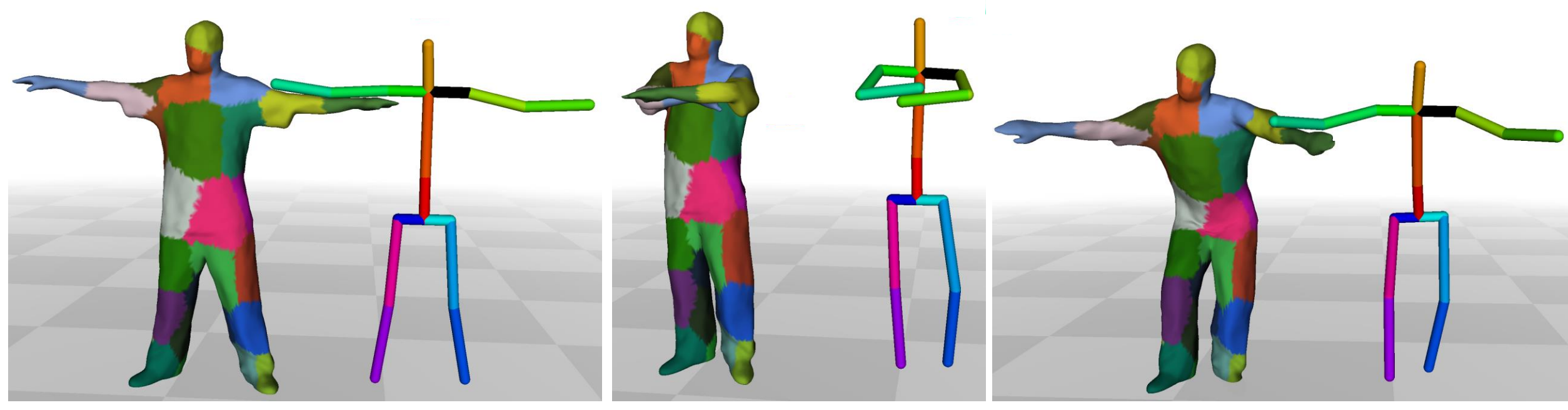


Motivation

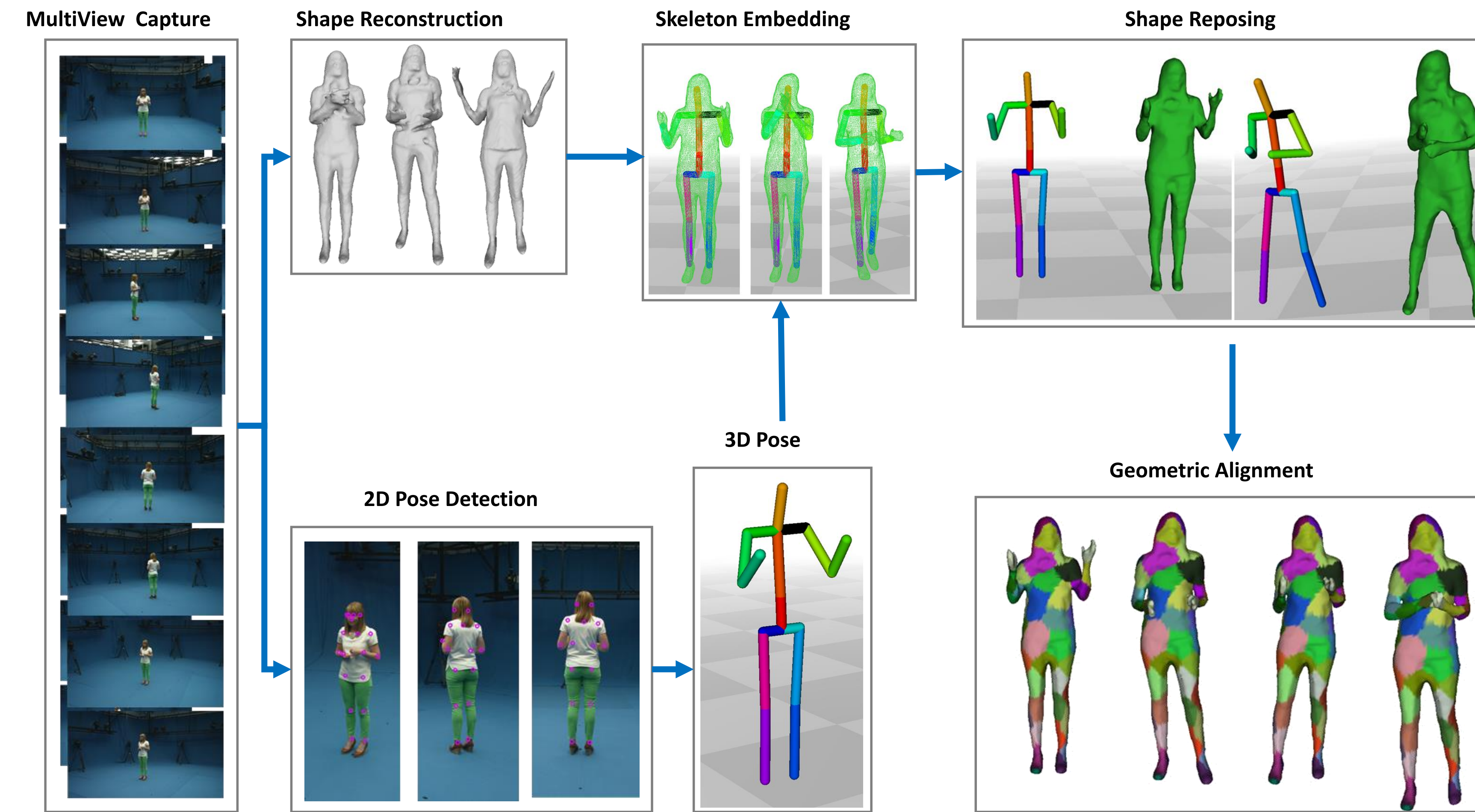
- Existing alignment methods suffer from the following limitations:
1. Accumulation of errors resulting in drift in correspondences over time
 2. Gross-errors for large non-rigid deformations
 3. Do not allow alignment across multiple sequences



