

Computer Graphics Seminar

MTAT.03.305

Spring 2016



IT Akadeemia
toetab Skype™



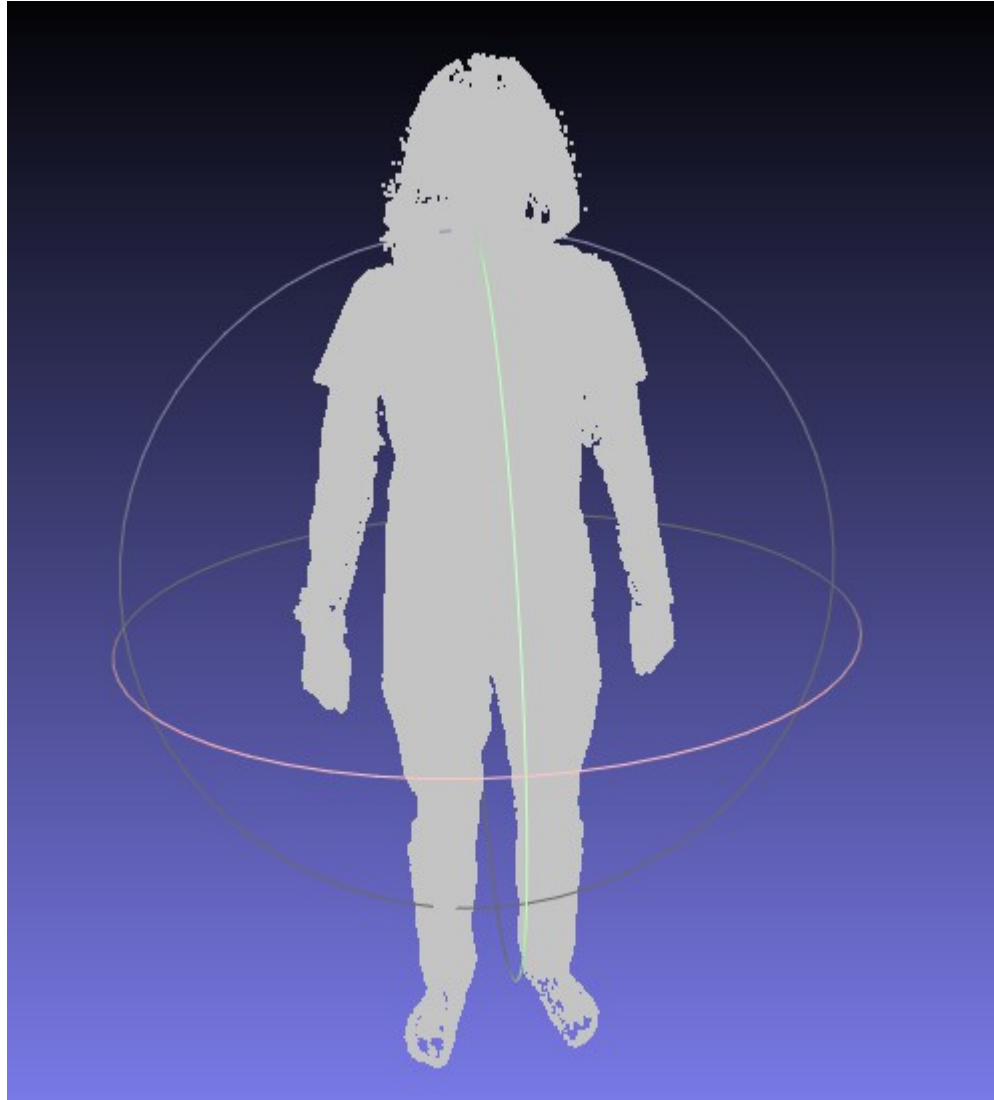
Raimond Tunnel

So you have some scan data...

