TEL AVIV UNIVERSITY אוניברסיטת תל אביב

3DV 2021
International Conference on 3D Vision
Online, December 1-3, 2021

DPC: Unsupervised Deep Point Correspondence via Cross and Self Construction

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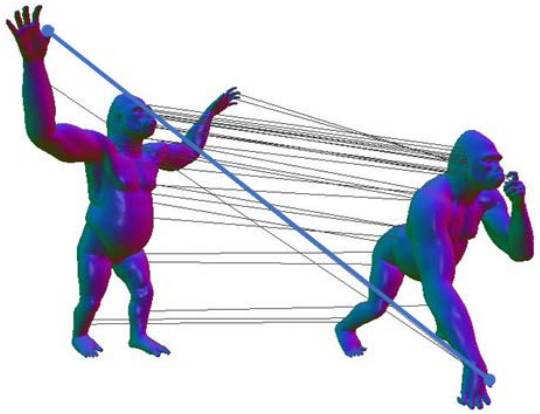
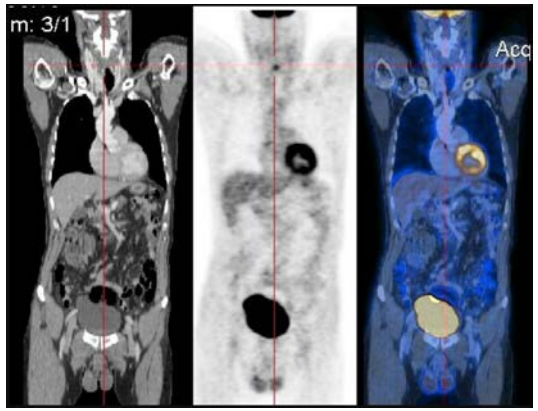
*Equal contribution

