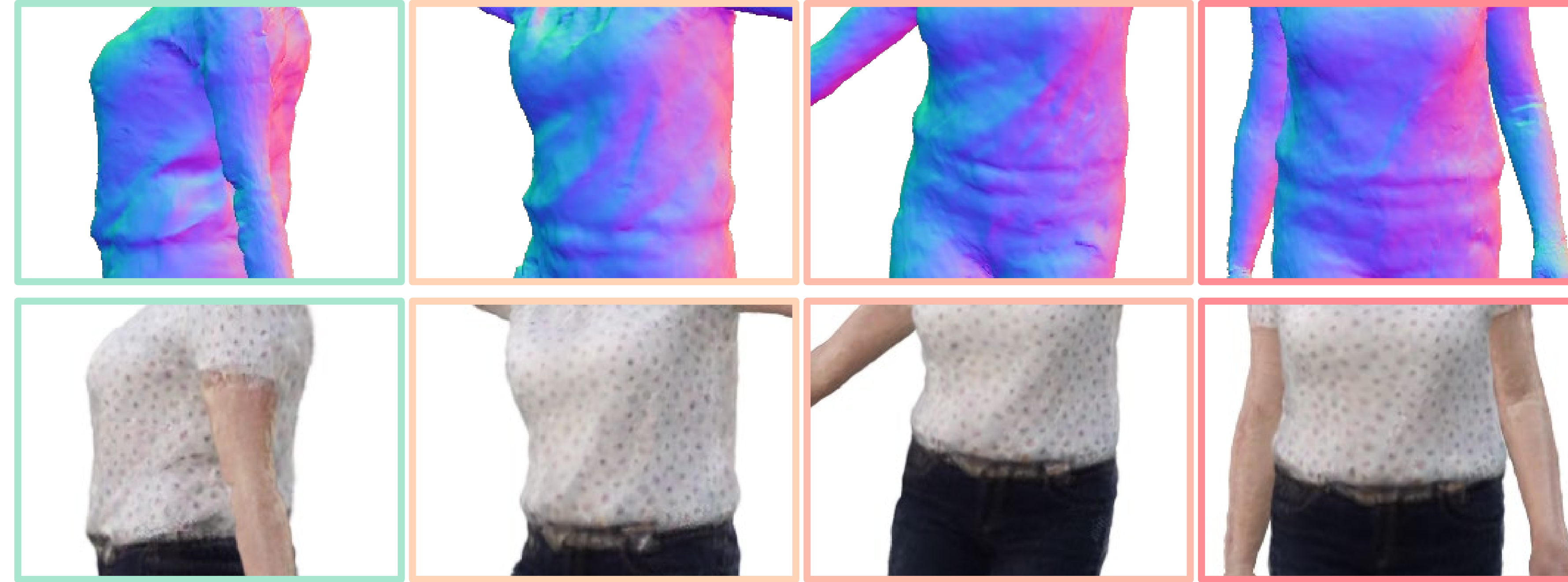
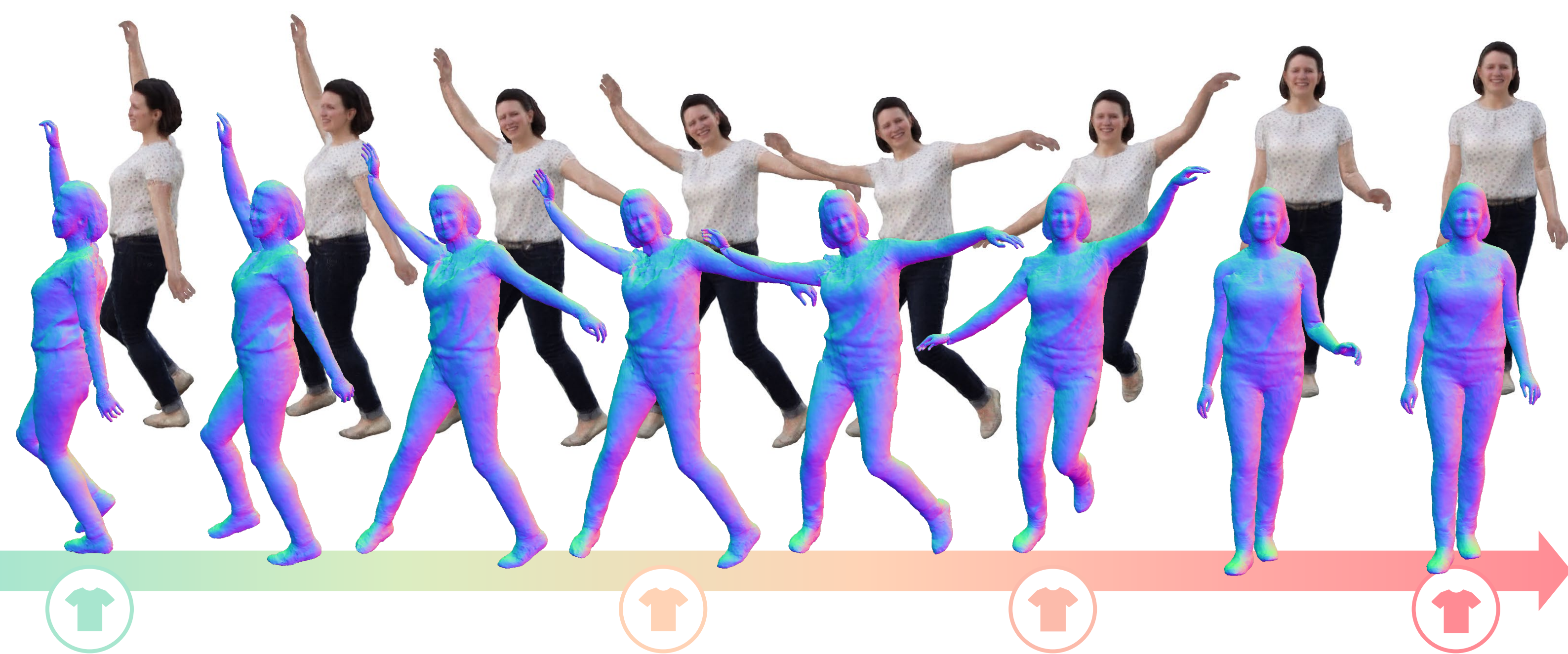