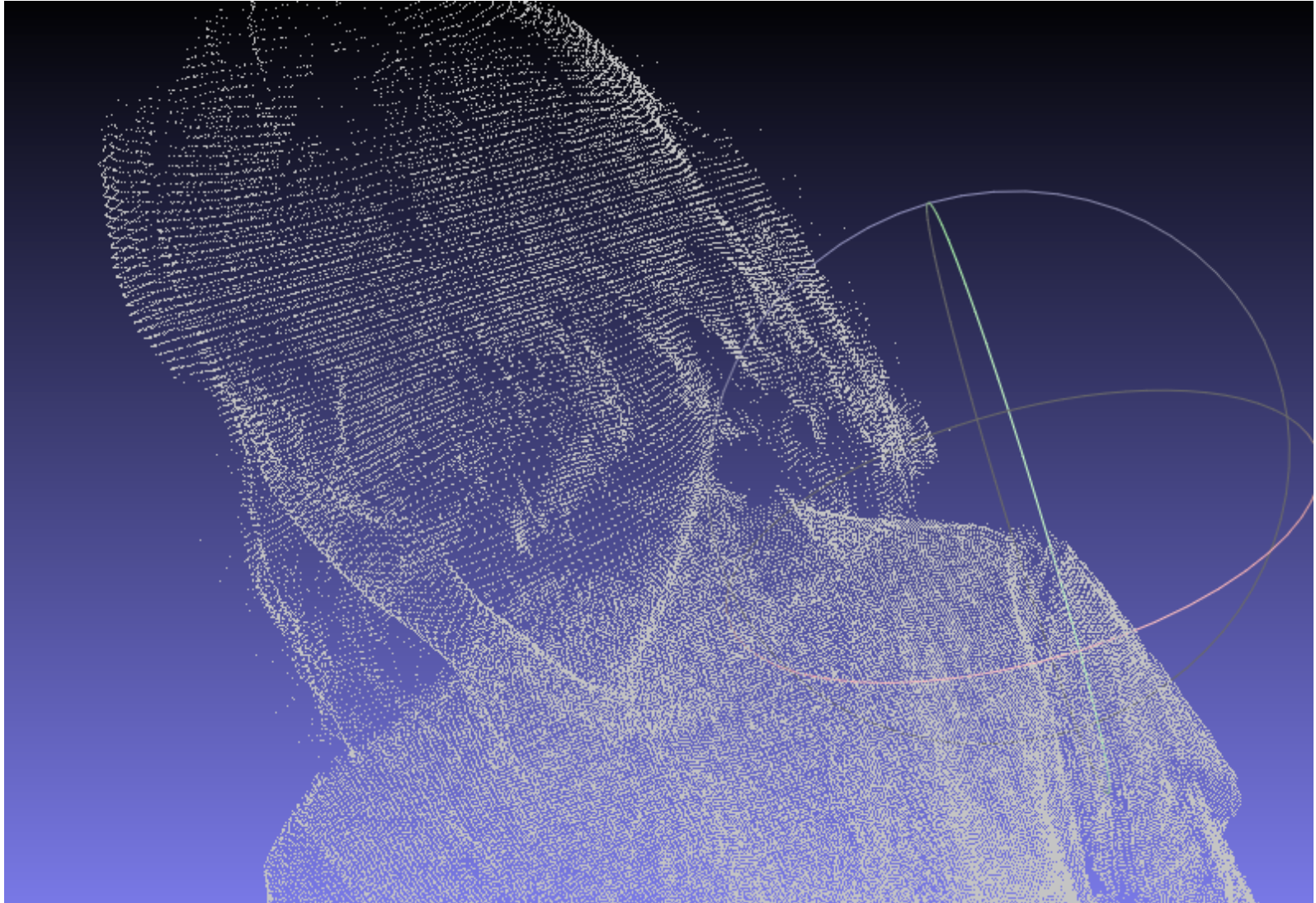
- First step, get a MeshLab
(or some alternative point cloud manipulation software)
- <http://meshlab.sourceforge.net/>



