MeshLab

★ Computing Inertia

Steps

1. Import the mesh.
2. Display the Layers dialog - "View->Show Layer Dialog"
3. Choose "Filters->Quality Measure and Computations->Compute Geometric Measures" from the menu.

⇒The lower part of the Layers dialog should now show some info about the inertial measures.

```
Mesh Bounding Box Size 2.000000 2.000000 2.000000
Mesh Bounding Box Diag 3.464102
Mesh Volume is 4.094867
Mesh Surface is 12.425012
Thin shell barycenter -0.000000 -0.000000 -0.000000
Center of Mass is -0.000000 0.000000 -0.000000
Inertia Tensor is :
| 1.617916 -0.000000 0.000000 |
| -0.000000 1.604620 -0.000000 |
| 0.000000 -0.000000 1.617916 |
Principal axes are :
| 0.000000 1.000000 0.000000 |
| -0.711101 -0.000000 0.703089 |
| -0.703089 0.000000 -0.711101 |
axis momenta are :
| 1.604620 1.617916 1.617916 |
```

{Example}

⇒Note: Each mesh has a coordinate frame attached to it. All the parameters are calculated from this coordinate frame.

● Inertia Matrix

⇒It is not explicitly stated in the output, but the mass is equal to the volume (implicitly using a density of 1).

⇒The moments of inertia are proportional to mass.

$$I_{true} = \left(\frac{Mass}{Volume}\right) \times I_{computed}$$