

COMP 5411 : Advanced Computer Graphics
Fall 2017
Programming Assignment 1
Released: Thursday, September 21, 2017
Due: Sunday, October 1, 2017

Now that you have gotten familiar with the half-edge data structure, you are ready to build upon the give code and implement Laplacian smoothing. Specifically, in this assignment you are required to implement the following functionalities.

- *Laplacian smoothing.* Implement both the explicit and implicit Laplacian smoothing schemes. For each of the two schemes, you should implement using the uniform weights and the cotangent weights. Note that the implicit method involves solving a sparse linear system. For this purpose, you may implement the iterative biconjugate gradient solver. Please refer to this webpage (https://en.wikipedia.org/wiki/Biconjugate_gradient_method).

Please refer to the supplemental slides for more details.

Submission

Please submit your zipped file with a name “COMP5411-[Your_full_name]-[Your_student_ID]” to CASS Submission System at <https://course.cse.ust.hk/cass>. For the usage of this system, please refer to this webpage (<http://cssystem.cse.ust.hk/UGuides/cass/student.html>).

The following items are required in your zipped file: 1) compilable source code; 2) executable program; 3) a report in pdf format. Specifically, the report should contain the following information:

- Screenshots of the meshes before and after Laplacian smoothing. At least you need to include these three test-case meshes: “data/bunny.obj” “data/cube_bumpy.obj” “data/feline.obj”
- Your conclusion on the smoothing part, including a comparison between the two smoothing schemes and your insight on the parameters, timing, etc.

If you use any special library, please state it in the report.