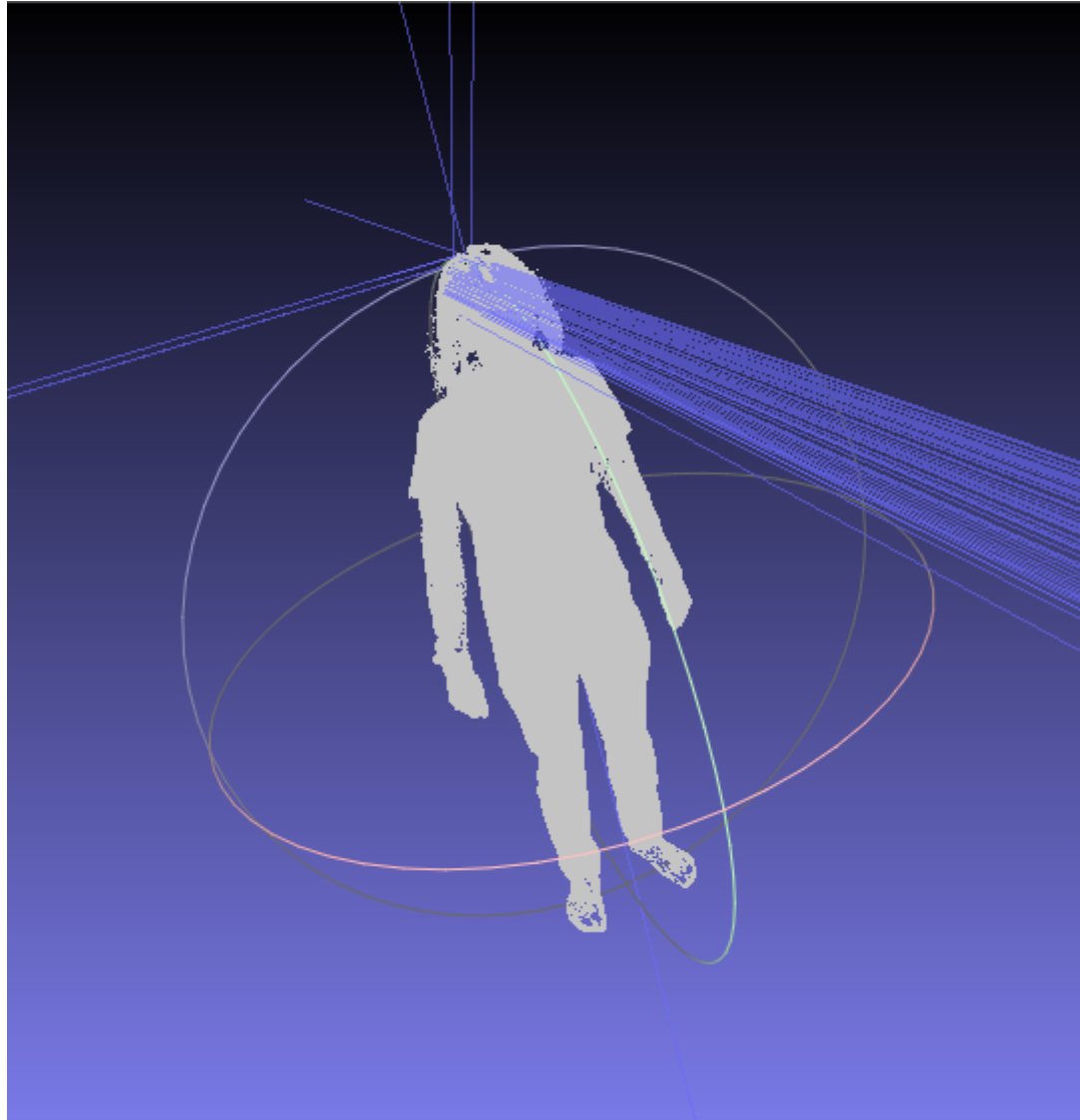
Import Your Point Cloud



It Really Is a Point Cloud

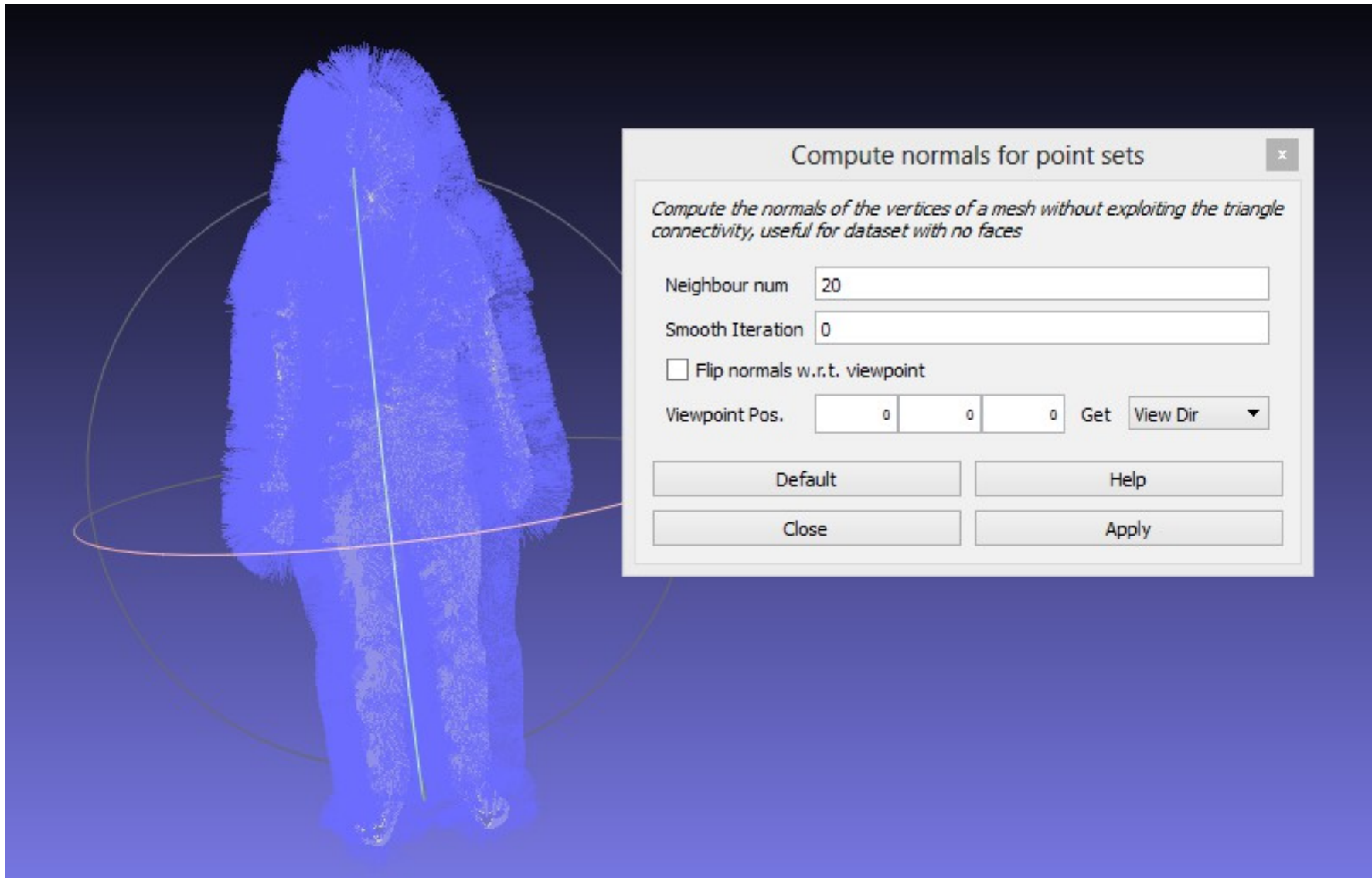


Render Show → Normals