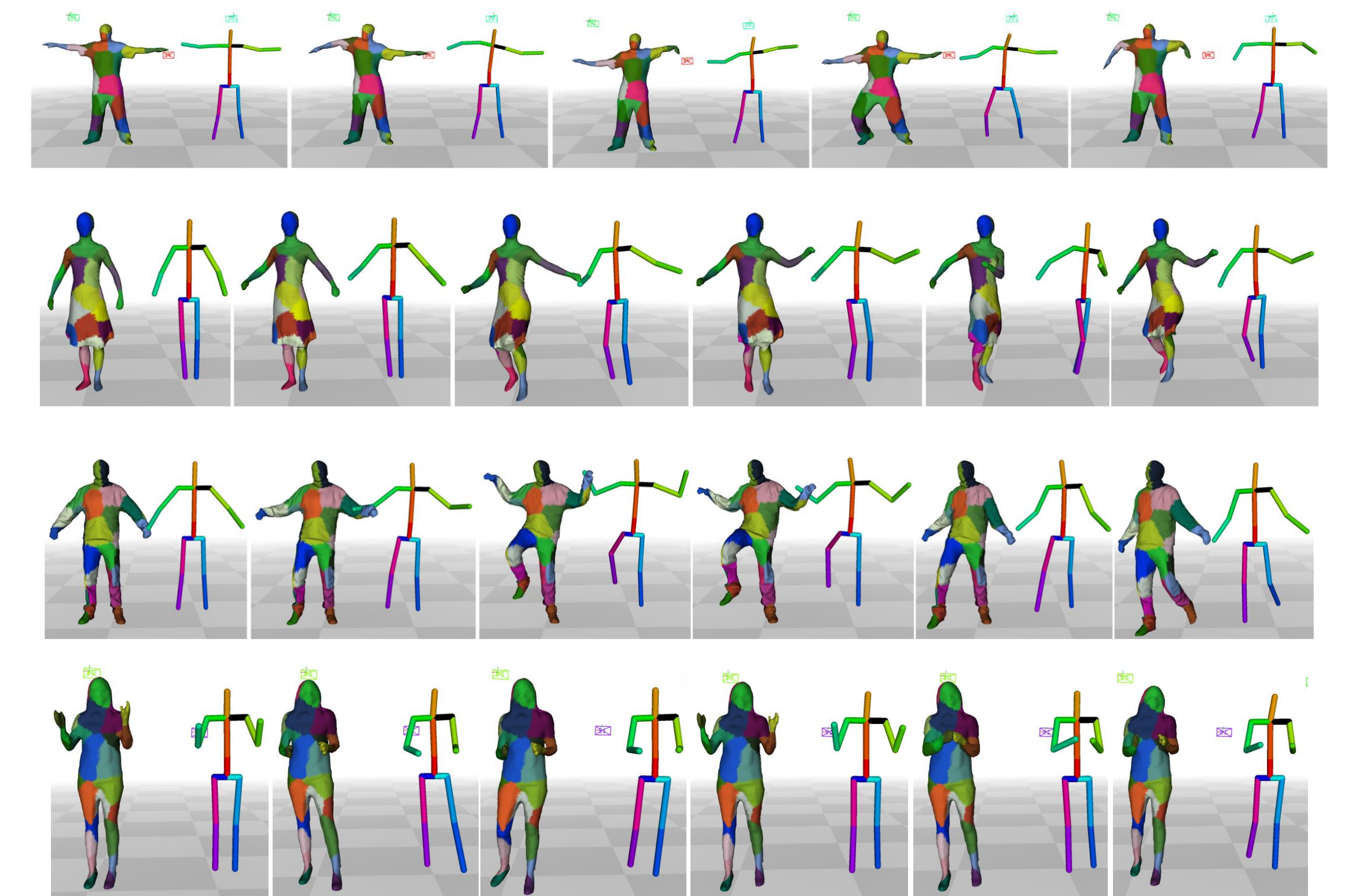
Contributions

1. A 4D surface tracking framework to temporally align mesh surfaces
2. A hybrid skeleton-driven surface registration method
3. A keyframe-based editing technique for volumetric video

