

Context

Objective

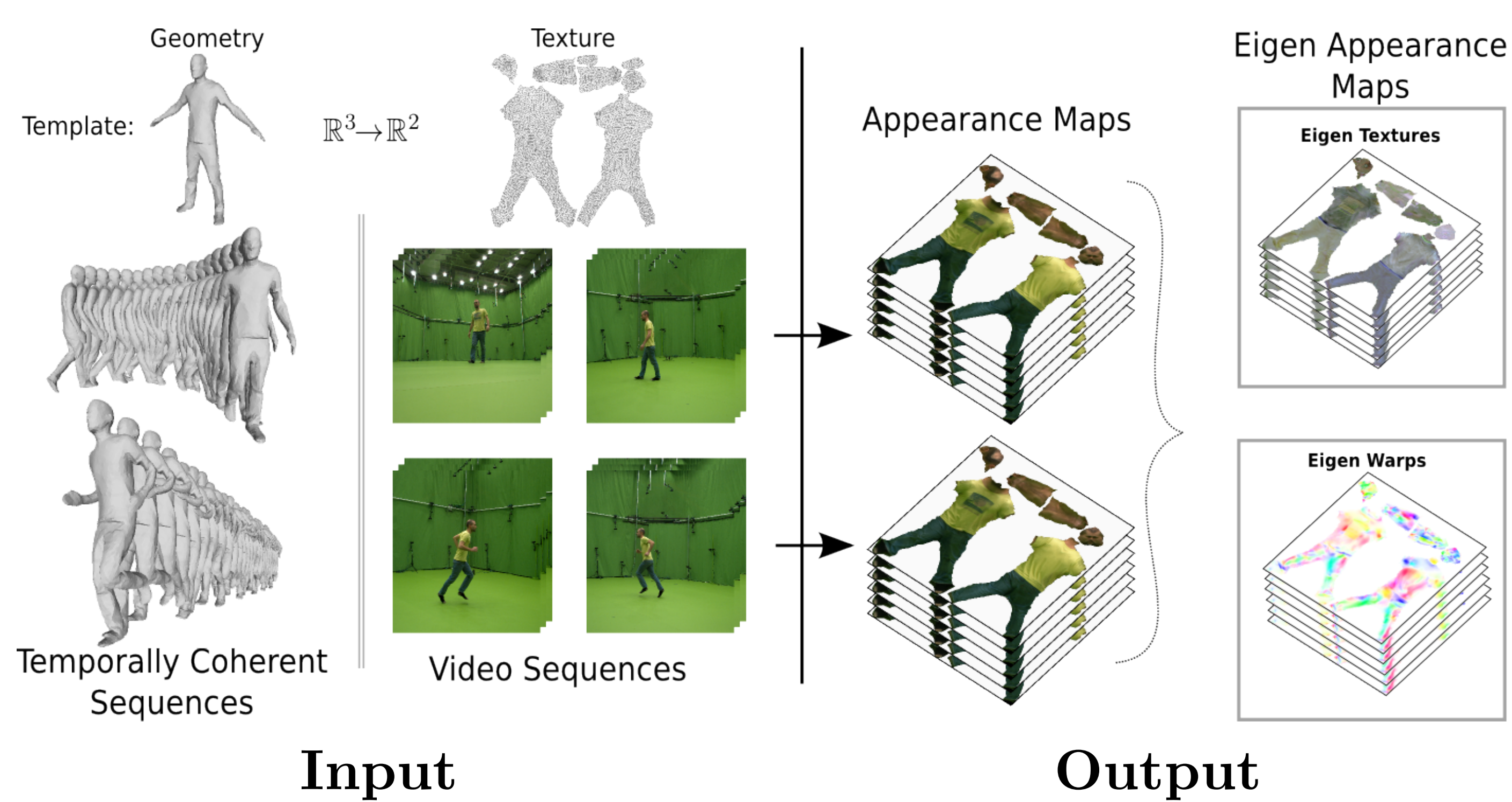
Building efficient appearance representations for multi-view 4d models.

Issues

High dimensionality of the captured appearance information.
Appearance misalignments due to geometry proxy.