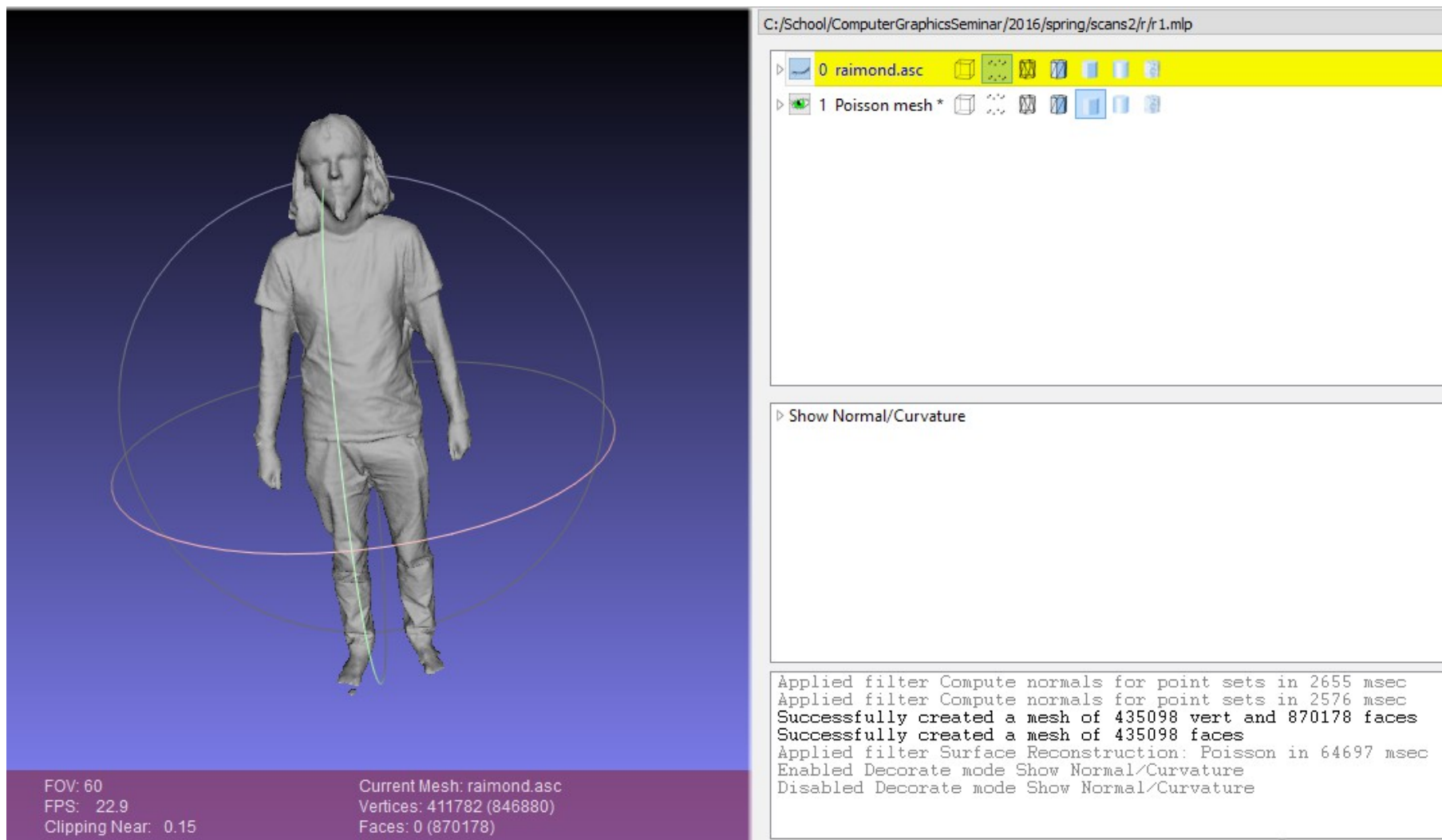
Compute Normals For Point Set

Filters → Point Set → Compute Normals For Point Set



Construct the Surface

Filters → Point Set → Surface Reconstruction: Poisson



Lessen the Vertex Count

Filters → Remeshing, Simplification, Reconstruction
→ Quadric Edge Collapse Decimation

You might want to duplicate the mesh before.

