

CONSTRAINED NON-RIGID REGISTRATION PIPELINE

Input:

4 files, two directories

	Source	Target
2D	<source>.png	<target>.png
3D	<source>.obj	<target>.obj



BOUNDARY-SETTING TECHNIQUE:

Deep Neural Network Facial Detection w/ Mediapipe

Convex Hull Intersection

Geodesic Perimeter from nosetip

Requires

Python

Alignment Quaternion

Nose detection - maybe also mediapipe?

RETURNS:

A boundary

points & edges
between points

Filter

Keep only points inside the boundary

- matplotlib.path.Path.contains_point()

RETURNS:

All the points on or inside the boundary

Non-Rigid Registration

ICP ✓ Zhou already did this

Harmonic Conformal Map

Returns

A predicted face

Analysis

Simple energy function

$$\sum_i (\hat{y}_i^{t+1} - y_i^t)$$

Returns

Cost value to compare