Contribution

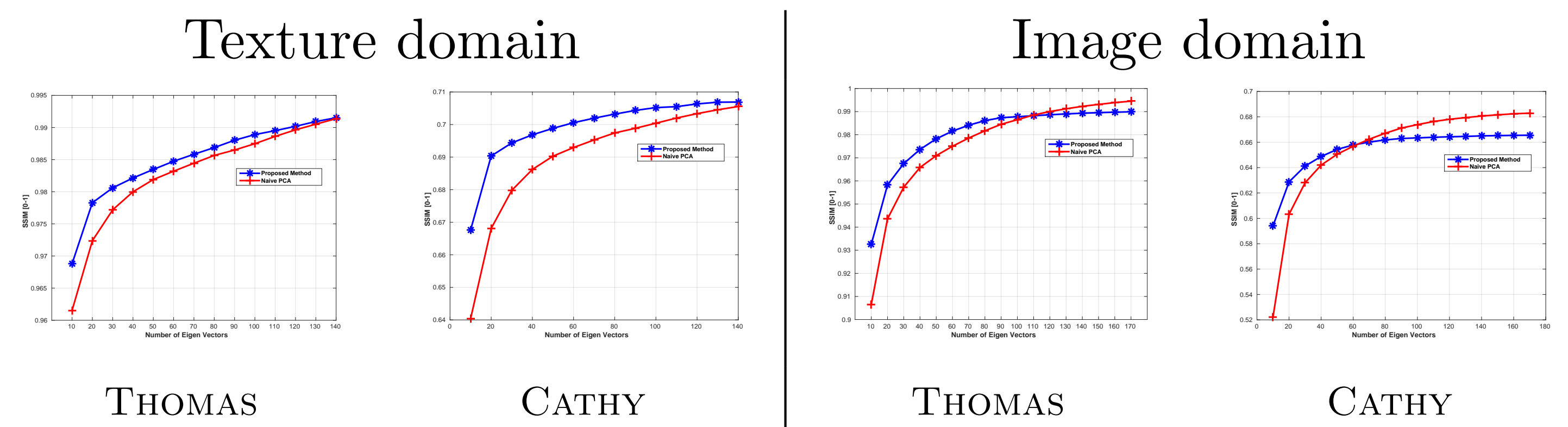
PCA based representation accounting for both appearance change and local geometric inaccuracies.



Quantitative evaluation

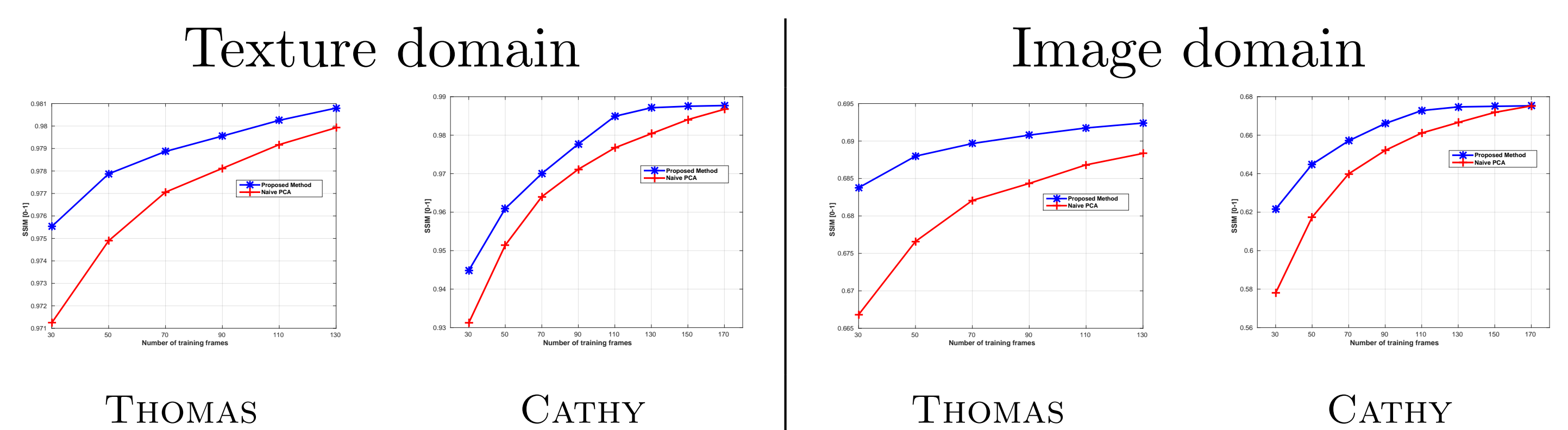
Compactness

SSIM reconstruction error w.r.t. Eigen space dimension.



