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).