Dense Correspondence Applications



Character Animation

Virtual Try-on

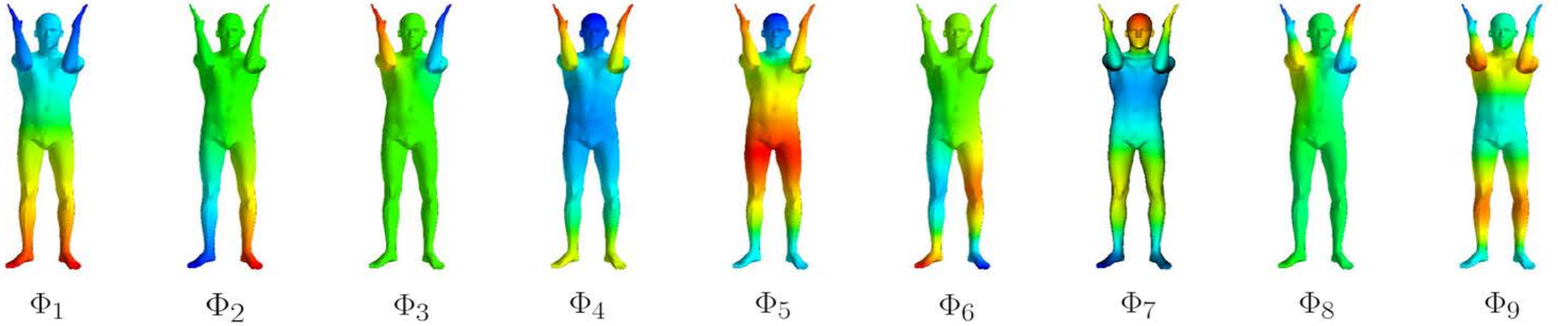


Medical Alignment

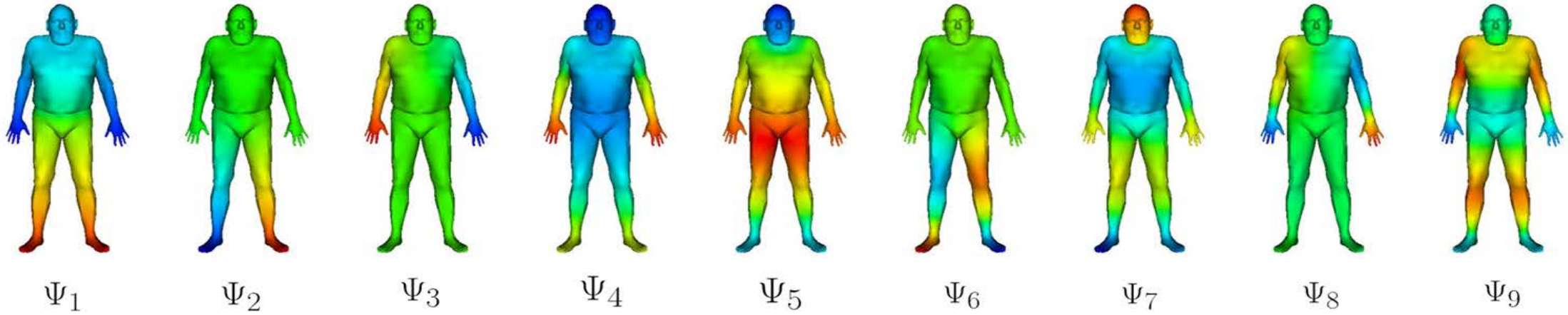
Action Recognition

