

Persistence Analysis of Multi-scale Planar Structure Graph in Point Clouds - Supplementary Material

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This supplementary material provides more results on the different interactive tools we propose in Section 6 of the article: persistence-based thresholding (Section 1), scale-based segmentation (Section 2), brush-based component selection (Section 3) and similarity search (Section 4). Finally, Section 5 gives some details on persistent diagrams.

1. Persistence exploration

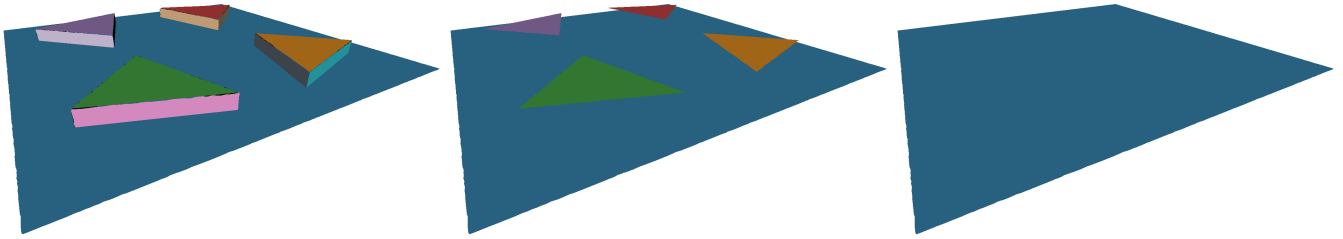


Figure 1: Persistence thresholds : 20, 25, 30

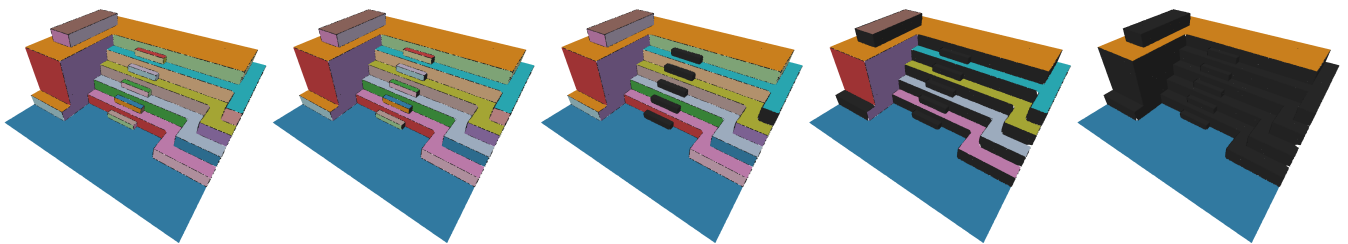


