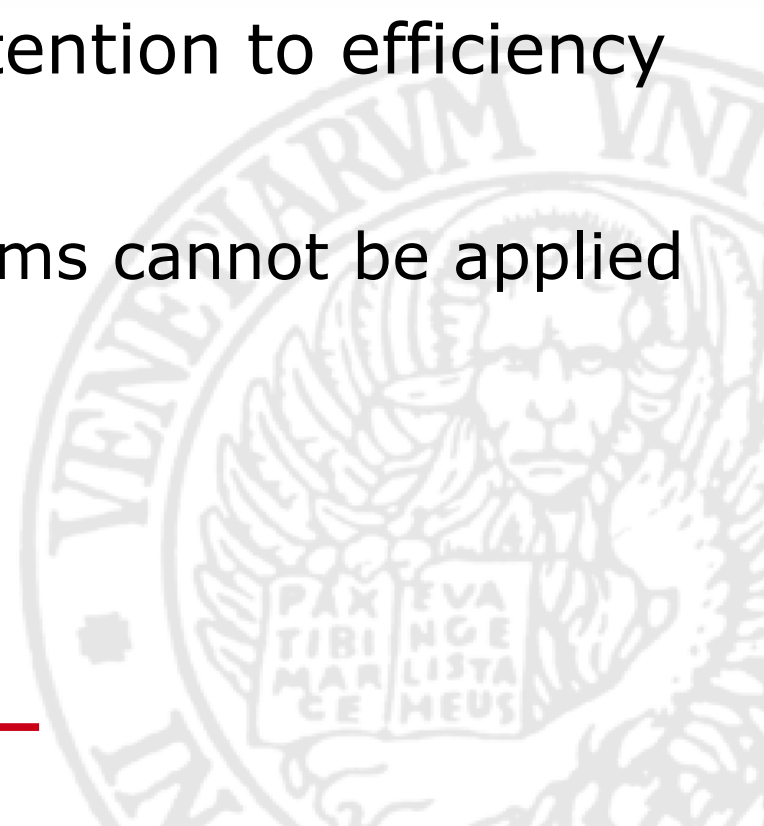

Semi-supervised Segmentation of 3D Surfaces using a Weighted Graph Representation

Filippo Bergamasco, Andrea Albarelli,
and Andrea Torsello

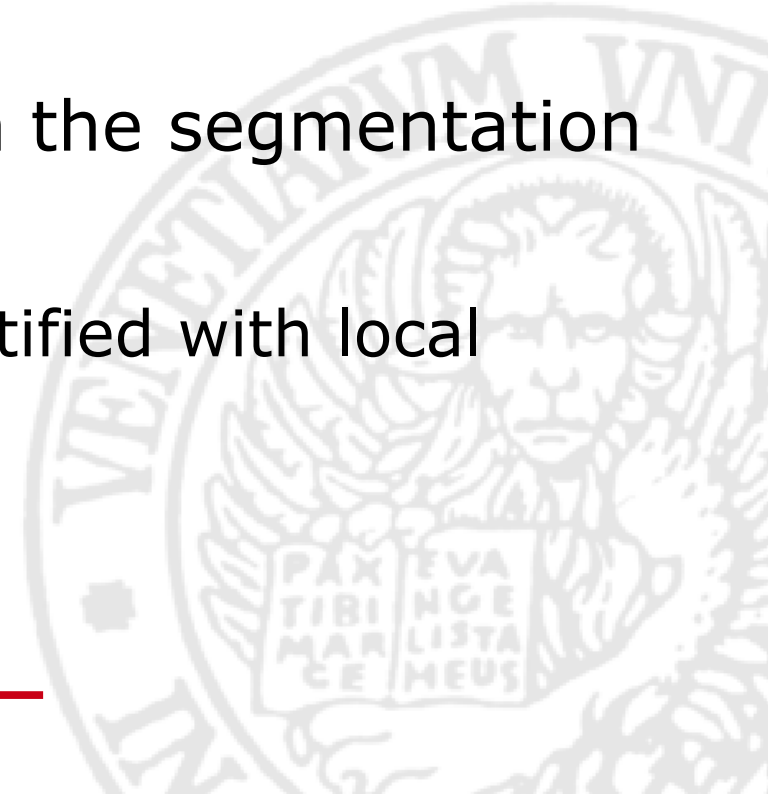
DAIS
Università Ca' Foscari Venezia, Italy

3D Meshes

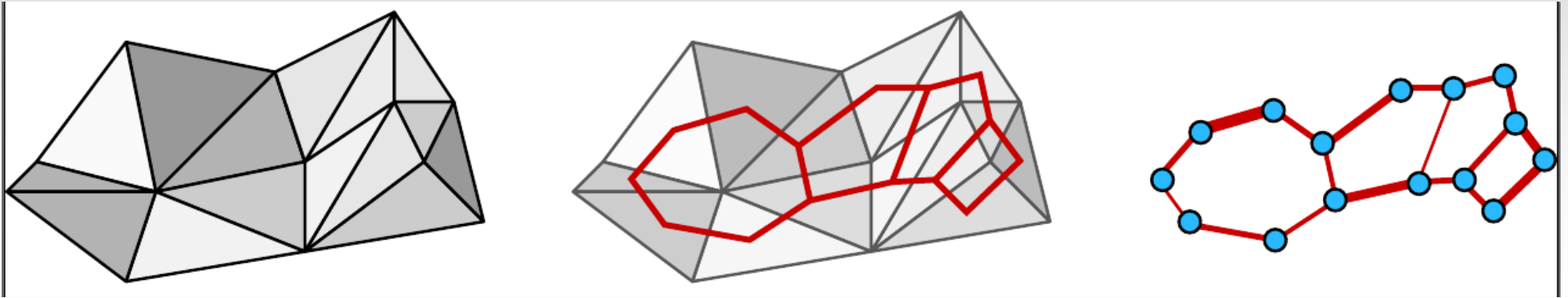
- 3D scanning devices have become mainstream
 - High availability of very high resolution meshes
- 3D meshes are a naturally graph-based representation with very large number of nodes (100'000 – 100'000'000)
- High dimensionality requires attention to efficiency especially for interactive tools
 - Several graph-based algorithms cannot be applied