Generalization ability

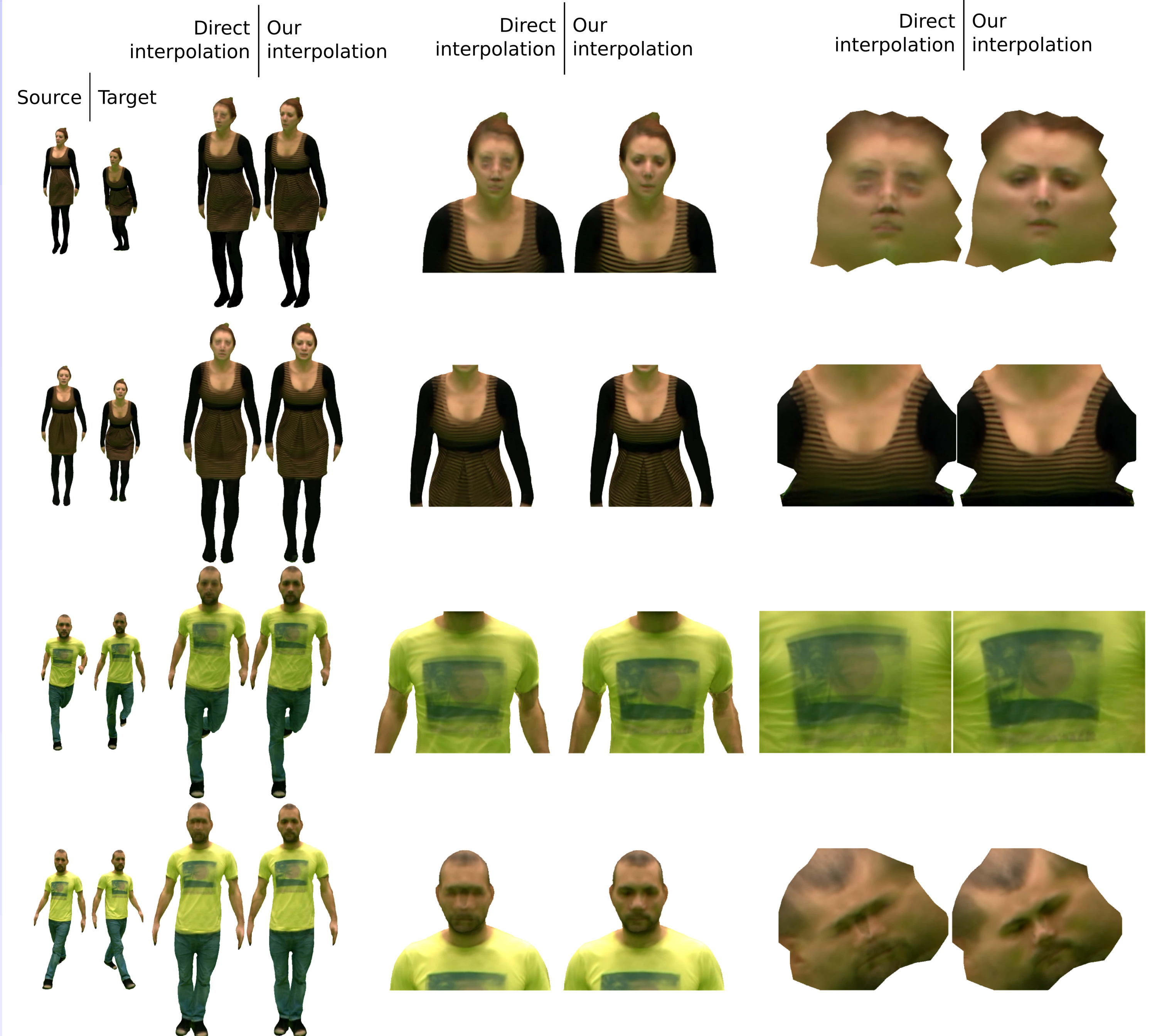
SSIM reconstruction error w.r.t. training set size.



Applications

Interpolation

Merging a source and a target pose geometry and appearance by interpolating in texture space and warp space separately.

