Geometric model simplification with QSlim *

Giulia Clementi

February 10, 2016

Abstract

This document shows a preliminary investigation on the problem of geometric model simplification. The aim is to implement a novel progressive approach, from finest to coarser resolutions, within the LAR+Visus architecture.

Contents

1 Introduction to Qslim

Qslim is a c++ library for model simplification.

Input:

- Model in obj format;

- Number of faces of the desired output model.

Output:

- Simplified obj model with the specified number of faces.

---

2 Test example 1

⟨ Basic example 2 ⟩ ≡

```
cd path/to/qslim-2.1/tools/qslim/
./qslim -t 20000 -o path/to/qslim.obj path/to/out_sm_i_tr.obj
◊
```

Macro never referenced.

The input model has been extracted with LarVolumeToObj, python module in LAR(Linear Algebraic Representation).

Input data

- Triangle mesh;

- Size:256x256x30;

- Threshold:8;

- Median filter:3;

- Number of vertices:210809;

- Number of faces:207170.

Output model

- Triangle mesh;

- Same size;

- Number of vertices:13705;
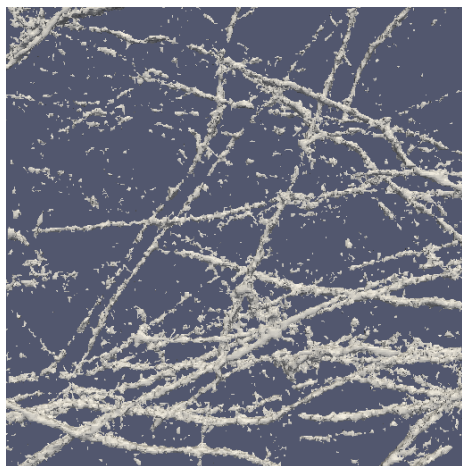
- Number of faces:20000.
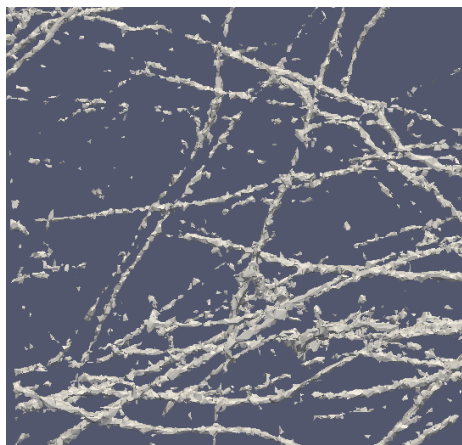
Figure 1: Model at finest resolution;

Figure 2: Decimated model.

References

A. PAOLUZZI, A. DI CARLO, F. FURIANI, M. JIRIK, *CAD models from medical images using LAR*, Computer-Aided Design and Applications,2015. Preliminary version in CAD'15, June 22-25, 2015, London, UK;

M. GARLAND, QSlim project