The screenshot shows a 3D software interface. On the left, a character model is displayed within a wireframe bounding box. In the top right, a file explorer window shows a list of files: '0 raimond.asc', '1 Poisson mesh *', and '2 Poisson mesh_copy *'. The '2 Poisson mesh_copy *' file is highlighted in yellow. In the center, a dialog box titled 'Quadric Edge Collapse Decimation' is open. The dialog box contains the following settings:

- Target number of faces: 50000
- Percentage reduction (0..1): 0
- Quality threshold: 0.3
- Preserve Boundary of the mesh
- Boundary Preserving Weight: 1
- Preserve Normal
- Preserve Topology
- Optimal position of simplified vertices
- Planar Simplification
- Weighted Simplification
- Post-simplification cleaning
- Simplify only selected faces

At the bottom of the dialog box are buttons for 'Default', 'Help', 'Close', and 'Apply'. In the bottom right corner of the software interface, there is a console window with the following text:

```
rmals for point set  
rmals for point set  
rmals for point set  
rmals for point set  
rmals for point set  
sh of 435098 vert a  
sh of 435098 faces  
construction: Poiss  
w Normal/Curvature  
ow Normal/Curvature  
to layer 3  
Current layer in 24
```

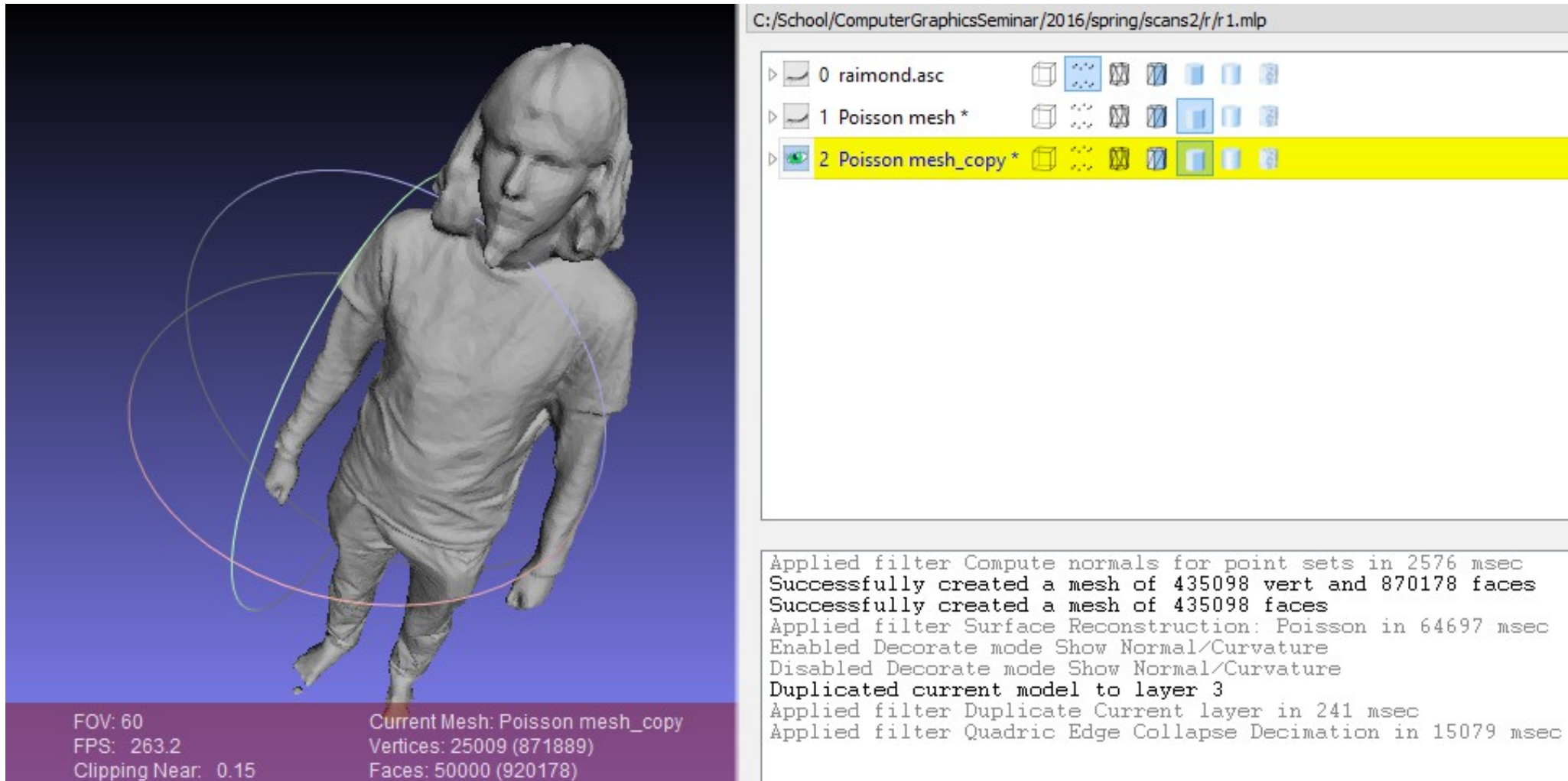
At the bottom left of the software interface, the following statistics are displayed:

