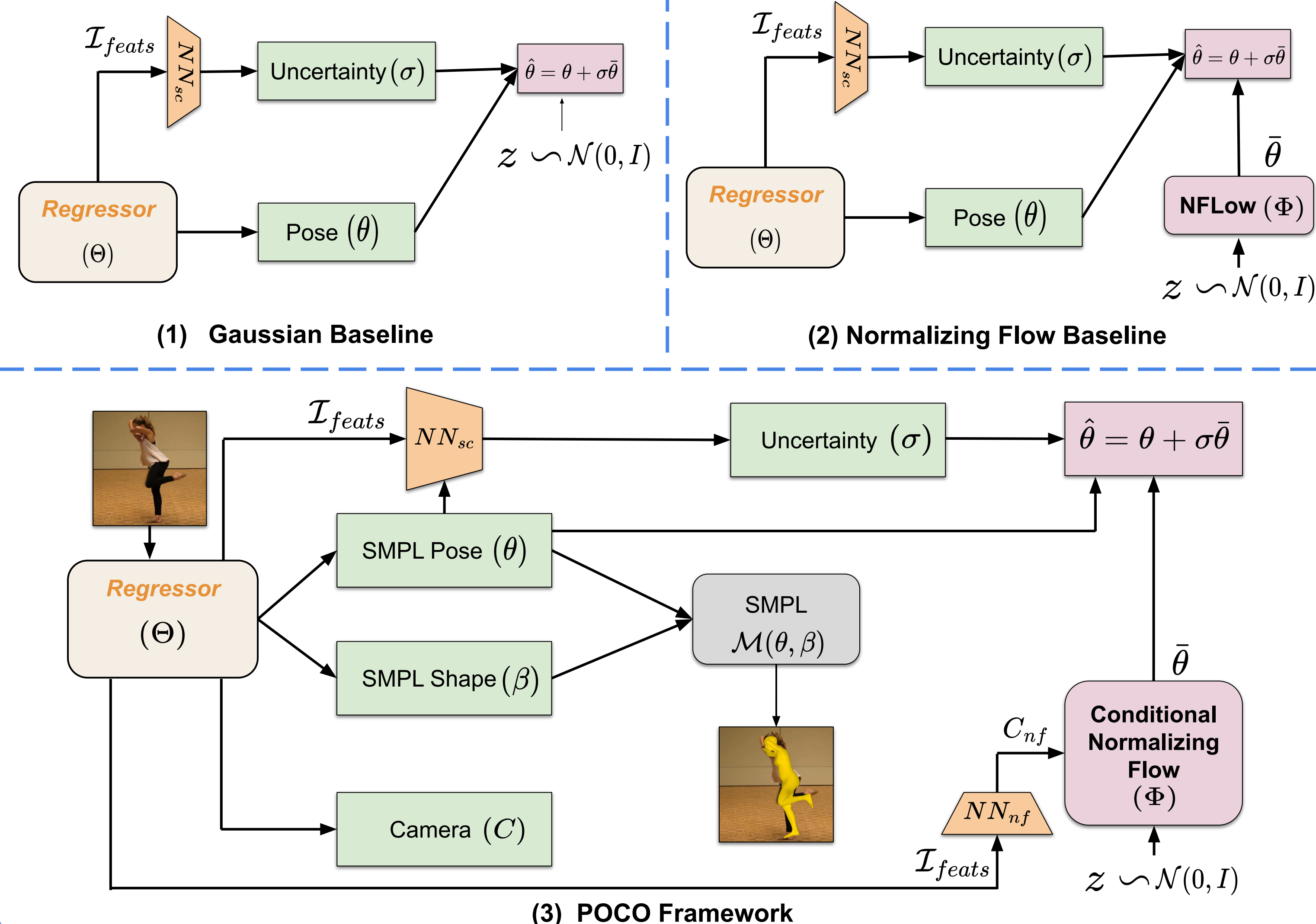
## Resources

Project Page

<https://poco.is.tue.mpg.de/>



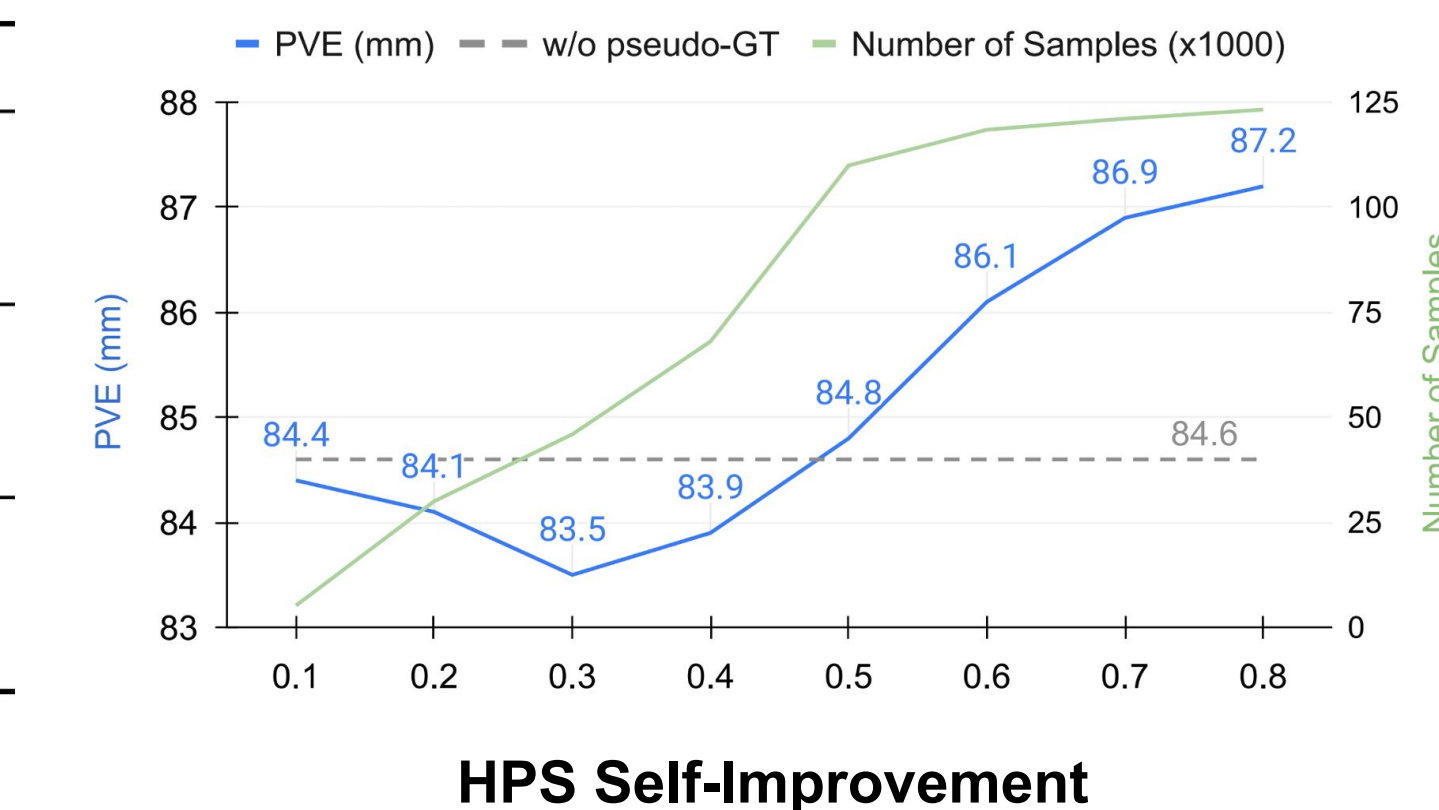
## POCO: Architecture



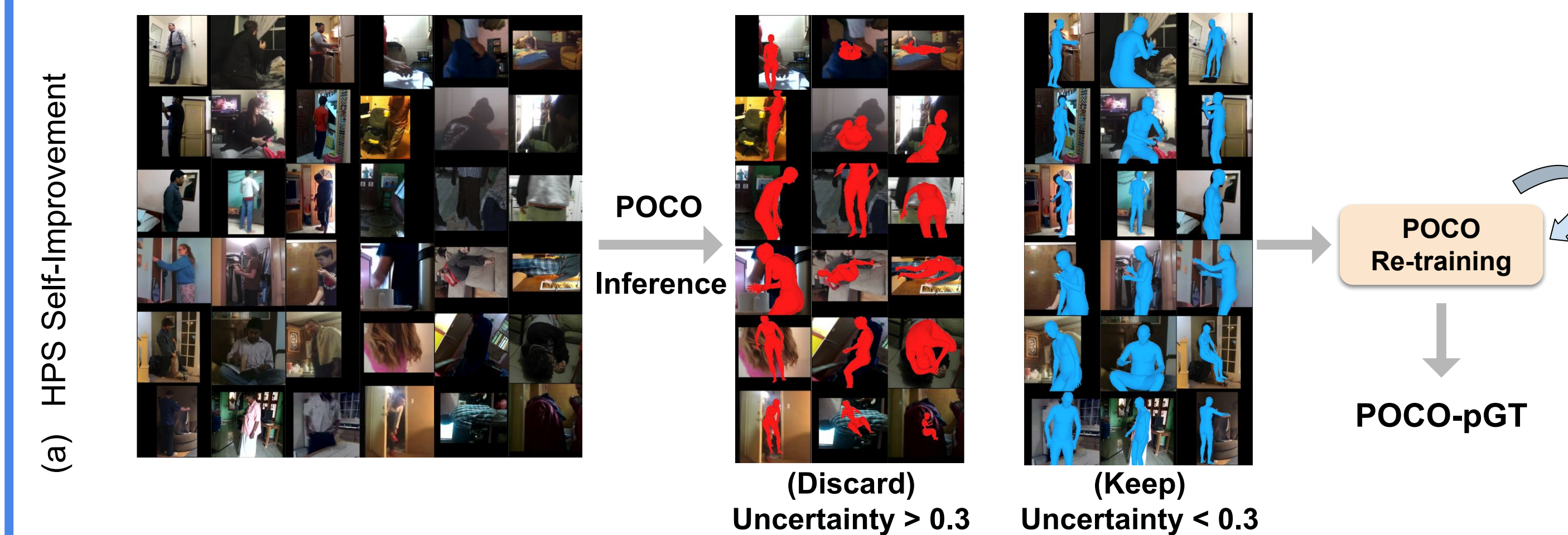
## Results

Method	PVE ↓	MPJPE ↓	PA-MPJPE ↓
HMR-EFT	106.1	92.5	54.2
POCO-HMR-EFT	101.1	88.5	52.4
<b>POCO-HMR-EFT-pGT</b>	<b>99.7</b>	<b>87.3</b>	<b>51.5</b>
PARE	97.9	82.0	50.9
POCO-PARE	95.3	80.3	49.9
<b>POCO-PARE-pGT</b>	<b>94.0</b>	<b>79.5</b>	<b>49.4</b>
CLIFF	85.8	72.8	44.5
POCO-CLIFF	84.6	70.9	43.3
<b>POCO-CLIFF-pGT</b>	<b>83.5</b>	<b>69.7</b>	<b>42.8</b>

