



Bachelor Thesis

Generating Realistic Polygons

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Abstract

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This thesis template is available at <https://github.com/parcio/templates> and consists of Chapters 2 to 5. It also contains Chapter A.

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Chapter 1.

Merge Closest Chains Algorithm

The main idea of this algorithm is that vertices that are far apart from each other should less likely be part of the same edge. During the process, the algorithm builds up long polygonal chains. In each iteration, the polygonal chains that are closest to each other are merged. A single point is also considered a polygonal chain, so in the first iteration the algorithm will merge the two points with the smallest distance.

1.1. Pseudocode

```
1 function merge_closest_chains(PointSet point_set) -> Polygon {
2   polygonal_chains := point_set
3   while (polygonal_chains.size > 1) {
4     a, b := find_pair_of_nearest_chains(polygonal_chains)
5     c := merge_chains(a, b)
6     polygonal_chains.remove(a)
7     polygonal_chains.remove(b)
8     polygonal_chains.add(c)
9   }
10  return Polygon(polygonal_chains)
11 }
12
13 function find_pair_of_nearest_chains ()
14
15 function merge_chains(PolygonalChain a, PolygonalChain b) -> PolygonalChain {
16   // TODO add implementation
17 }
18
```

bla

Chapter 2.

Introduction

In this chapter, Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aequale doleamus animo, cum corpore dolemus, fieri tamen permagna accessio potest, si aliquod aeternum et infinitum impendere malum nobis opinemur. Quod idem licet transferre in voluptatem, ut.

2.1. Motivation



(a) Left



(b) Right

Figure 2.1.: Caption

You can refer to the subfigures (Figures 2.1a and 2.1b) or the figure (Figure 2.1).

Summary

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Chapter 3.

Background

In this chapter, ...

3.1. Citations

You can comfortably reference literature [Duwe et al., 2020].¹ BibTeX entries for a large number of publications can be found at <https://dblp.org/>. [Girshick, 2015]

3.2. Tables

Header 1	Header 2	Header 3
Row 1	Row 1	Row 1
Row 2	Row 2	Row 2

Table 3.1.: Caption

You can also refer to tables (Table 3.1).

3.3. Math

$$E = mc^2 \tag{1}$$

Summary

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¹This is a footnote.

Chapter 4.

Evaluation

In this chapter, ...

4.1. Listings

```
1 printf("Hello World!\n");
2
3 // Comment
4 for (int i = 0; i < m; i++) {
5     for (int j = 0; j < n; j++) {
6         sum += 'a';
7     }
8 }
```

Listing 4.1.: Caption

You can also refer to listings (Listing 4.1).

Summary

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Chapter 5.

Conclusion

In this chapter, ...

5.1. Todos

FIXME

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FIXME:
remove
this

Summary

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Bibliography

- [Duwe et al., 2020] Duwe, K., Lüttgau, J., Mania, G., Squar, J., Fuchs, A., Kuhn, M., Betke, E., and Ludwig, T. (2020). State of the Art and Future Trends in Data Reduction for High-Performance Computing. *Supercomput. Front. Innov.*, 7(1), 4–36. (Cited on page 3)
- [Girshick, 2015] Girshick, R. (2015). Fast R-CNN. (Cited on page 3)

Appendix A.

Appendix

```
1 printf("Hello World!\n");
2
3 // Comment
4 for (int i = 0; i < m; i++) {
5     for (int j = 0; j < n; j++) {
6         sum += 'a';
7     }
8 }
```

Listing A.1.: Caption

Statement of Authorship

I herewith assure that I wrote the present thesis independently, that the thesis has not been partially or fully submitted as graded academic work and that I have used no other means than the ones indicated. I have indicated all parts of the work in which sources are used according to their wording or to their meaning.

I am aware of the fact that violations of copyright can lead to injunctive relief and claims for damages of the author as well as a penalty by the law enforcement agency.

Magdeburg, September 28, 2024

Signature