Introduction

Goal

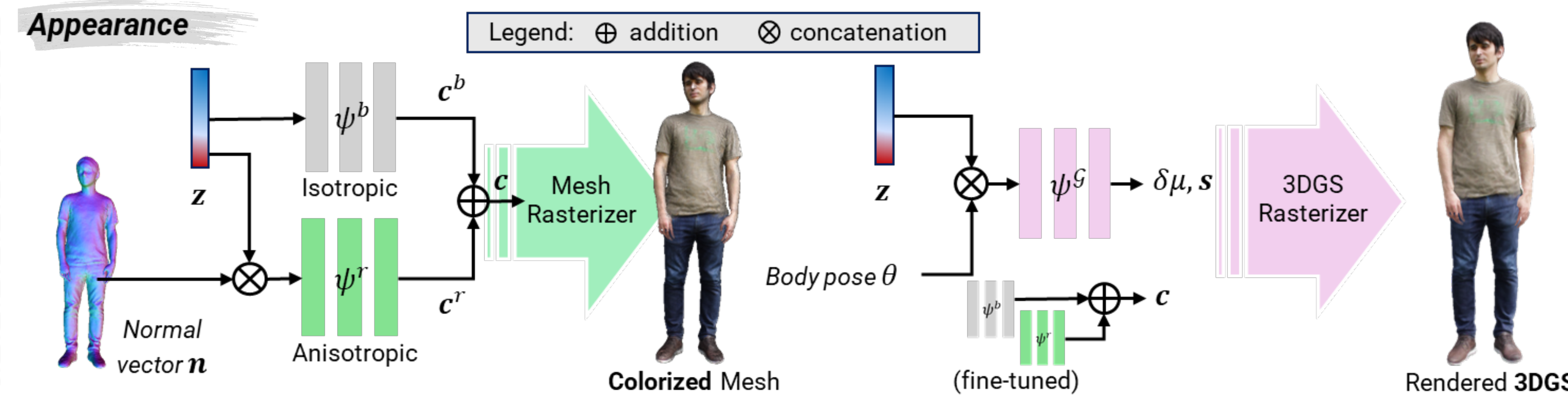
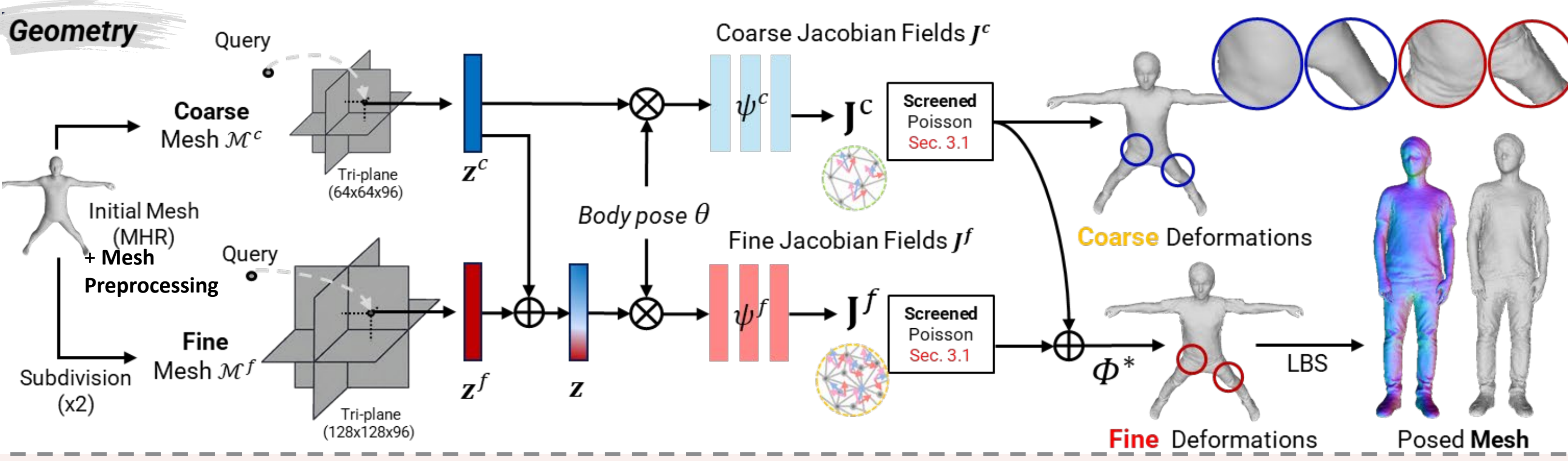
- Reconstructing **Semi-Rigid Avatar Deformation** from Monocular Video



Contributions

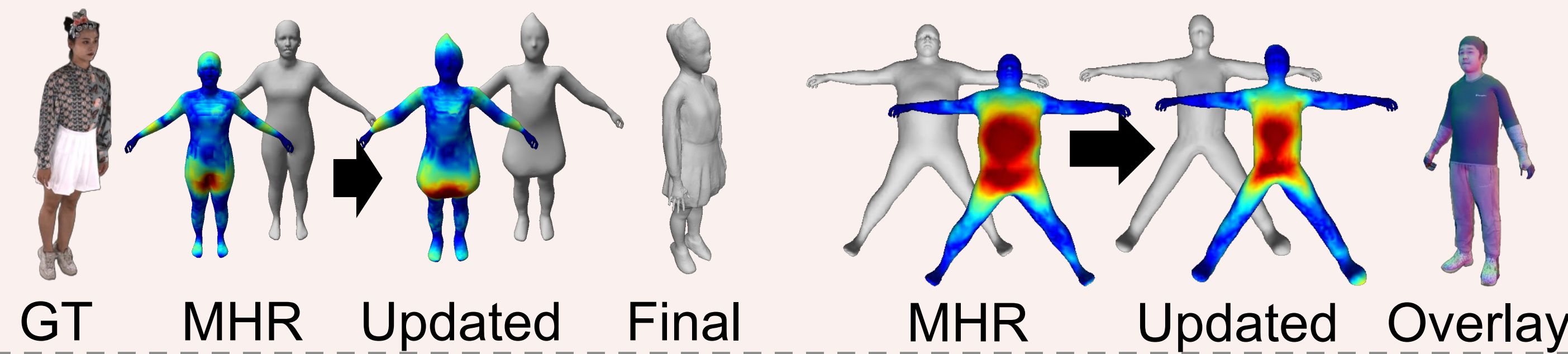
- Novel representation for semi-rigid deformation leveraging Neural Jacobian Fields with a **Screened Poisson Solver**
- SDF-based regularizer** to preserve the global shape / **Temporal consistency regularizer** leveraging human priors