Figure 2: Persistence thresholds : 10, 15, 20, 25, 30

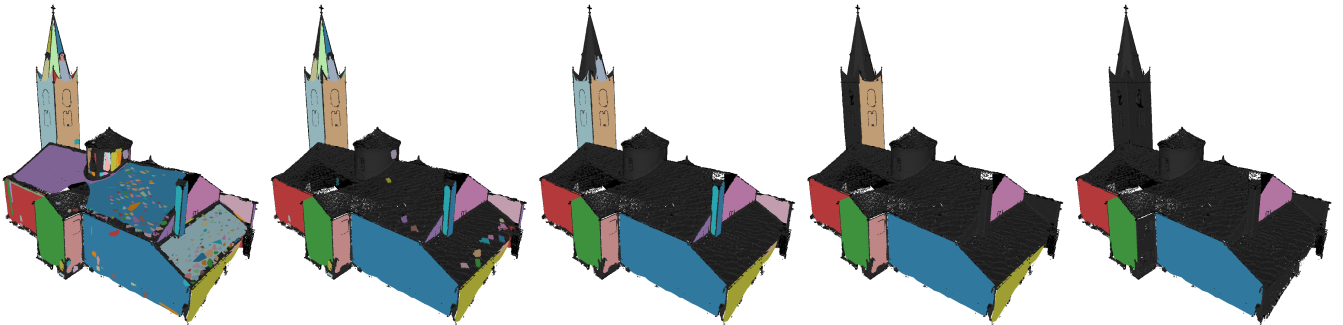


Figure 3: Persistence thresholds : 5, 10, 15, 20, 25

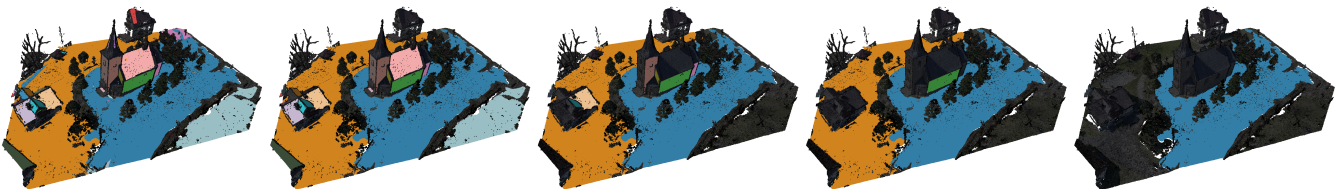


Figure 4: Persistence thresholds : 5, 10, 15, 20, 25

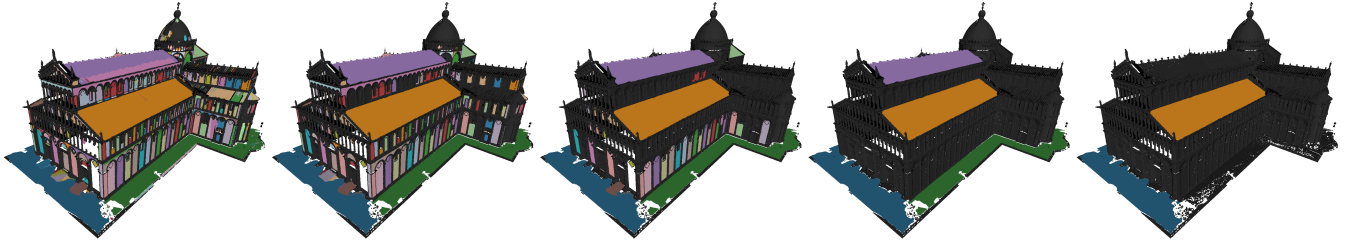