Framework for Hybrid Skeleton Driven Surface Registration



Proposed Hybrid Skeleton Driven Surface Registration



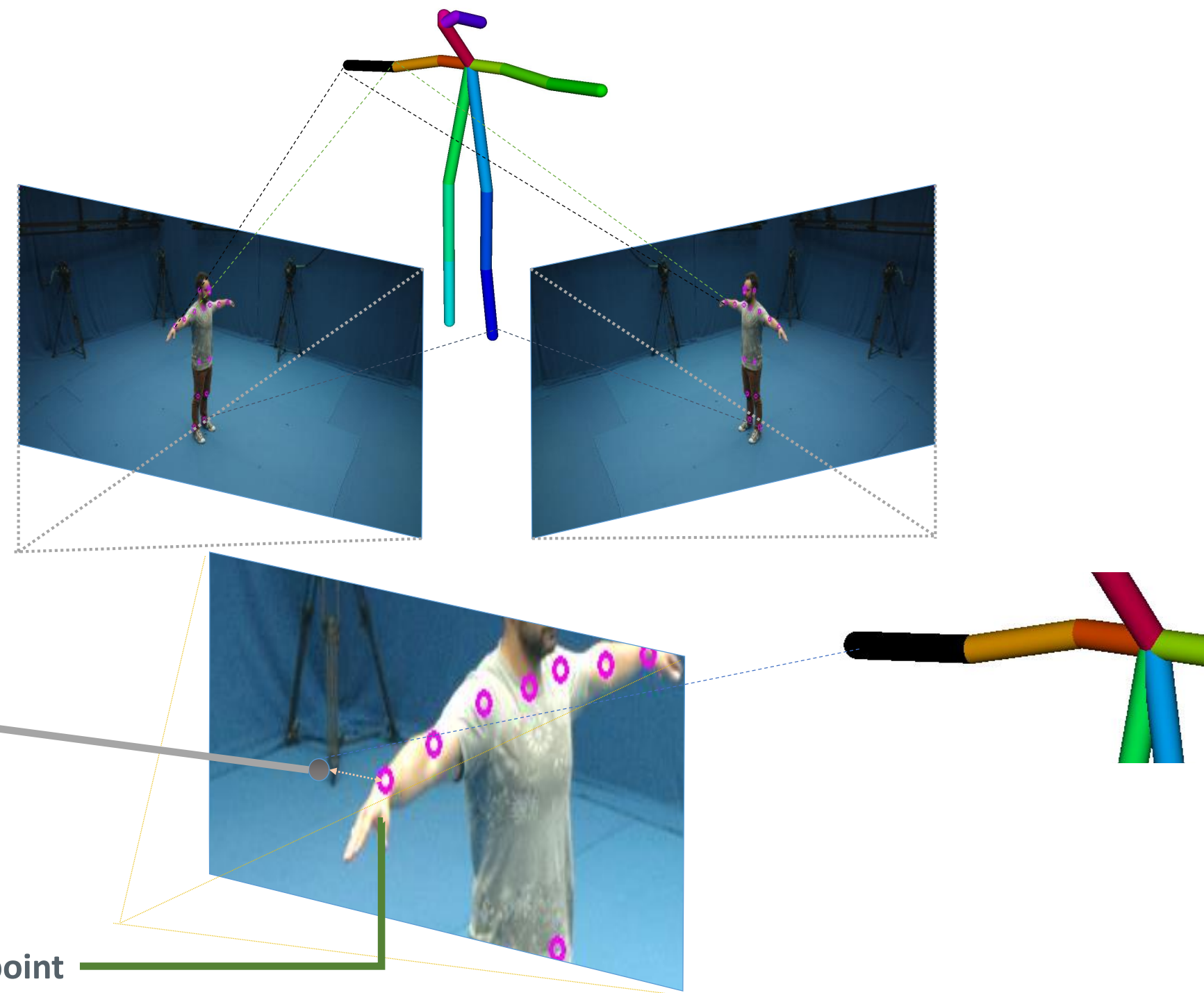
Pose estimation

- 2D Pose Detector
- CPM [8] detector applied to a multiple views

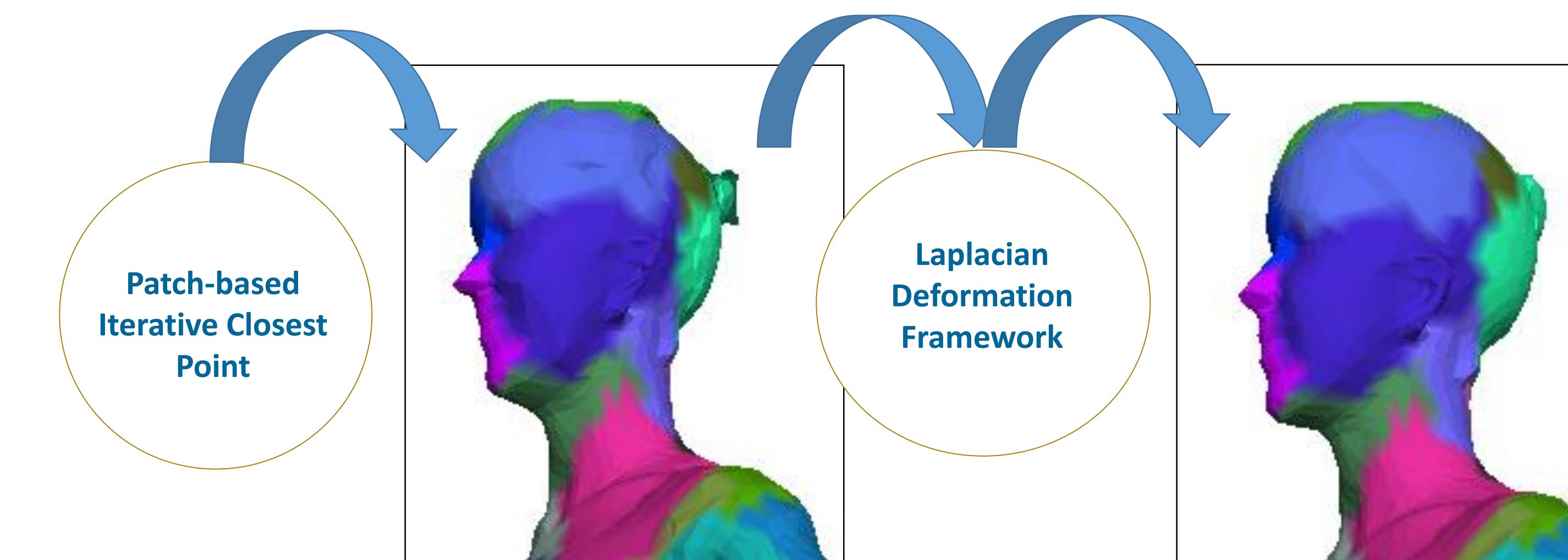