Method

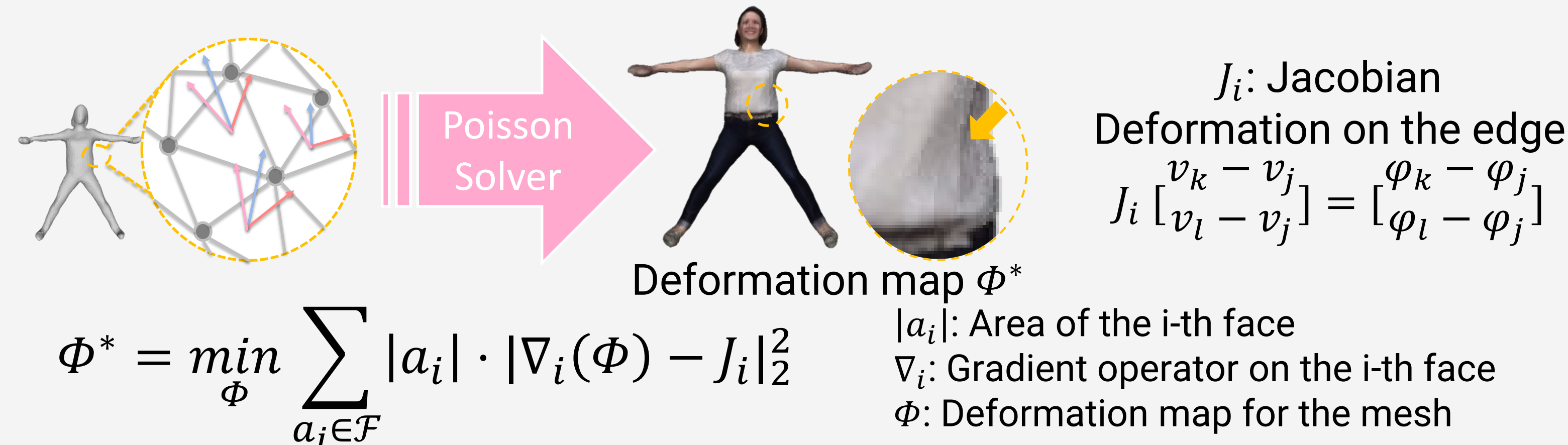


Mesh Optimization

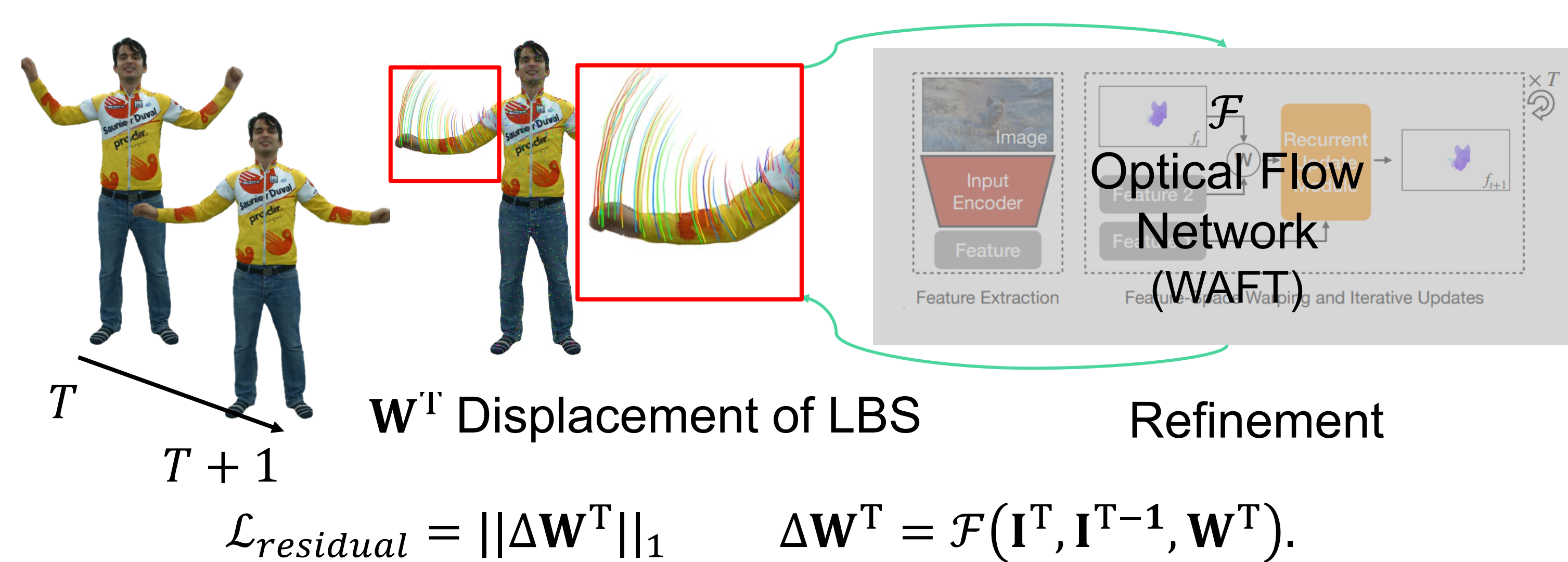
Through preprocessing mesh optimization, our pipeline can reconstruct avatars in loose clothing. Heatmap indicates geometric updates.