-
- In this work we present a simple and quick semi-supervised segmentation algorithm fast enough to be used interactively on high resolution scans
 - Shortest path-based approach
 - Label transduction computed greedily
 - Requires few seeds far away from the segmentation boundaries
 - In 3D parts boundary can be identified with local geometric information



- Dual graph

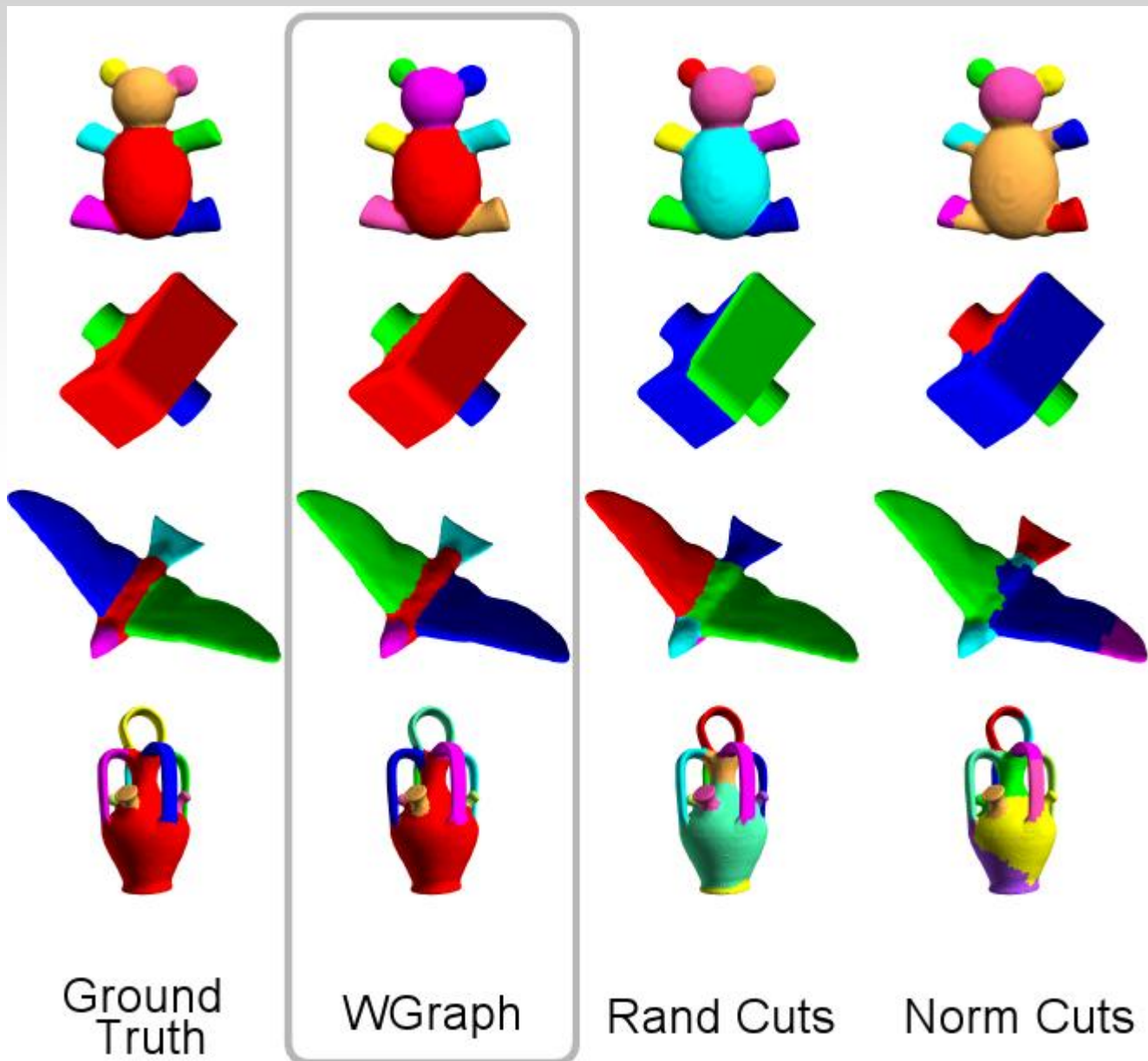


- Geometric edge-weights

$$\omega(i, j) = \frac{1 - \langle n_i, n_j \rangle}{|p_i - p_j|}$$

- Closest-label transduction





Ground Truth

WGraph

Rand Cuts

Norm Cuts