ShapeWorks: Statistical Shape Analysis

Shireen Elhabian and Ross Whitaker
SCI Institute, University of Utah
shireen@sci.utah.edu, whitaker@cs.utah.edu

Statistical Shape Analysis
It’s all about representation…

ShapeWorks for Non-regular Shapes

ShapeWorks for Cardiology
Left Atrial Appendage – Stroke Prediction

If LAA traps blood longer than it should be, blood clots and causes stroke

Can shape analysis aid in predicting whether someone will have a stroke or not?

How do we choose the “same” points??

Dynamic particles represented in reference to pre-defined landmarks

Euclidean distance → Incorrect tangent plane interactions
Complexity → incorrect correspondences
Variability → inconsistent landmark matching

Example mesh and configuration for interpolation of Geodesic distances

Dynamic Particle: x
Pre-defined Landmark: l
Geodesic Distance to Landmark: D(x,l)

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