Background: Neural Jacobian Fields

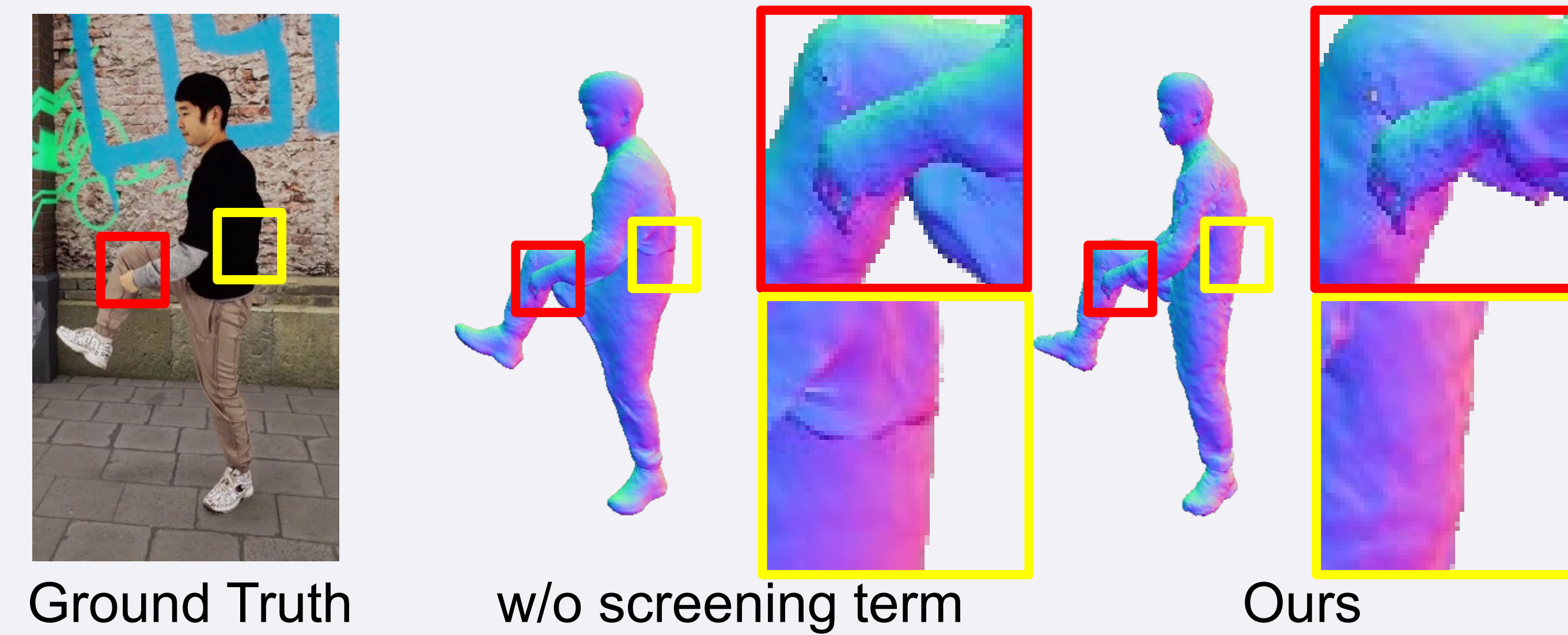


Deformation-guided Residual Flow Loss



Screened Poisson Solver

Effects: The screening term mitigates mesh stretching caused by limited views.

