Geometry Processing Report

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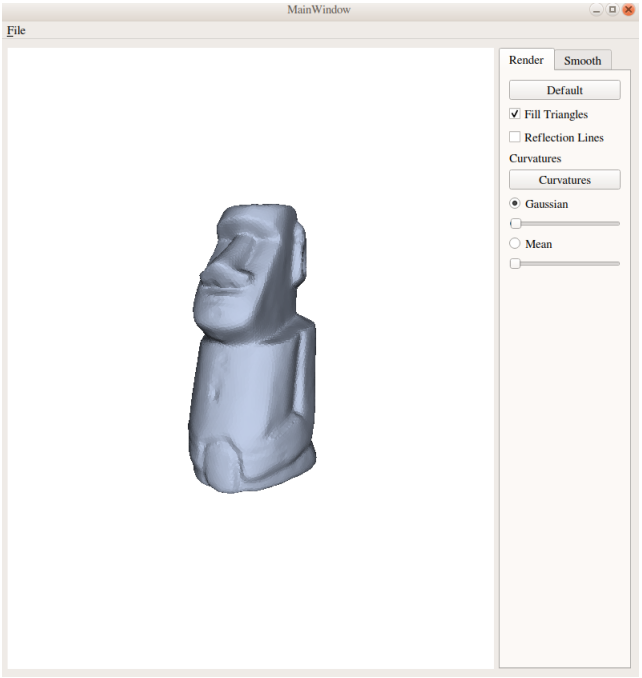
1 Interface

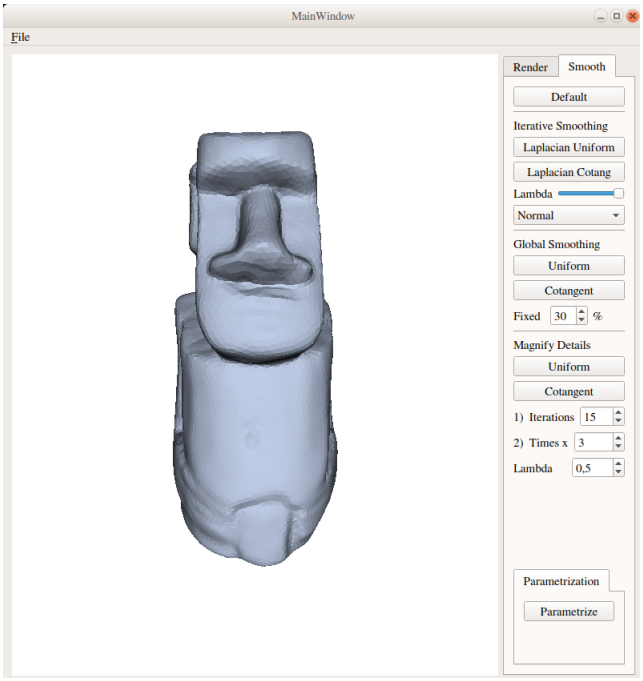
The program presents a basic interface whit different options. On the right side there are all the available interaction. There are two main tab: Render and Smooth. Both of them with a default button that restores the original mesh.



1.1 Render

The render tab manages the colors, allows the computation of the Curvature and their representation as colors on the mesh.
Under both the Gaussian and the Mean curvature there is a parameter that is settable to adapt the curvature visualization to different models in the shader

(the visualization is not woworkingrks perfectly with all the models).
There is also the possibility of visualize the reflection lines on the model.



1.2 Smooth

The smooth tab performs the iterative smoothing, both Laplacian and Cotanget, allowing the tuning of the lambda parameter (set by default at 1.0). There is also the possibility to switch between Normal, Bilablacian and Tabuin computation.
In the next segment there is the Golbal Smoothing with both Uniform and Cotangent, it is also possible to personalize the percentage of fixed vertices of the mesh.
The last segment is for the Magnification of the high frequencies details. It has both Cotangent and Uniform approach and in this case it is possible to select hoe many smoothing iteration to compute for Smooth(1) (Iterations) and how many more time for Smooth(2) (Iteration x Times). Even in this case it is possible to modify the lambda value.

Each operation is performed every time the button is pressed, and the initial mesh can always be restored through the "Default" button.

1.3 Parametrization

Unfortunately I was not able to complete the visualization of the parametrization, I have a code that is not completely working for the uploading of the texture coordinate. All the previous computation are performed: there is a function to compute the border of the open mesh, a new function for computing the ring(neighbours) of a vertex that take into account the hole in the mesh, and the parametrization by solving the linear system.
I wasn't able to test if the results were working or not.

2 Code

All the relevant code is in the triangleMesh file.