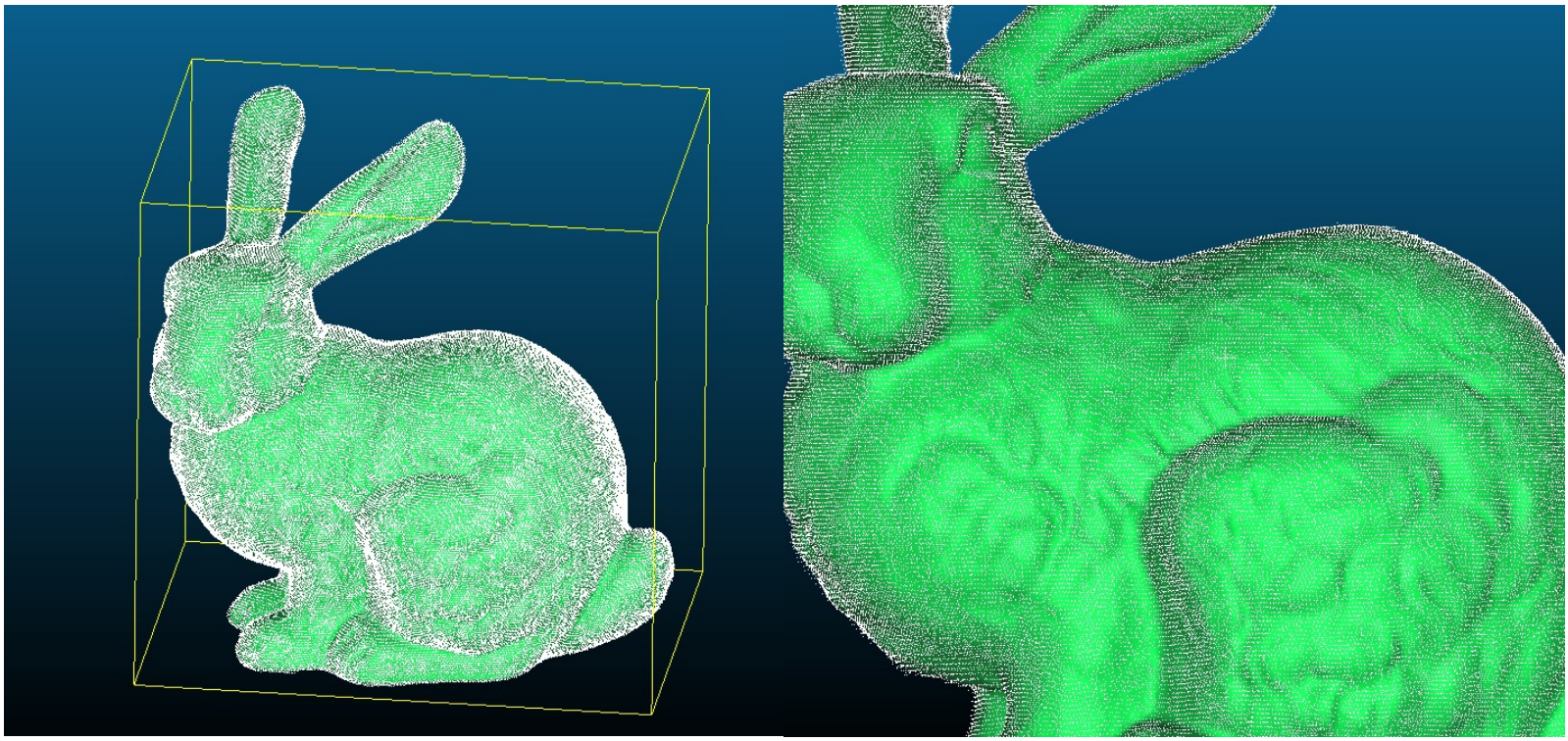
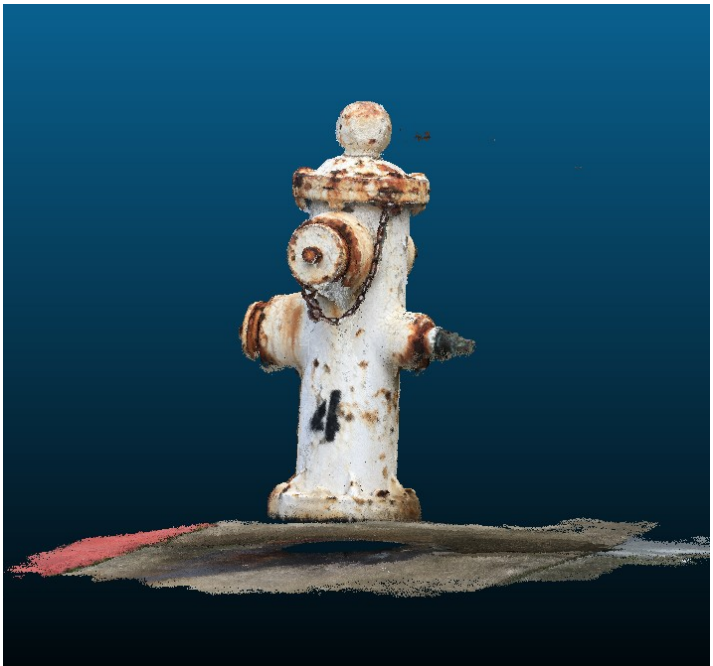
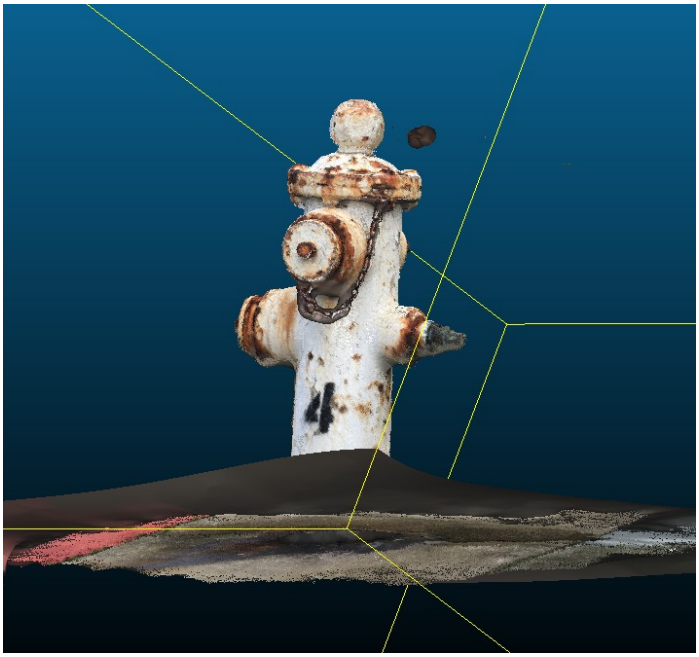
Questions 1 & 2:



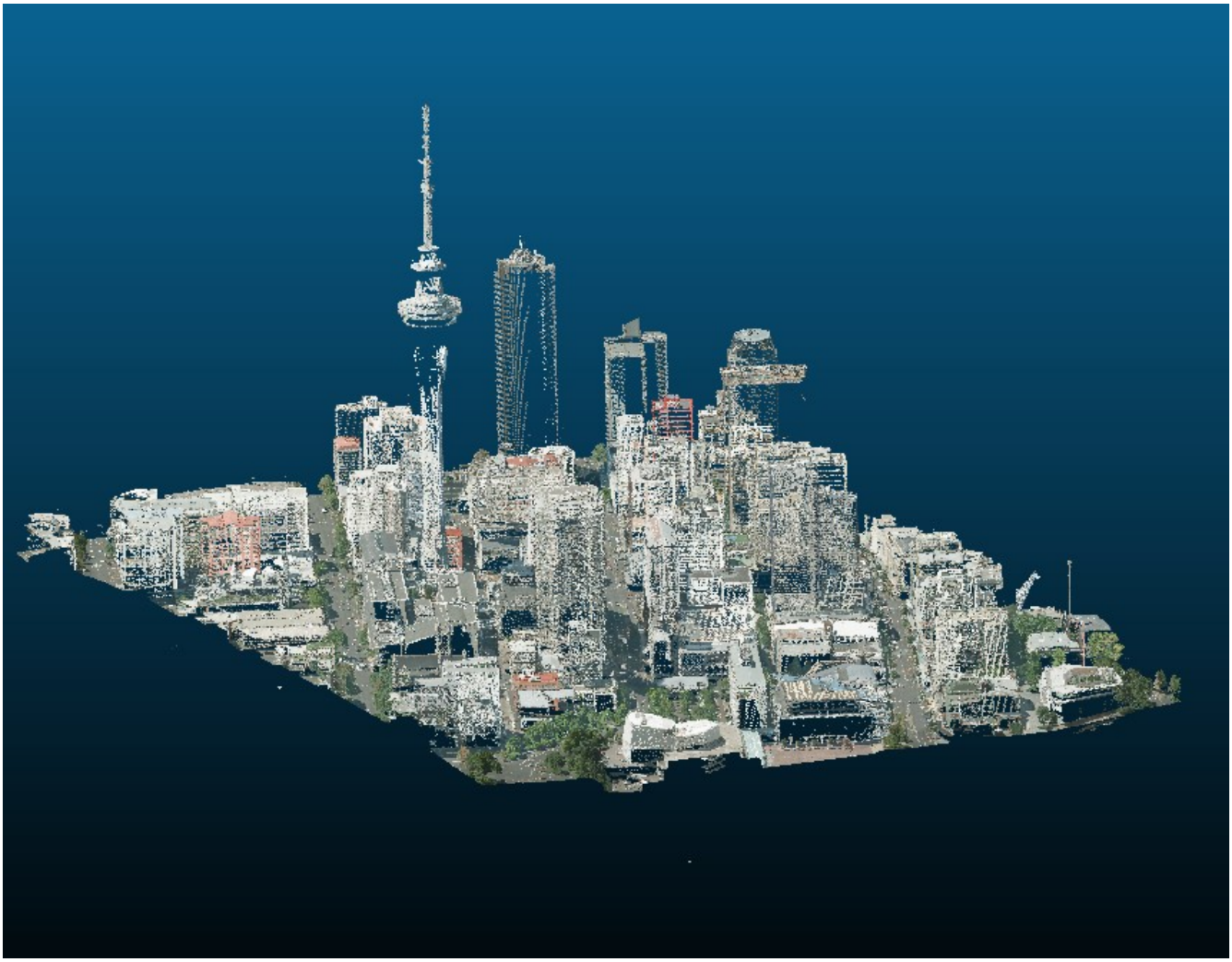
Here is the result for the Poisson reconstruction for the bunny. We can see that the fur is pretty well reconstructed.