Figure 5: Persistence thresholds : 5, 10, 15, 20, 25

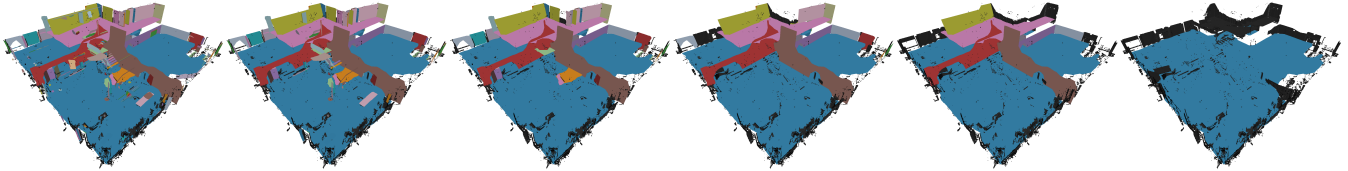


Figure 6: Persistence thresholds : 10, 15, 20, 25, 30, 35

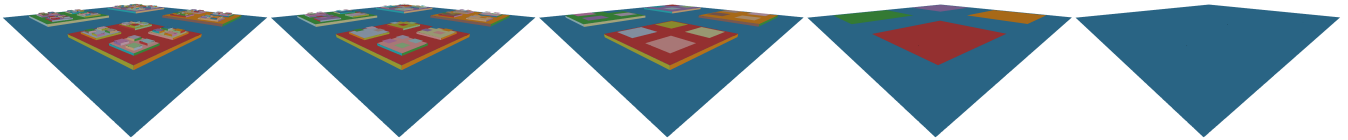


Figure 7: Persistence thresholds : 10, 15, 20, 25, 30

2. Scale-Space exploration

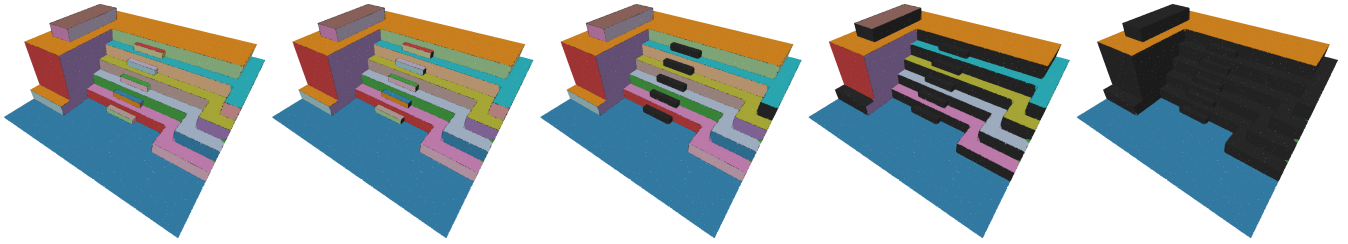


Figure 8: Scale threshold : 0, 15, 20, 25, 30