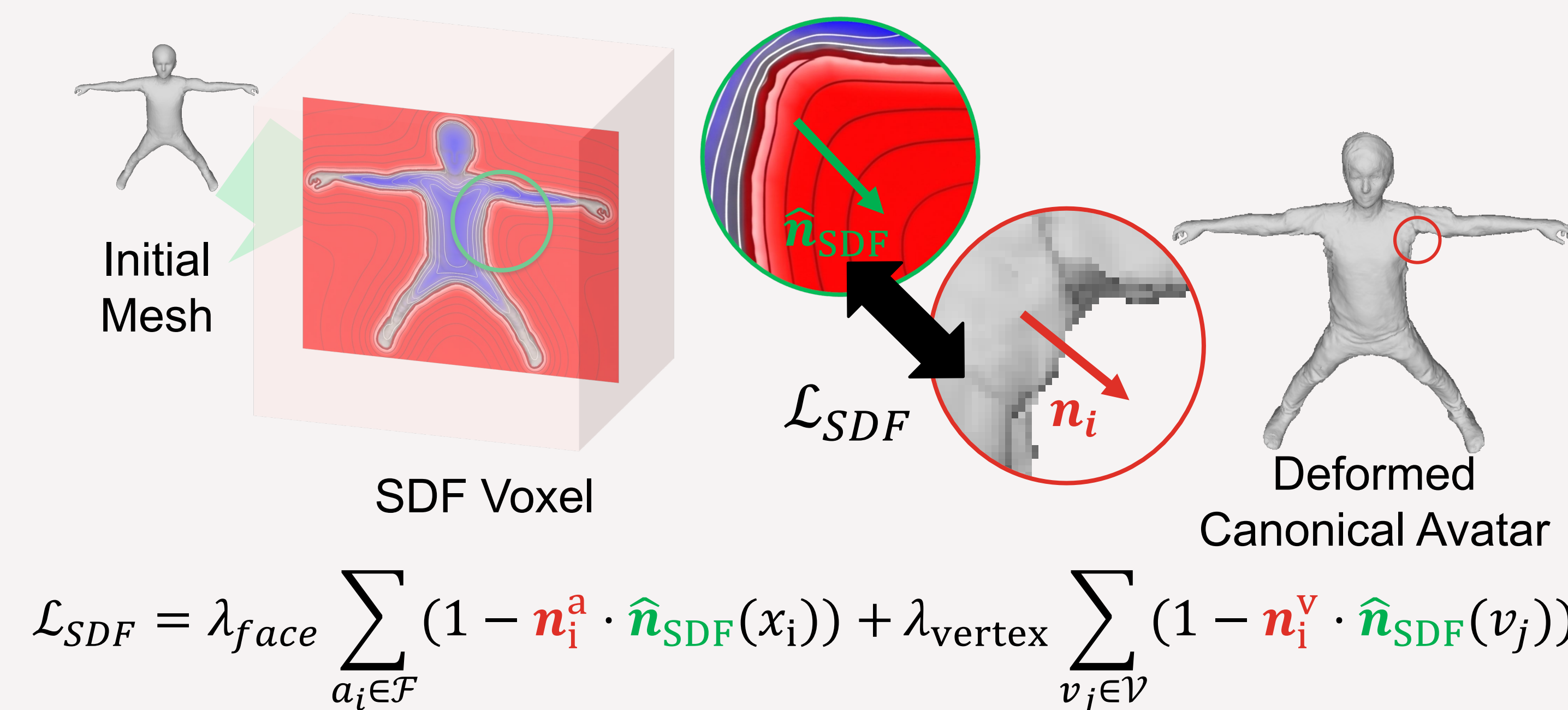


$$\Phi^* = \min_{\Phi} \sum_{a_i \in \mathcal{F}} |a_i| \cdot |\nabla_i(\Phi) - J_i|_2^2 + \lambda_{\Phi} |\Phi - \mathcal{V}|_2^2$$