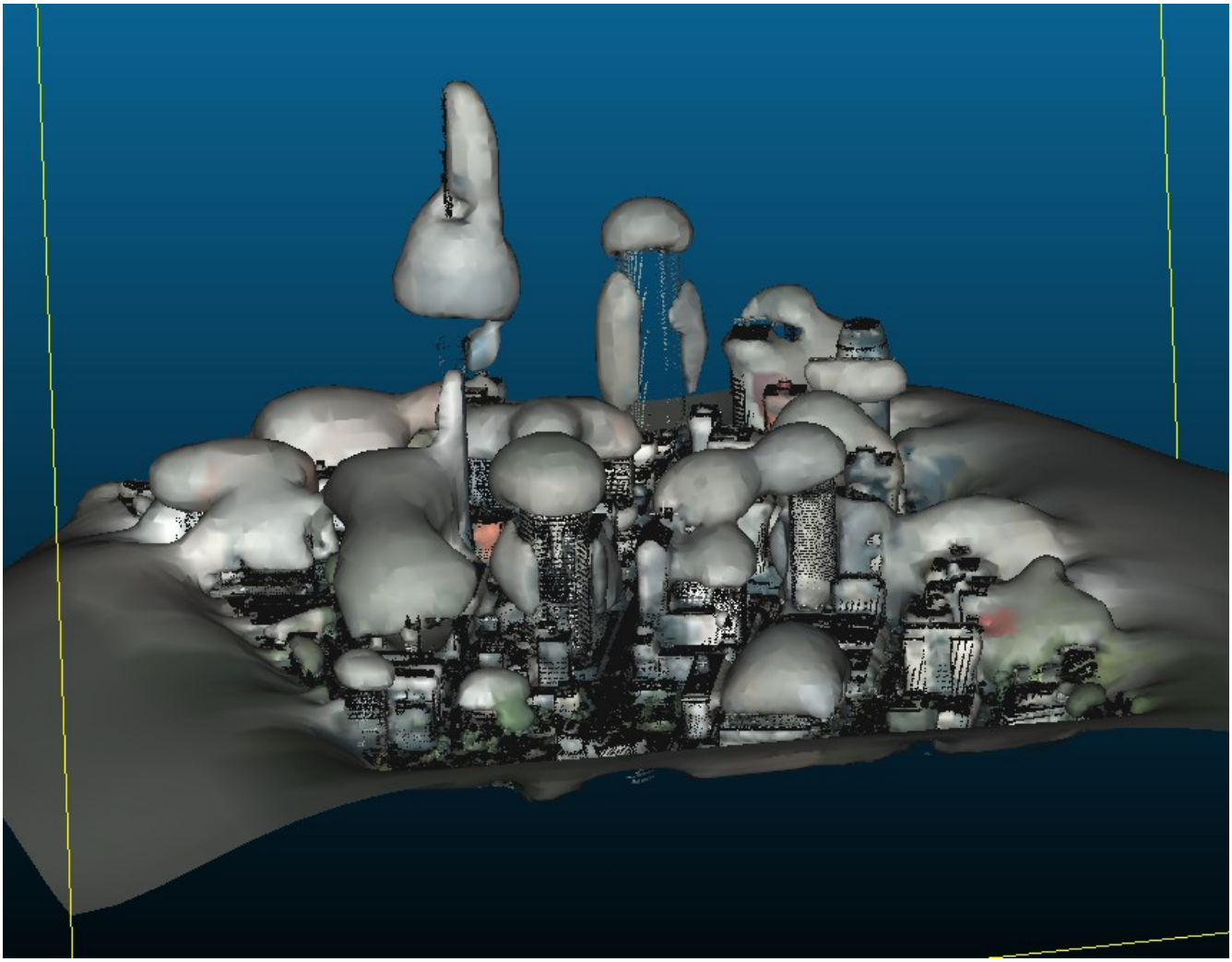
Let’s try with 2 other meshs : one of a fire hydrant, and the other one of Auckland’s CBD.