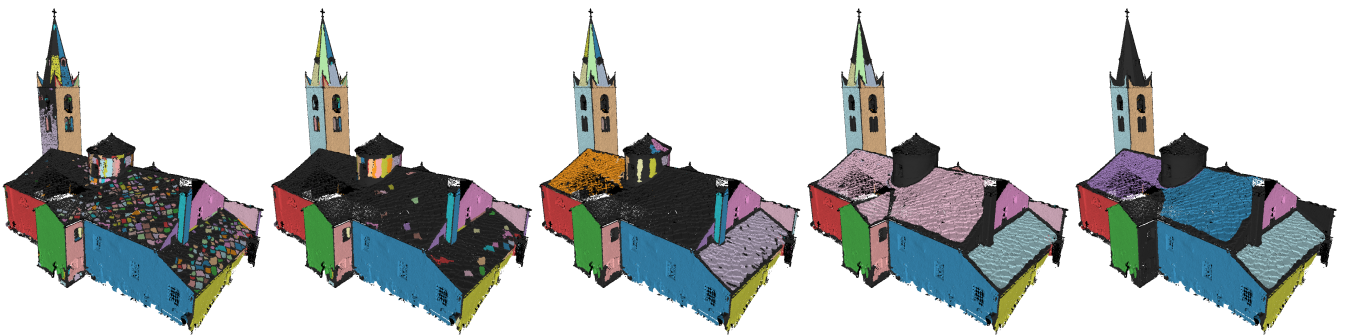


Figure 9: Scale threshold : 5, 10, 15, 20, 25

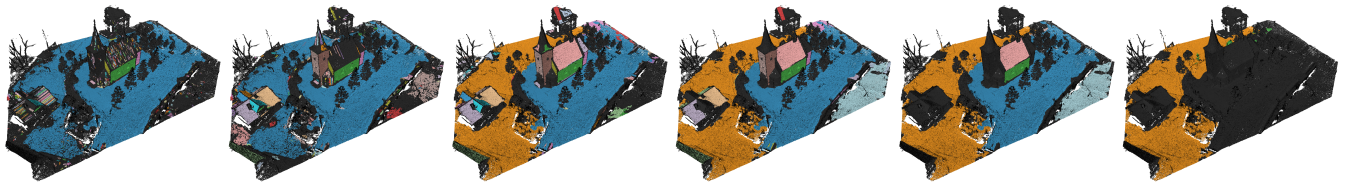


Figure 10: Scale threshold : 5, 10, 15, 20, 25, 30

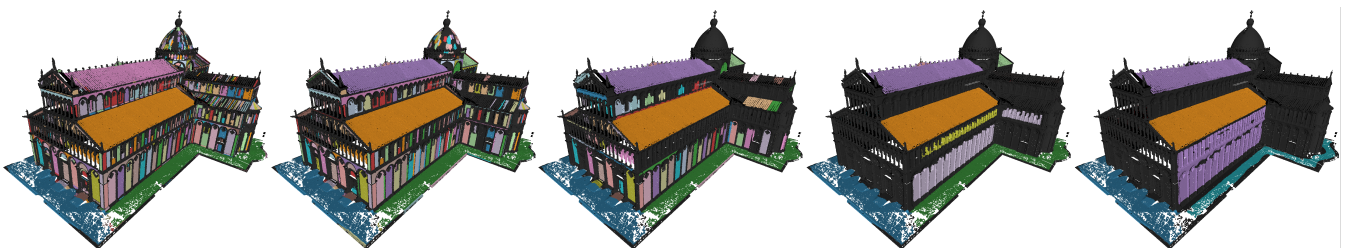


Figure 11: Scale threshold : 5, 10, 15, 20, 25

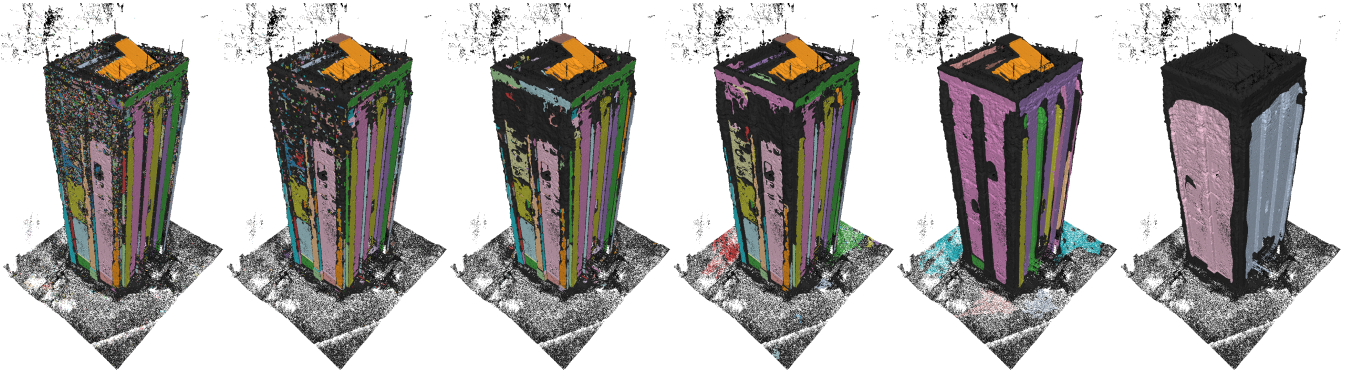