FOV: 60
FPS: 21.5
Clipping Near: 0.15

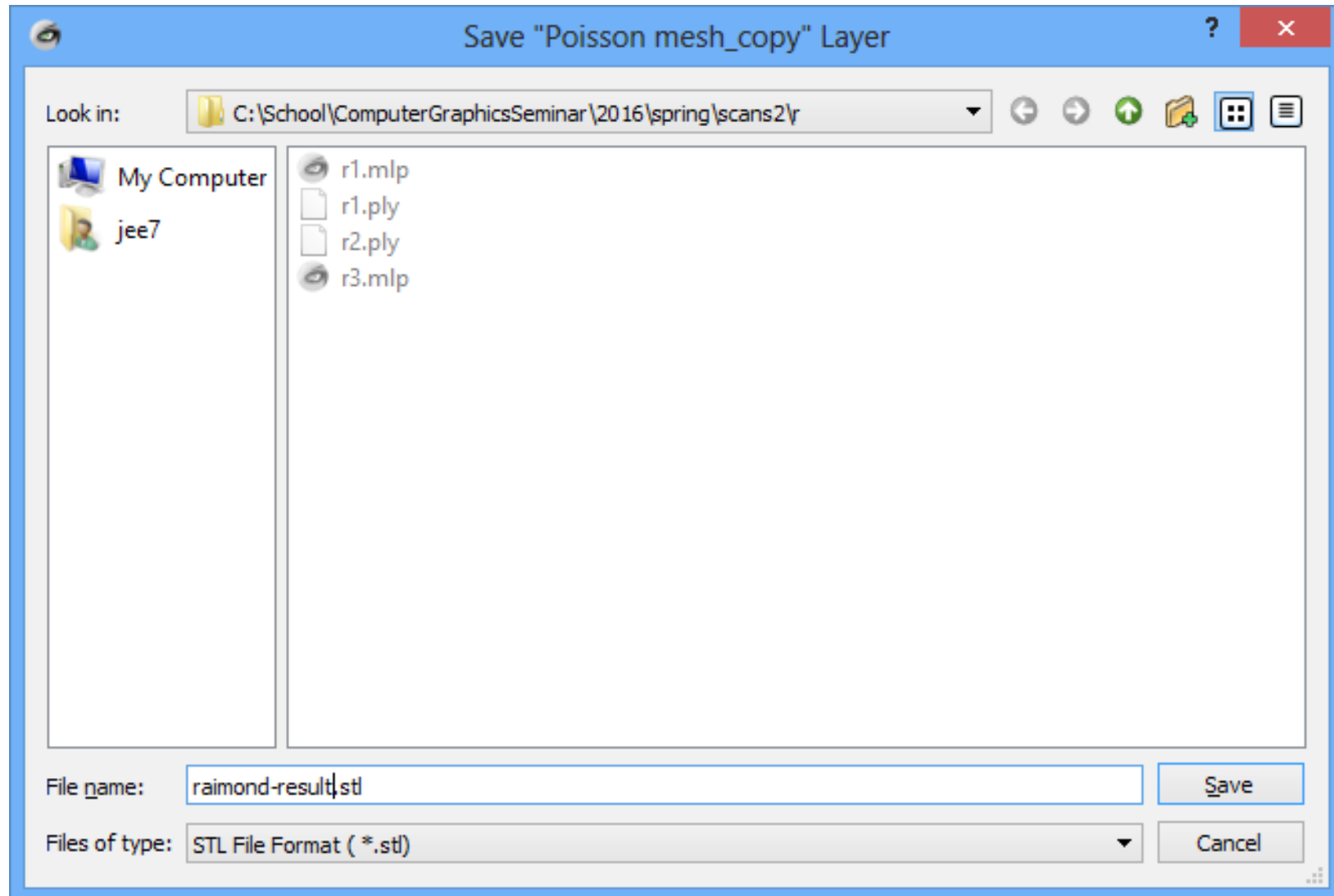
Current Mesh: Poisson mesh_co
Vertices: 435098 (1281978)
Faces: 870178 (1740356)