Spectral Approach

Source shape basis

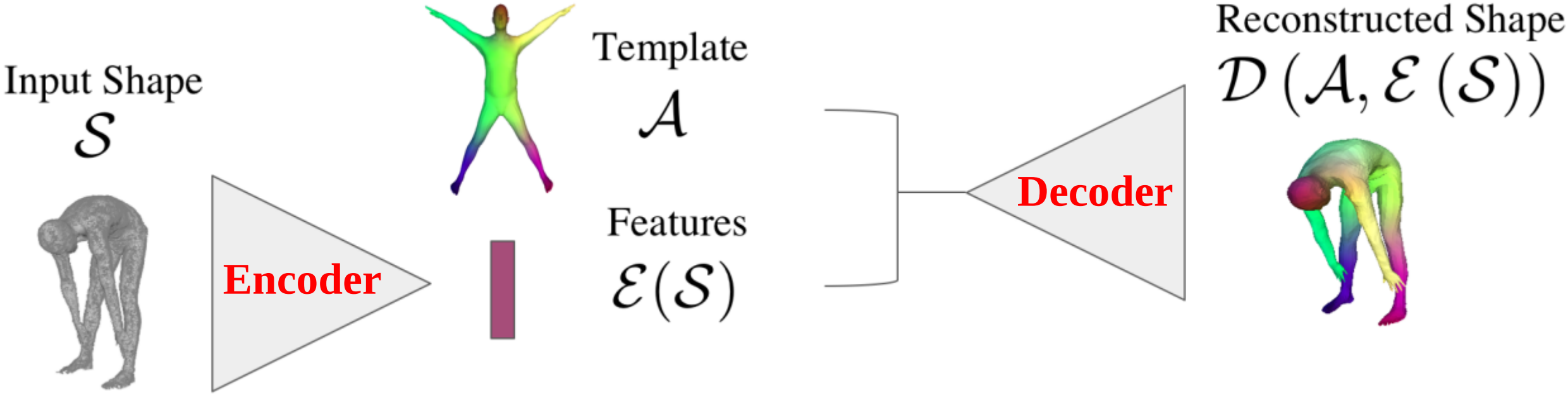


Target shape basis



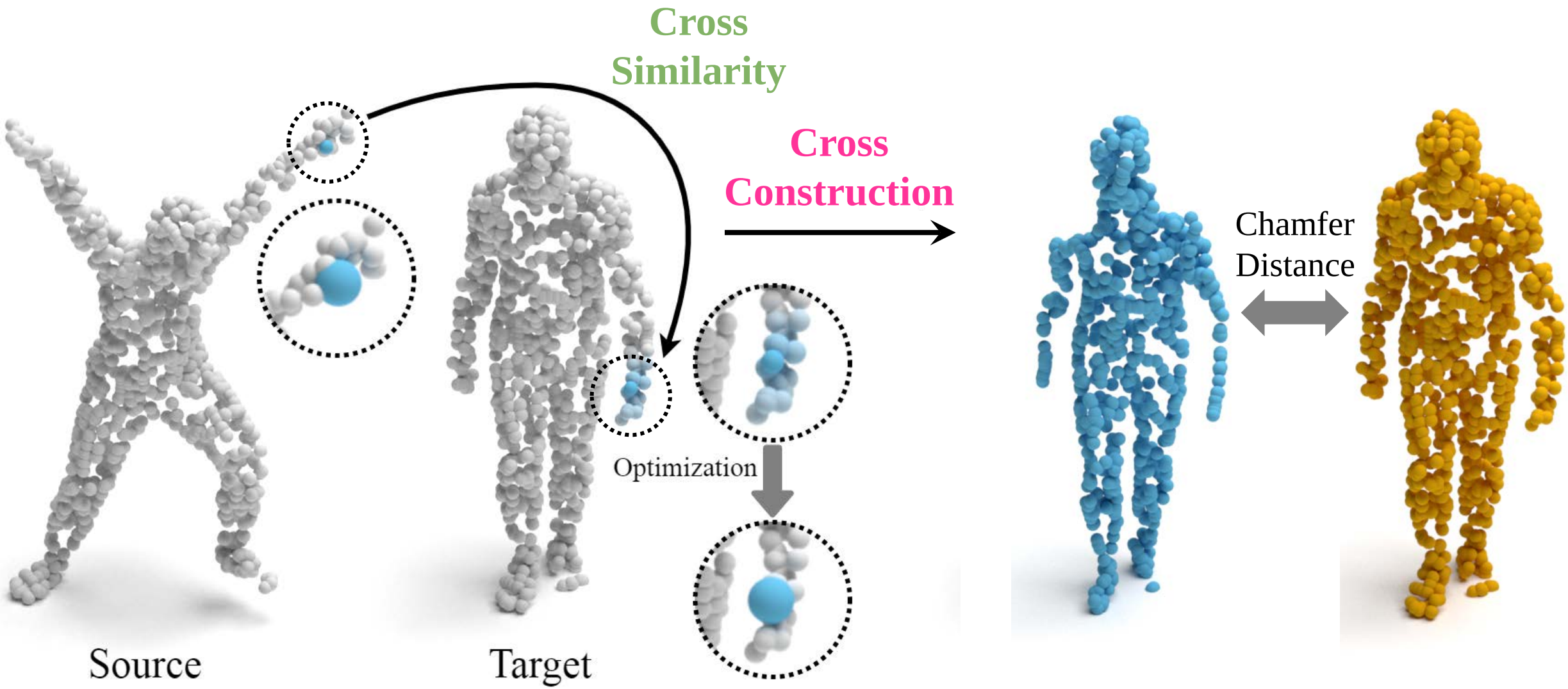
Functional Maps, Ovsjanikov *et al.*, 2012