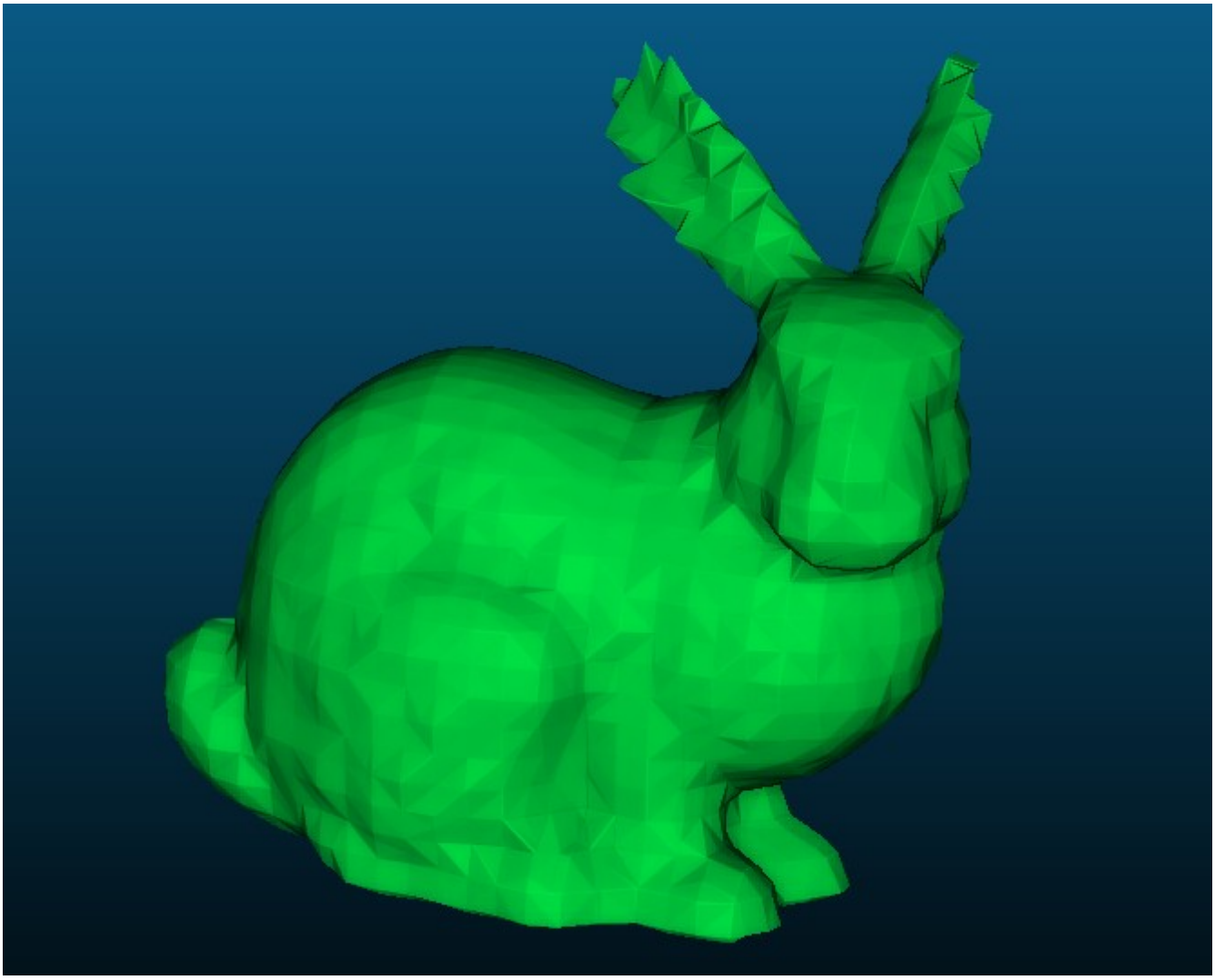
For the fire hydrant, the mesh is pretty precise and thus Poisson reconstruction works well. However, for details such as the chain, the original point cloud wasn’t too precise, which explains why the result is a little too much interpolated.



