

Digital 3D Geometry Processing

Exercise 6 – Surface Reconstruction

Handout date: 02.04.2019

Submission deadline: 09.04.2019, 13:00 h

What to hand in

A .zip compressed file renamed to `Exercise n -GroupMemberNames.zip` where n is the number of the current exercise sheet. It should contain:

- Hand in **only** the files you changed (headers and source). It is up to you to make sure that all files that you have changed are in the zip.
- A `readme.txt` file containing a description on how you solved each exercise (use the same numbers and titles) and the encountered problems. Indicate what fraction of the total workload each project member contributed.
- Other files that are required by your `readme.txt` file. For example, if you mention some screenshot images in `readme.txt`, these images need to be submitted too.
- Submit your solutions to ILIAS before the submission deadline. Late submissions will receive 0 points! The total points of this homework is 10.

Coding Exercise (3 pts)

The goal of this exercise is to get one an idea on how the poisson surface reconstruction works in practice. The method first setup an adaptive octree with specified depth. Then with given points coordinates and normals, it computes the indicator function by solving a Poisson equation. In the end, the iso-surface is extracted and triangulated.

- Download `Plugin-DGPExercises.zip` and replace the old files.
- Add your code in the function `prepare_data()` in the `PoissonReconstructionT.cc`. Feed the data to the vector `_pt_data`. The container holds two 3D vectors in 6 columns, first the point coordinates, followed by the normals. The input data is a triangle mesh in OpenMesh data structure. You can serialize the data with the iterators that you learned before.
- Run the algorithm on your scanned model and experiment with the octree depth parameter. Briefly write a summary and make screenshots of what you observe.