Figure 12: Scale threshold : 5, 10, 15, 20, 25, 30

3. Brush Reconstruction

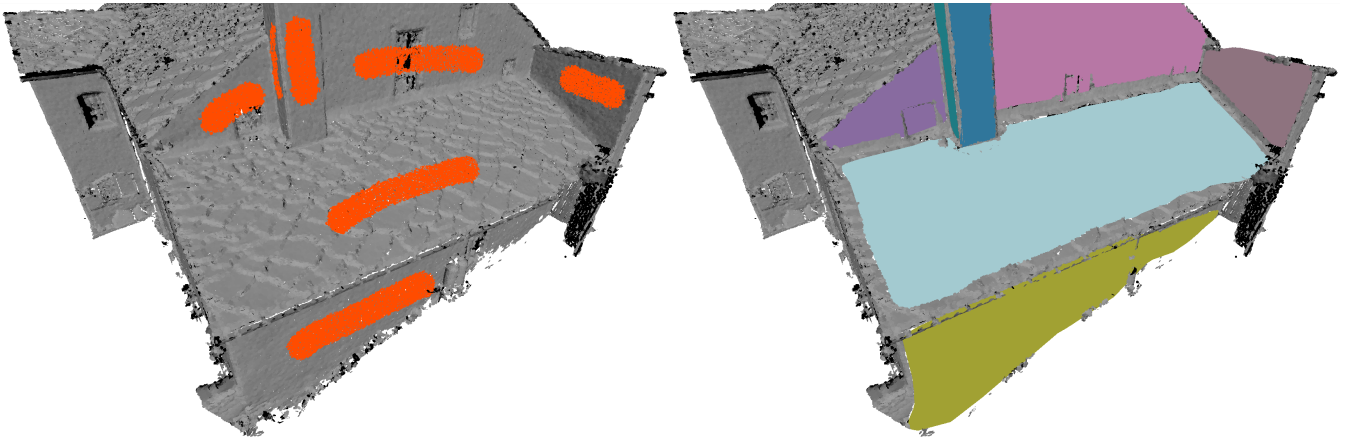


Figure 13: *Brush reconstruction*

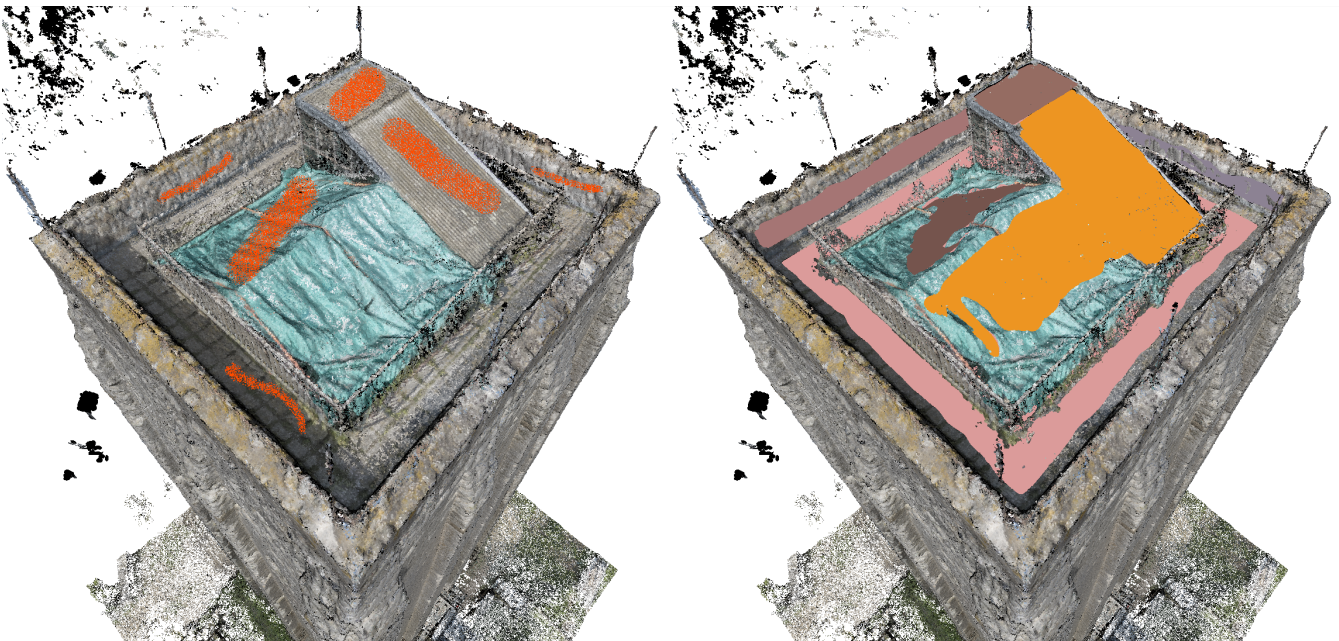


Figure 14: *Brush reconstruction*

4. Similarity Search

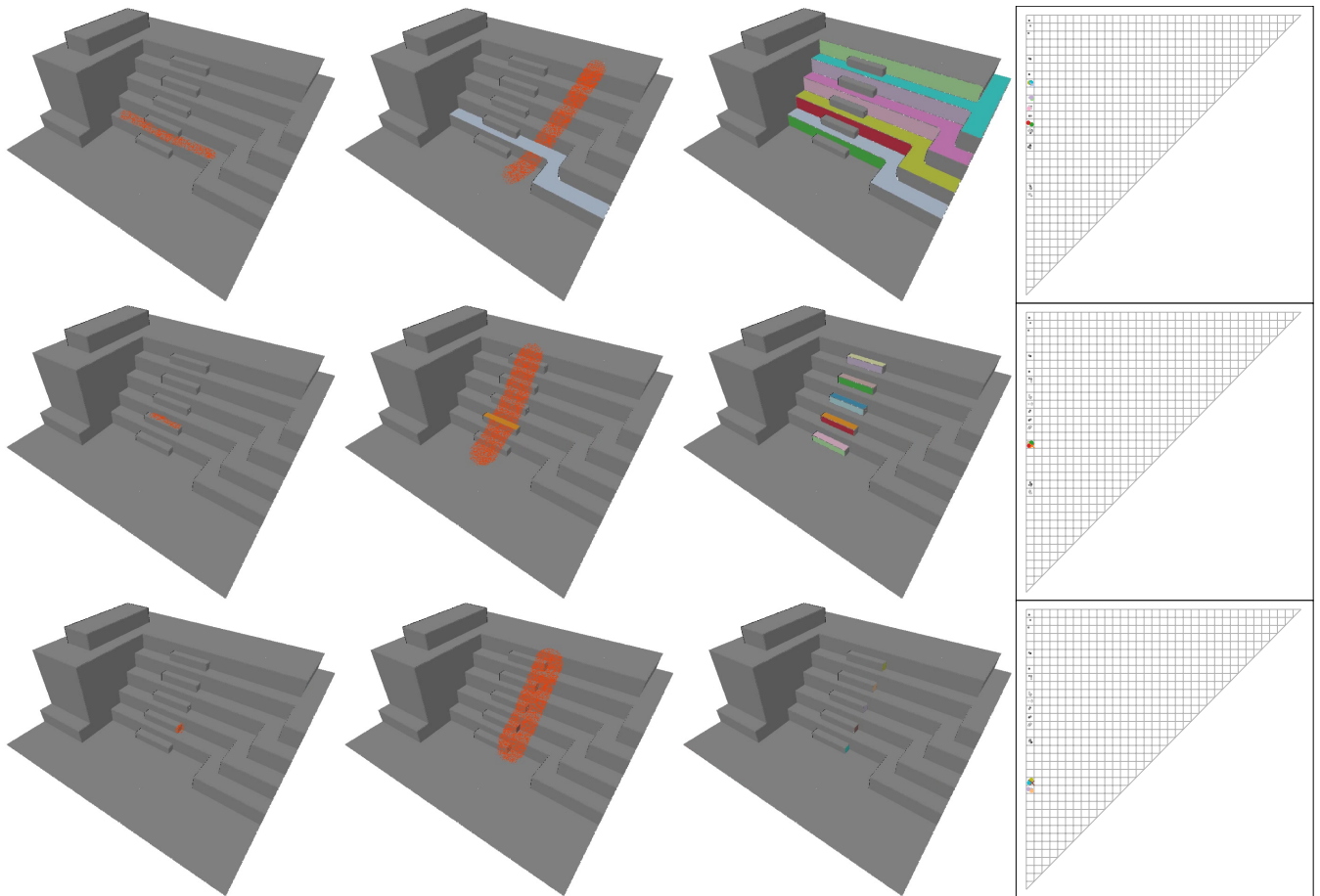