Previous Poisson Solver Screening Term

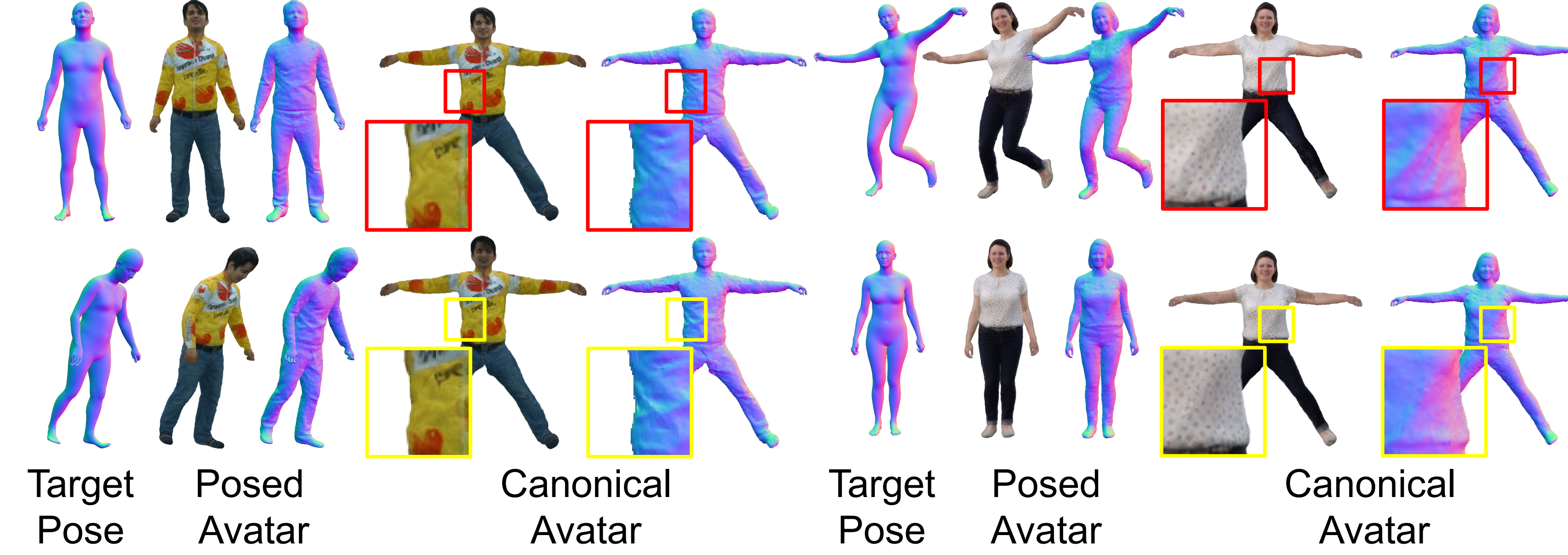
SDF-based Regularizer

Problem: Stretching artifacts caused by occlusions at highly articulated regions.

