

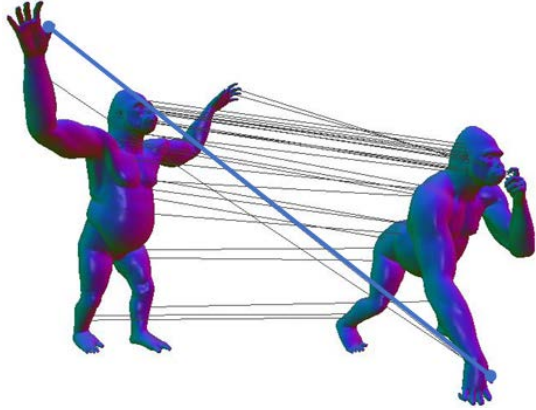
DPC: Unsupervised Deep Point Correspondence via Cross and Self Construction

Itai Lang*, Dvir Ginzburg*, Shai Avidan, Dan Raviv



*Equal contribution

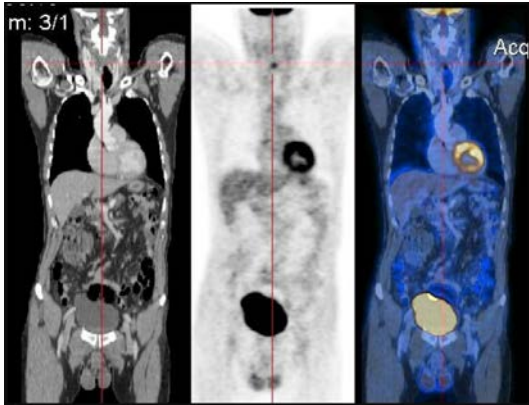
Dense Correspondence Applications