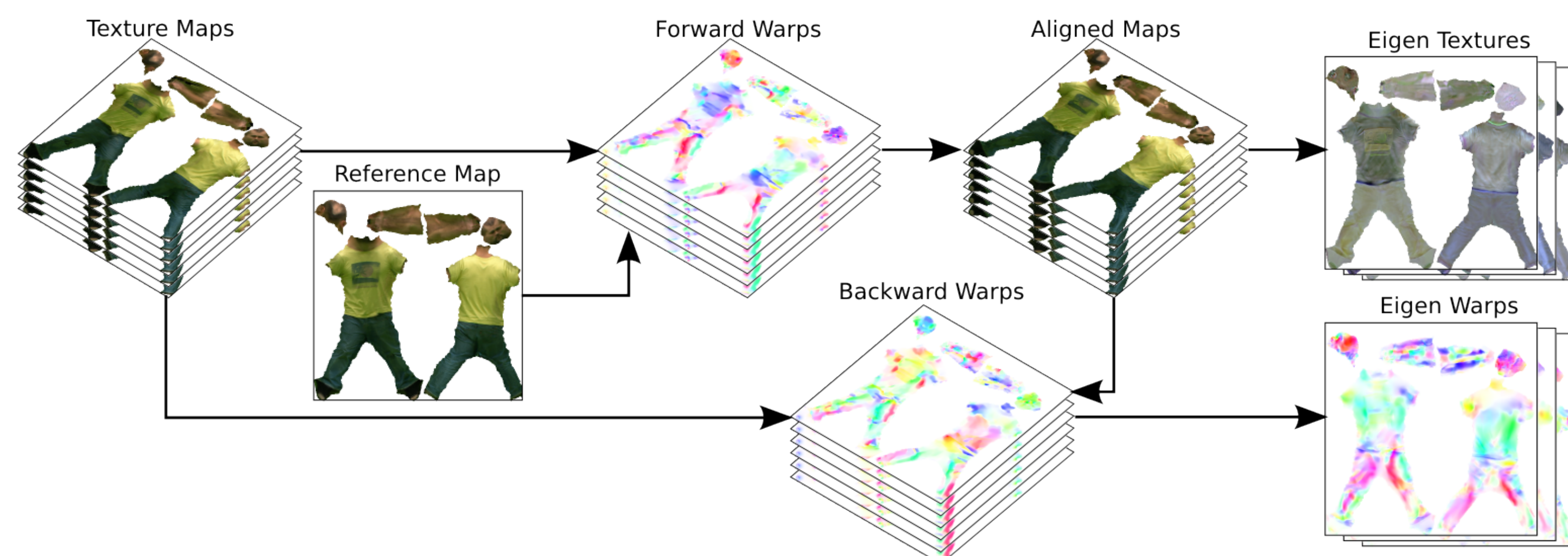


Strategy

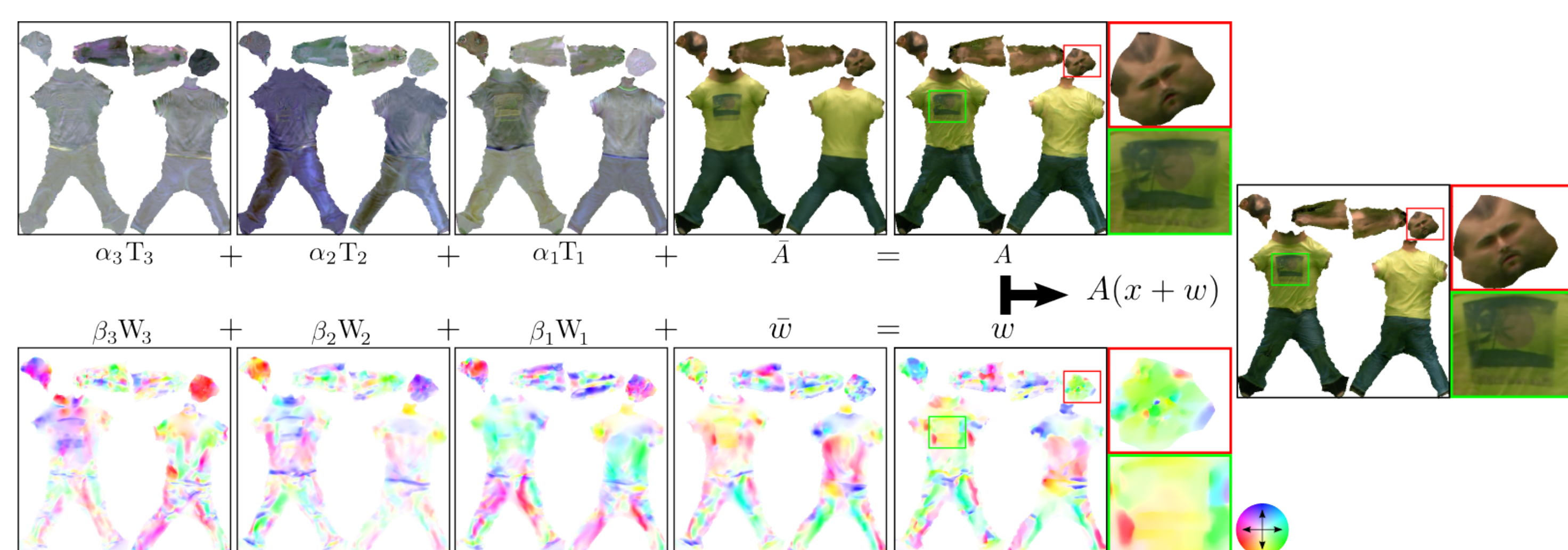
Building representation

All views, over space and time, are used to build Eigen Maps:

- Eigen Textures for appearance variation.
- Eigen Warps for local geometric inaccuracies.



Using representation for texture generation



Dataset



THOMAS
207 frames of running, walking, turning left and right



CATHY
290 frames of jumping far, close, high and low

2048x2048 pixels per view, 68 input views per frame, 50 frames per second.

Completion

Filling in missing appearance information by taking benefit of all observations accounted for in the representation.