3D Pose Triangulation

$$\operatorname{argmin}_{j_i} \sum_{c=1}^{N_c} \omega_i^c |P(c, j_i) - p_i^c|$$

Joint confidence



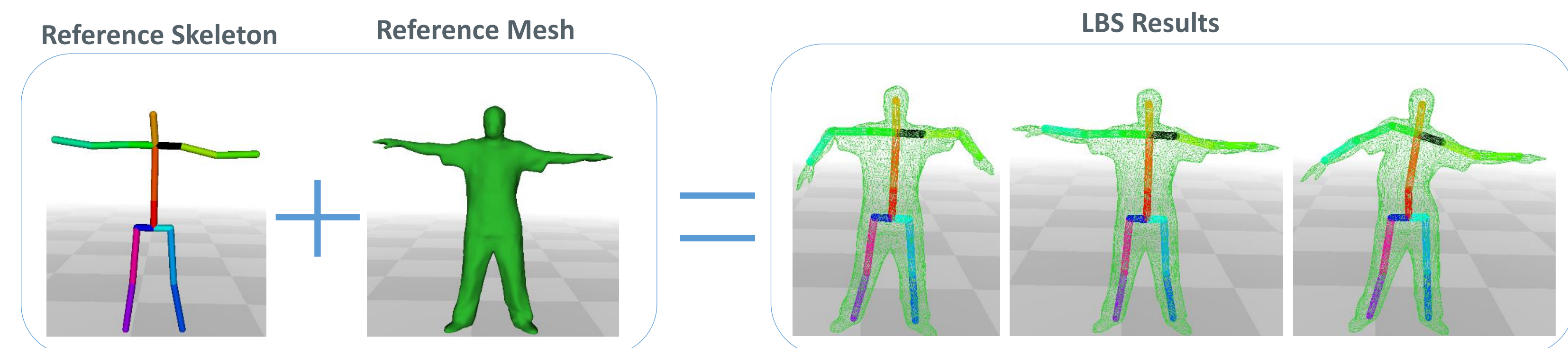
Geometry alignment



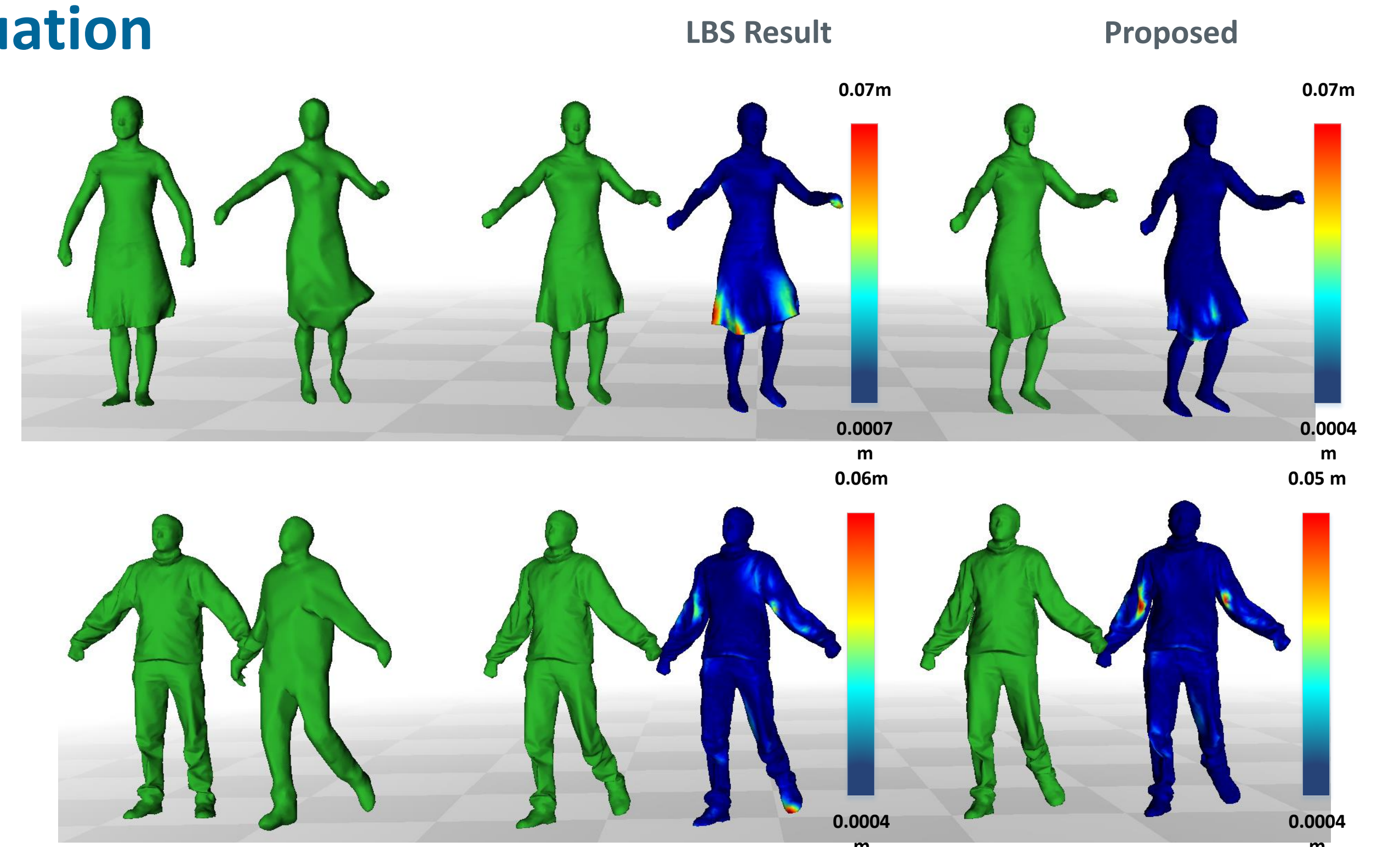
Geometry alignment preserves fine surface detail and geometric shape

Shape reposing

- Skin attachment weights are given by Pinocchio frame [1].
- Linear Blend Skinning (LBS) for mesh deformation
- LBS results in a reference frame for every frame of the sequence.
- Provides a closer approximation of the desired target pose.