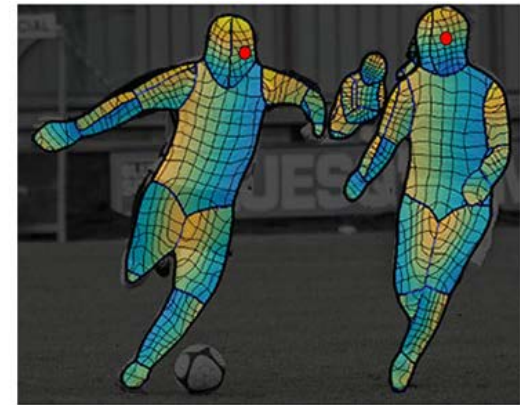
Character Animation



Virtual Try-on



Medical Alignment



Action Recognition

Spectral Approach

Source
shape
basis



Φ_1



Φ_2



Φ_3



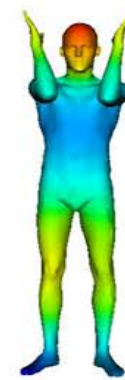
Φ_4



Φ_5



Φ_6



Φ_7



Φ_8



Φ_9

Target
shape
basis



Ψ_1



Ψ_2



Ψ_3



Ψ_4



Ψ_5



Ψ_6



Ψ_7

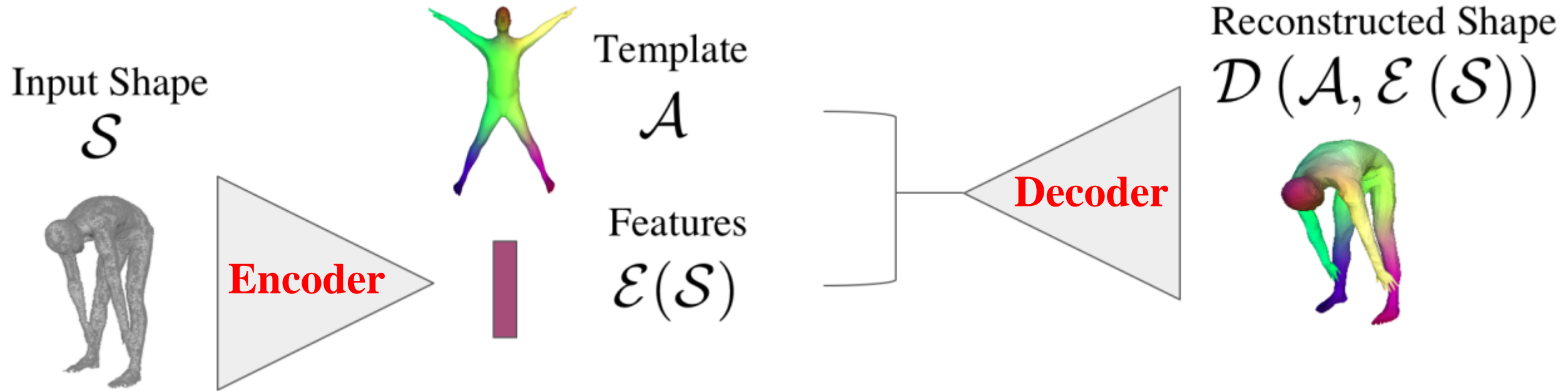


Ψ_8

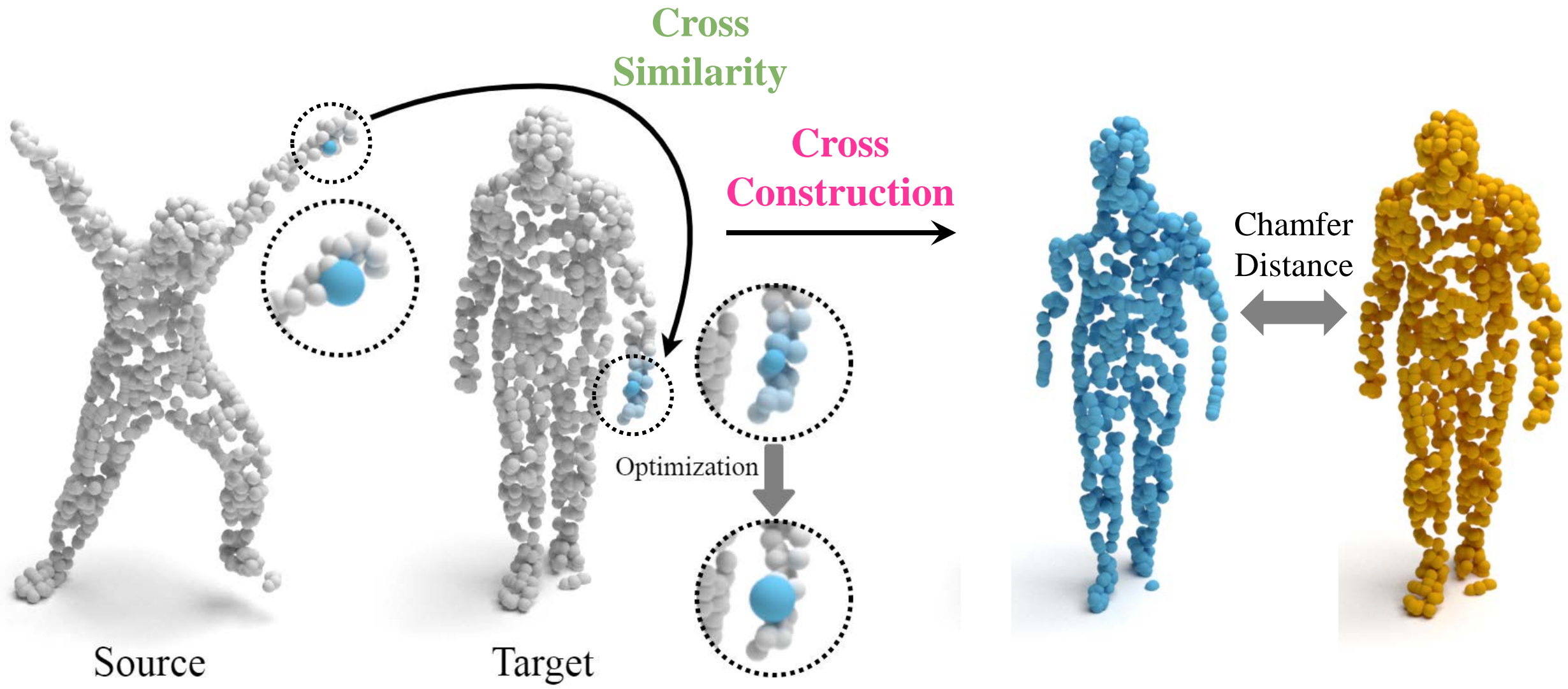


Ψ_9

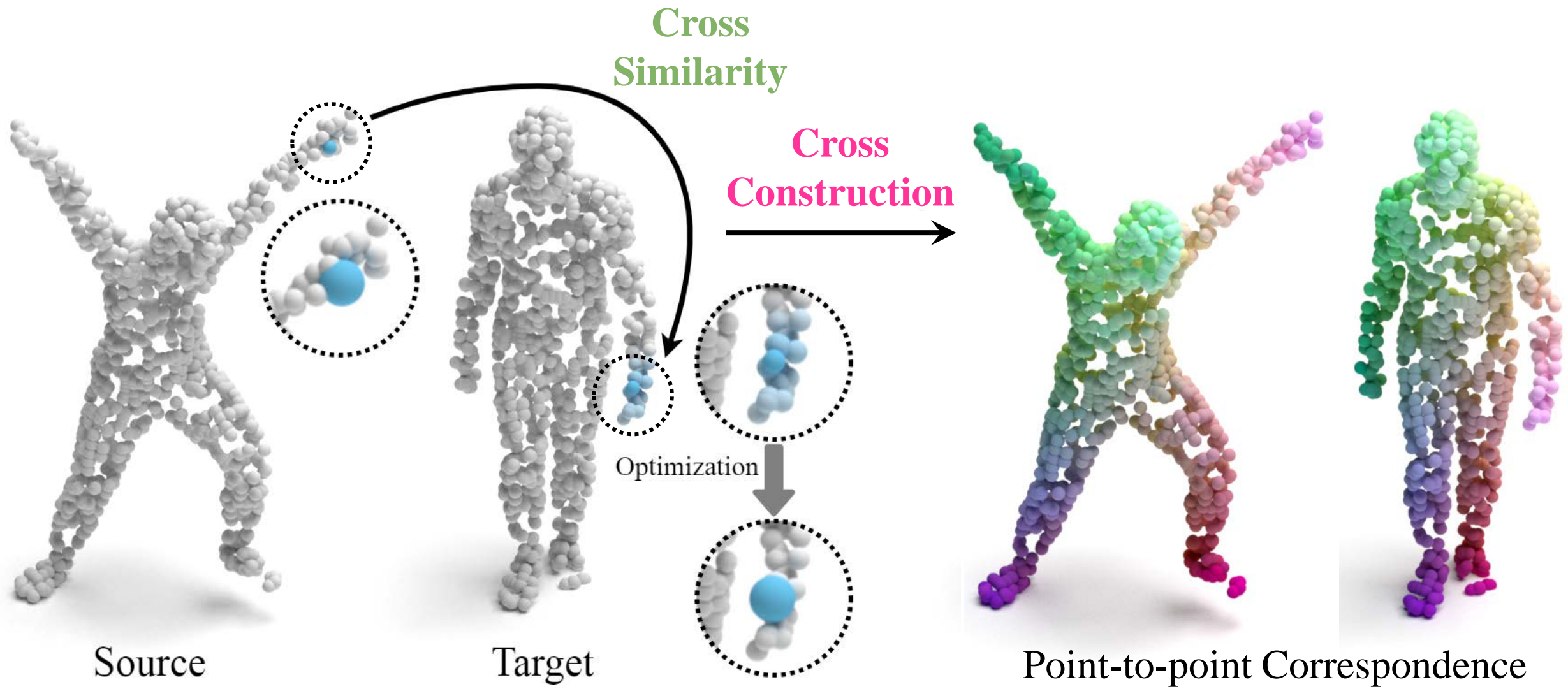
Spatial Approach



Our Method



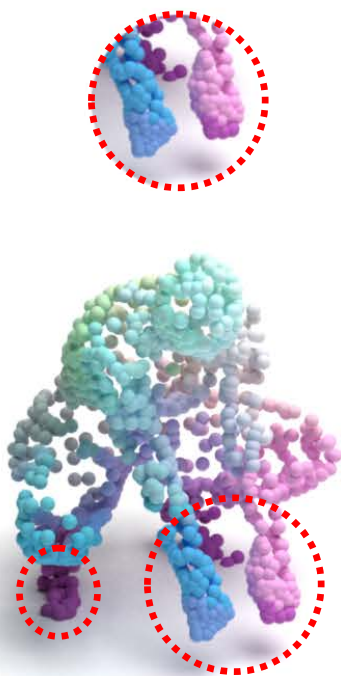
Our Method