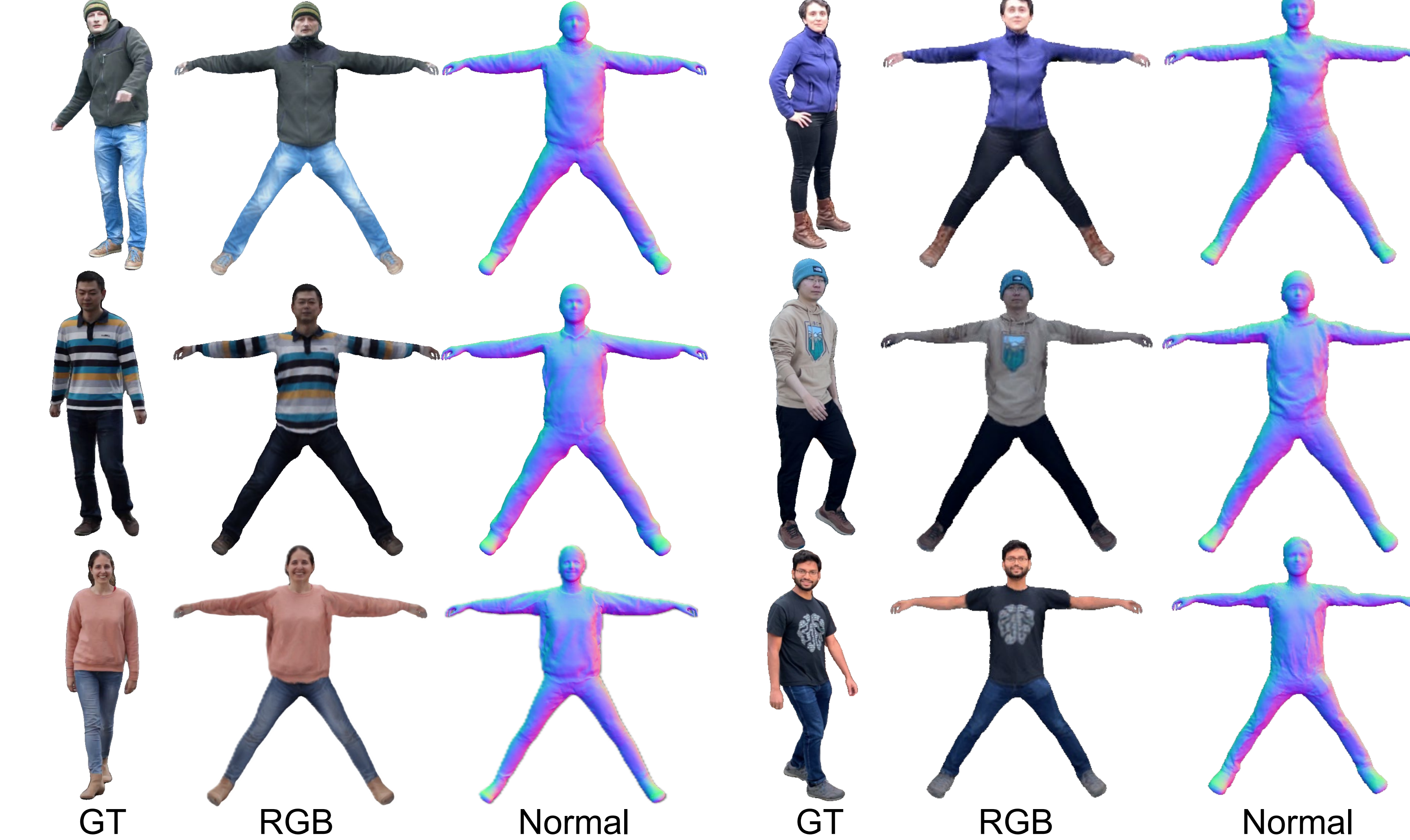


Experiment Result

Pose Driven Semi-Rigid Deformation



Canonical Avatar



Qualitative Comparison