Evaluation

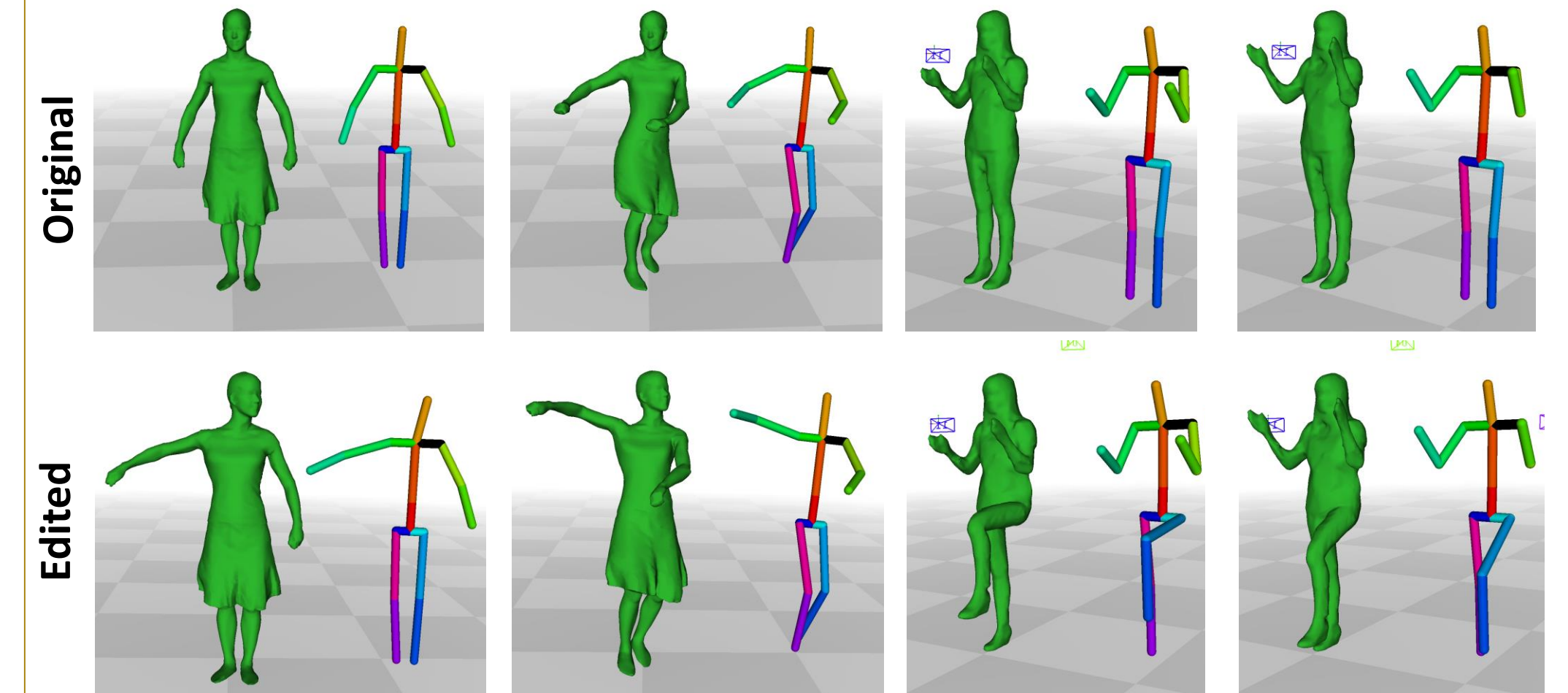


Applications

Compression



Editing



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