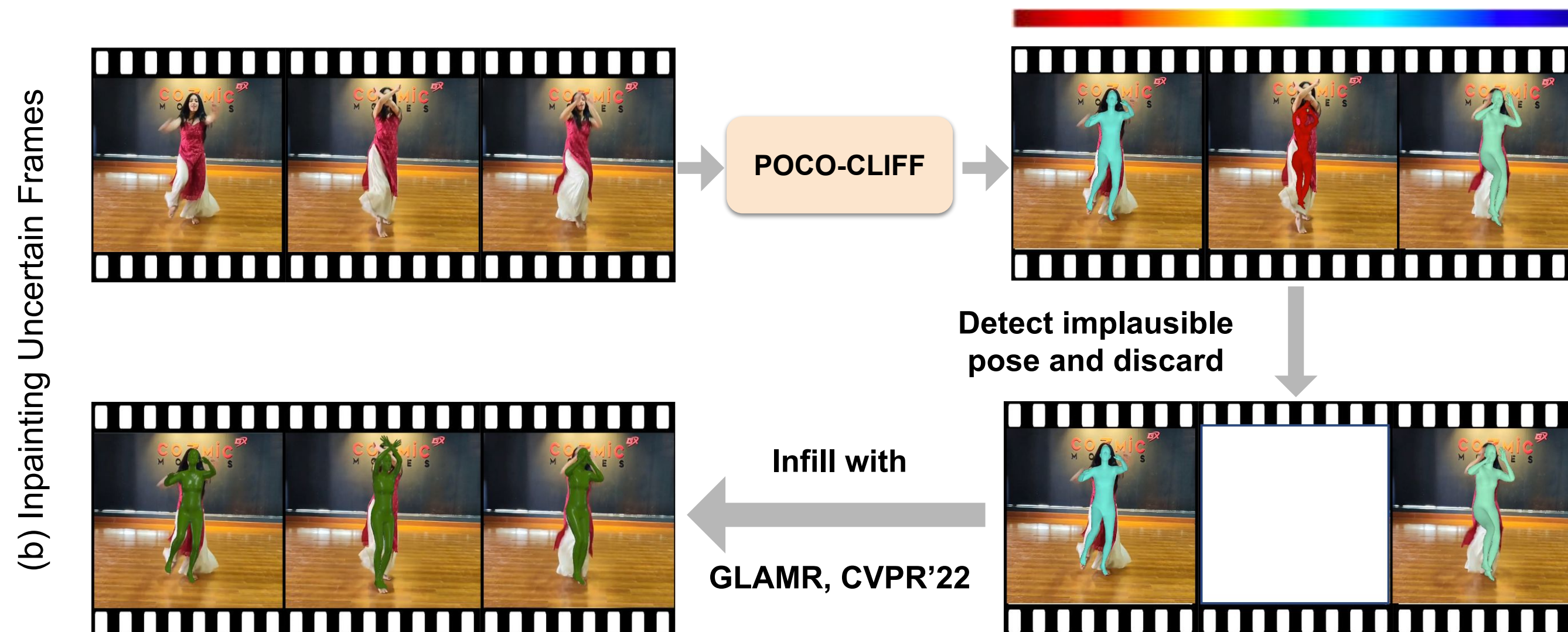
Evaluation on 3DPW Test Set



## Downstream Tasks



## Qualitative Results



## References

- HMR: Kanazawa et al., End-to-end Recovery of Human Shape and Pose. CVPR 2018
- PARE: Kocabas et al., PARE: Part Attention Regressor for 3D Human Body Estimation. ICCV 2021
- CLIFF: Li et al., CLIFF: Carrying Location Information in Full Frames into Human Pose and Shape Estimation. ECCV 2022
- 3DPW: von Marcard et al., Recovering Accurate 3D Human Pose in The Wild Using IMUs and a Moving Camera, ECCV 2018
- ProHMR: Kolotouros et al., Probabilistic Modeling for Human Mesh Recovery. ICCV 2021
- Sengupta et al., Hierarchical Kinematic Probability Distribution for 3D Human Shape and Pose Estimation from Image in the Wild. ICCV 2021