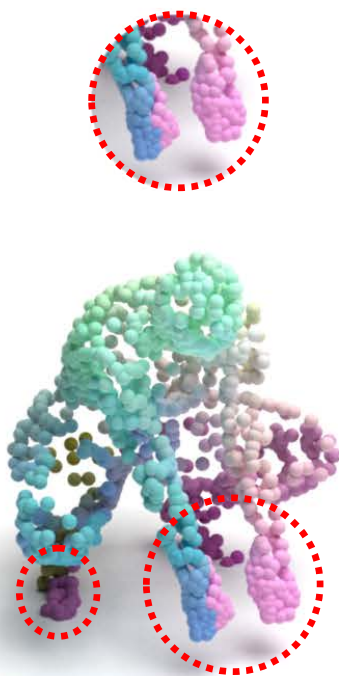
Visual Comparison for SHREC'19



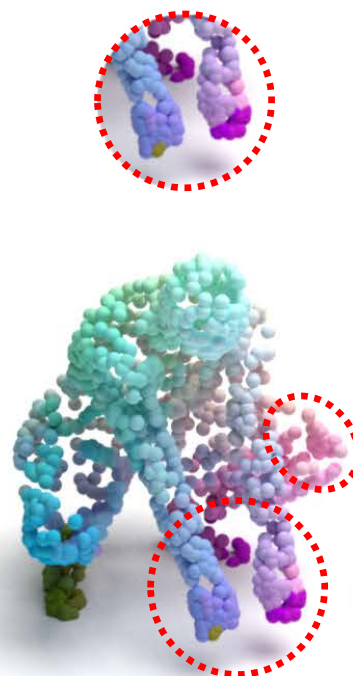
Reference target



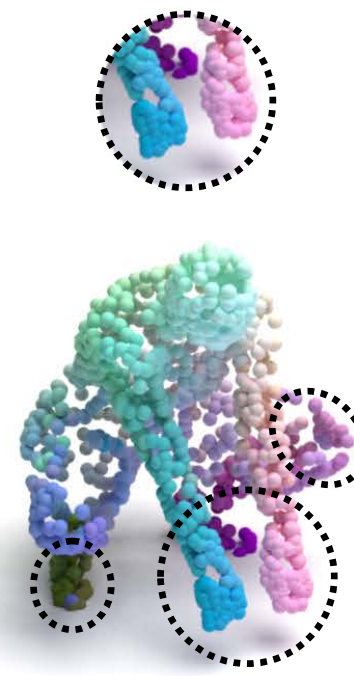
3D-CODED



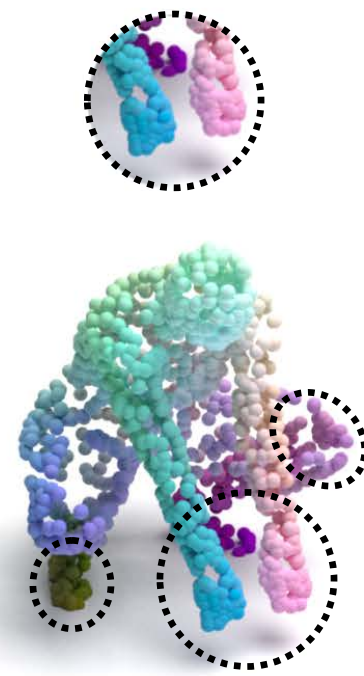
Elementary



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!