It Does Get a Bit Blurry

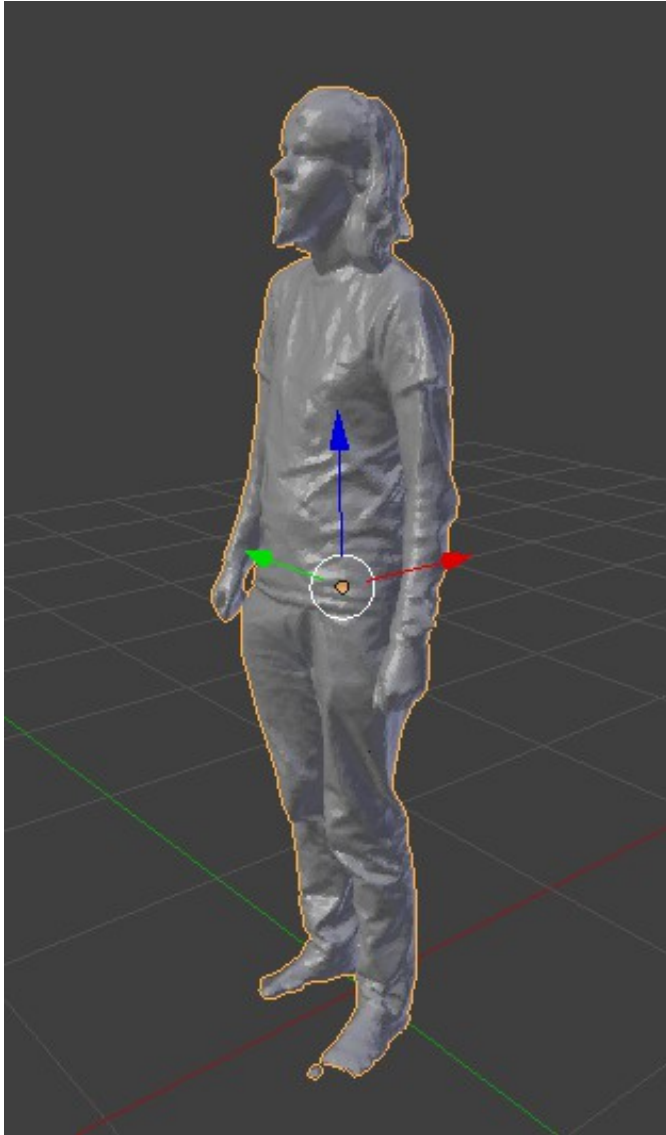
If possible you could try not to collapse the face. Not done here.



Export STL



Import to Blender



Done

- Tell me if you want to 3D print it out. :)
- Feel free to try out different tools in MeshLab.
- See also:
<http://ikuz.eu/2014/04/03/proof-of-concept-from-3d-scanner-to-animated-model/>