Spatial Approach

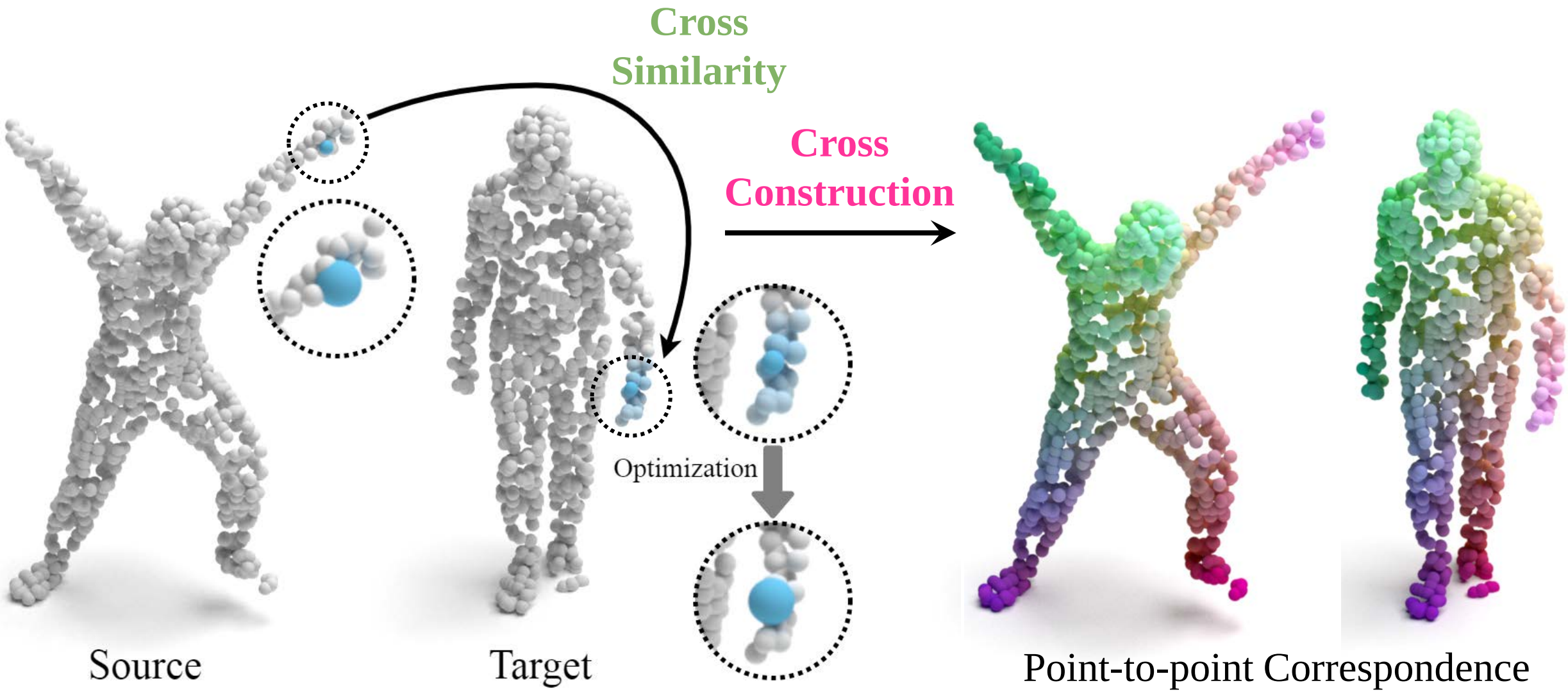


3D-CODED, Groueix *et al.*, 2018

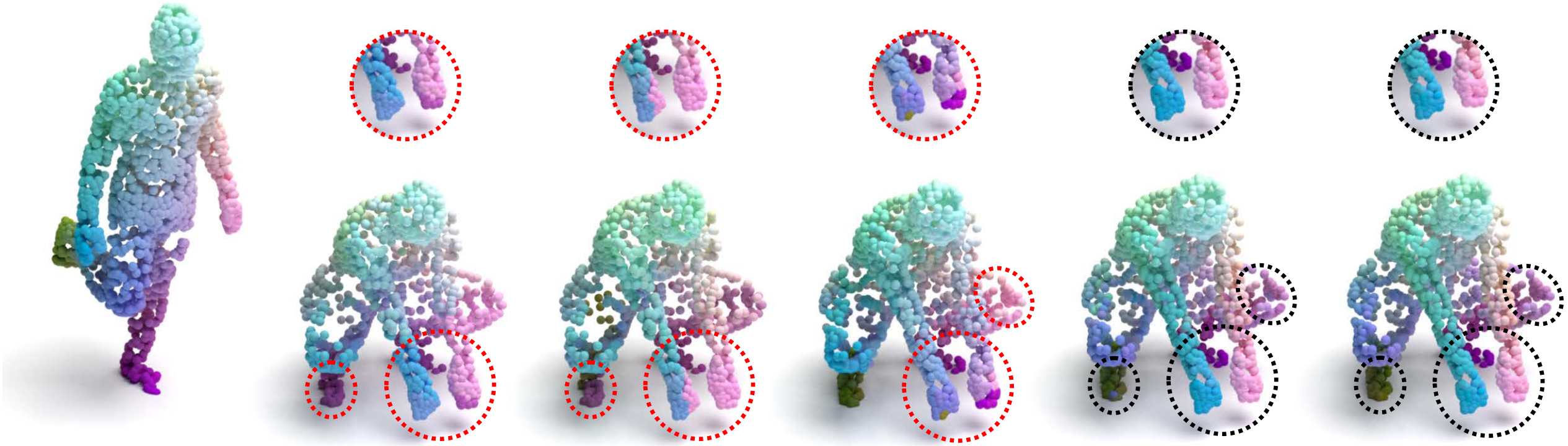
Our Method


Cross
Similarity
Cross
Construction
Optimization
Chamfer
Distance
Source
Target

Our Method


Cross
Similarity
Cross
Construction
Optimization
Source
Target
Point-to-point Correspondence

Visual Comparison for SHREC’19



Reference target | 3D-CODED | Elementary | CorrNet3D | DPC (ours) | Ground-truth

SURREAL, Groueix, *et al.*, 2018; SHREC’19, Melzi *et al.*, 2019
3D-CODED, Groueix, *et al.*, 2018; Elementary, Deprelle *et al.*, 2019; CorrNet3D, Zeng *et al.*, 2021

Summary

- **A new method for dense shape correspondence**
  Directly on point clouds, unsupervised, real-time
- **Assignment by construction**
  Rather than regression by a decoder
- **Surpasses existing methods by a large margin**
  For both human and animal shapes
- Paper and code are available
  https://github.com/dvirginz/DPC

Reference shape Our result

THANK YOU!