Figure 15: Similarity Search with parameters : 5,5,100,90

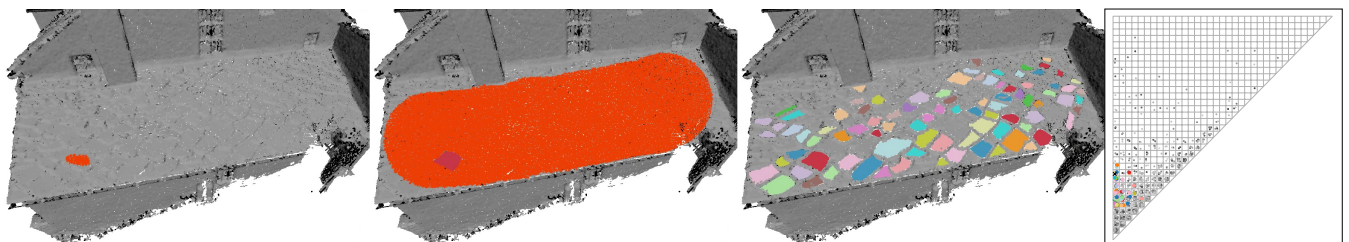


Figure 16: Similarity Search with parameters : 5,5,100,5

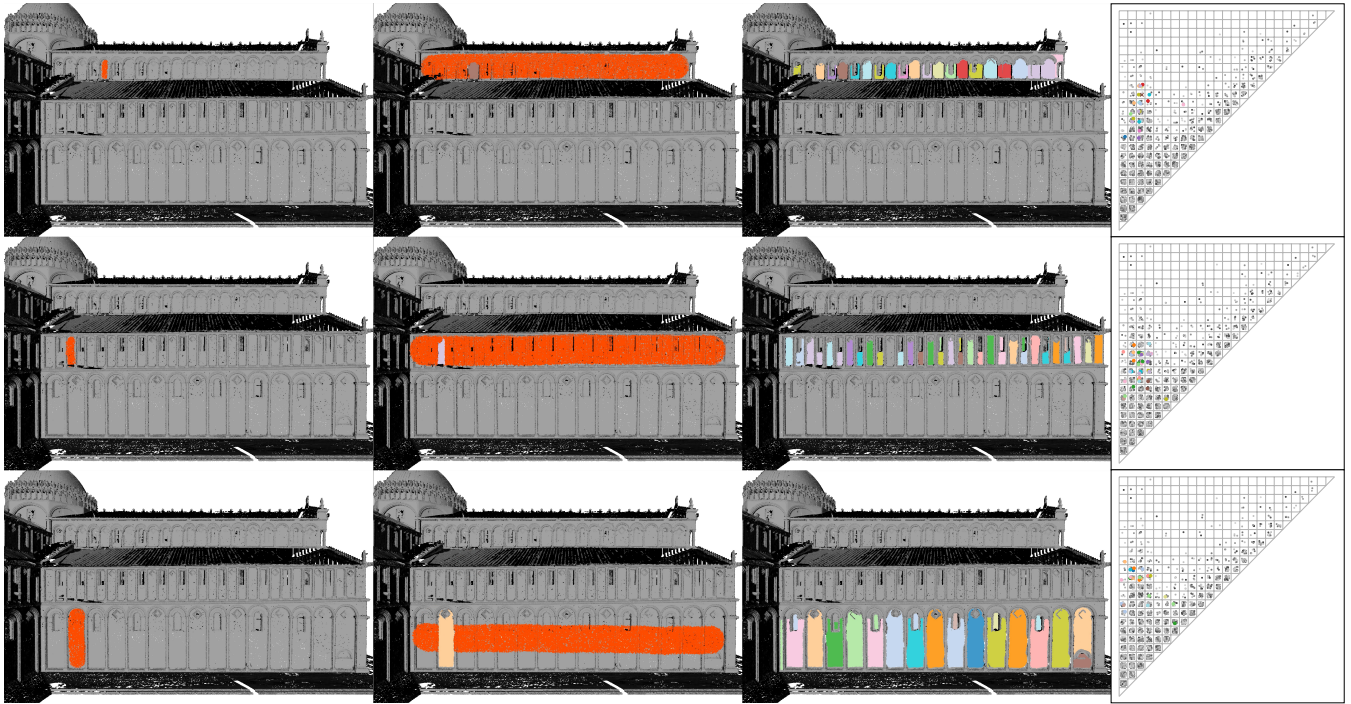


Figure 17: Similarity Search with parameters : 5,5,100,10

5. Persistent diagram

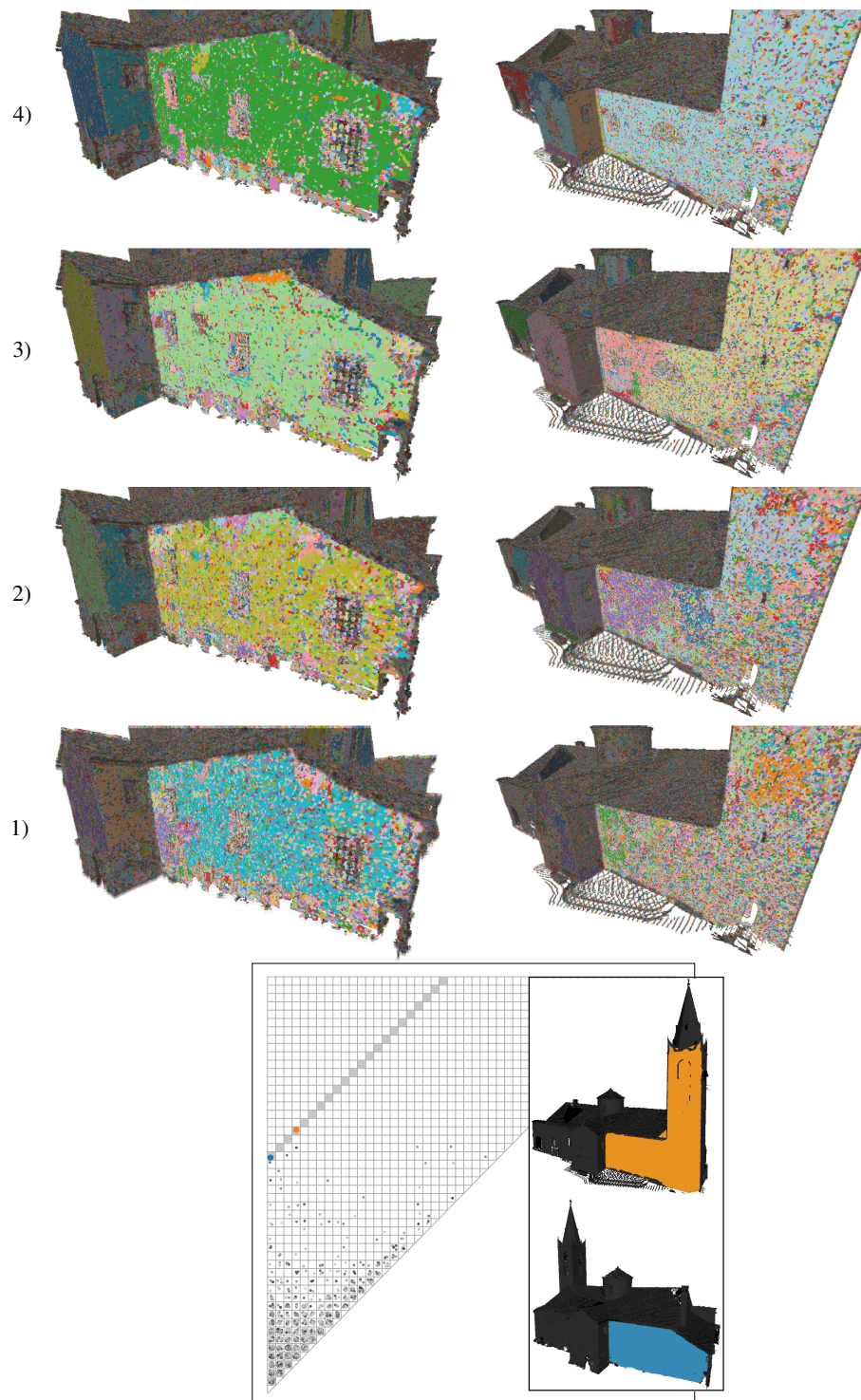


Figure 18: Top: raw segmentations at the four first scales increasing from bottom to top. Bottom: persistent diagram highlighting the two most persistent components. Noisy regions on the tower wall obtained at small scales explain why the corresponding orange component appears at a higher level of scale (see also Figure 7 of the article).