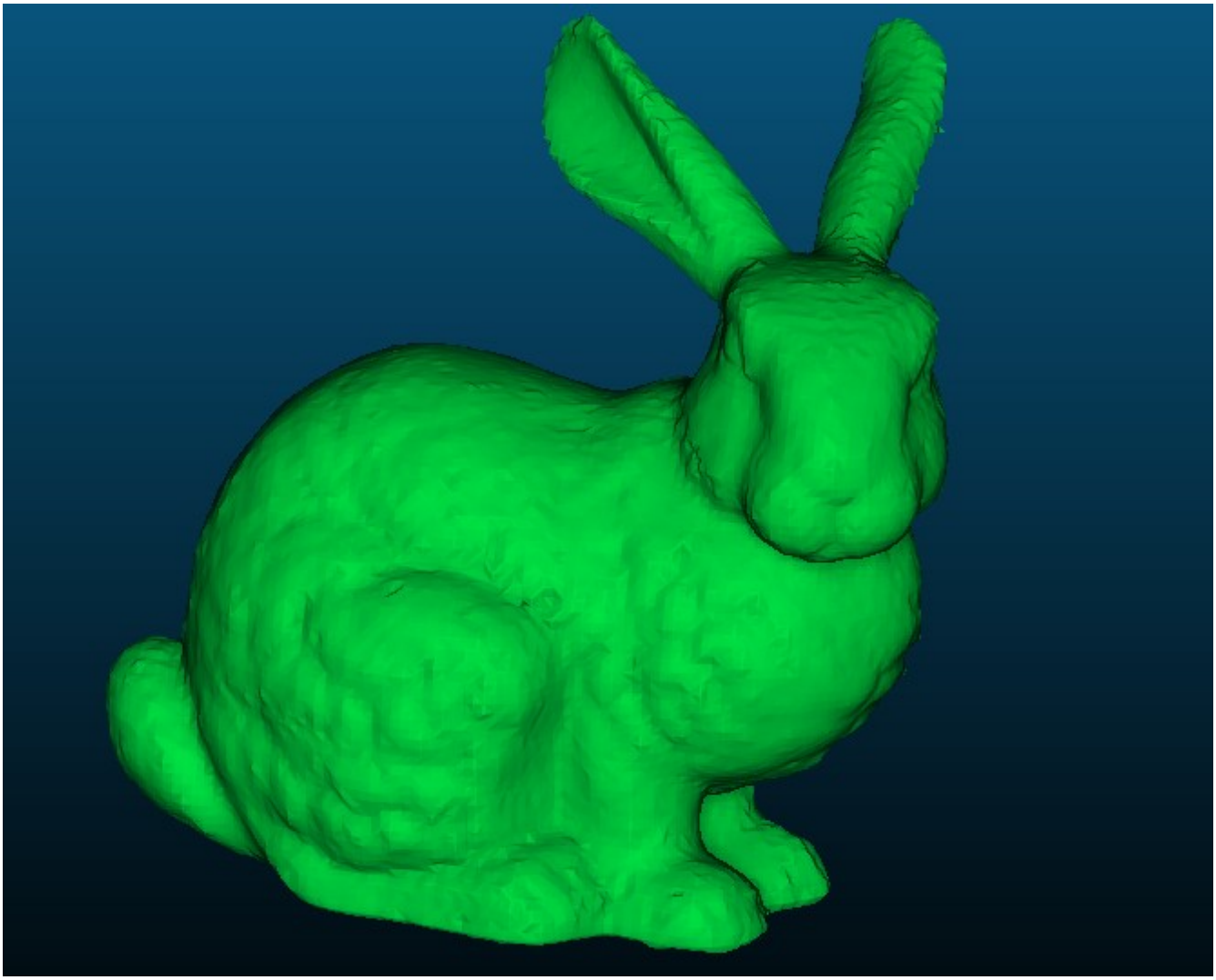


This point cloud has a few holes in it, so when we compute the normals and then the Poisson reconstruction, the final result shows bubbles artefacts (caused by the lack of points).

Question 3 :
With a grid_resolution of 30, computation takes approximately 1 second.

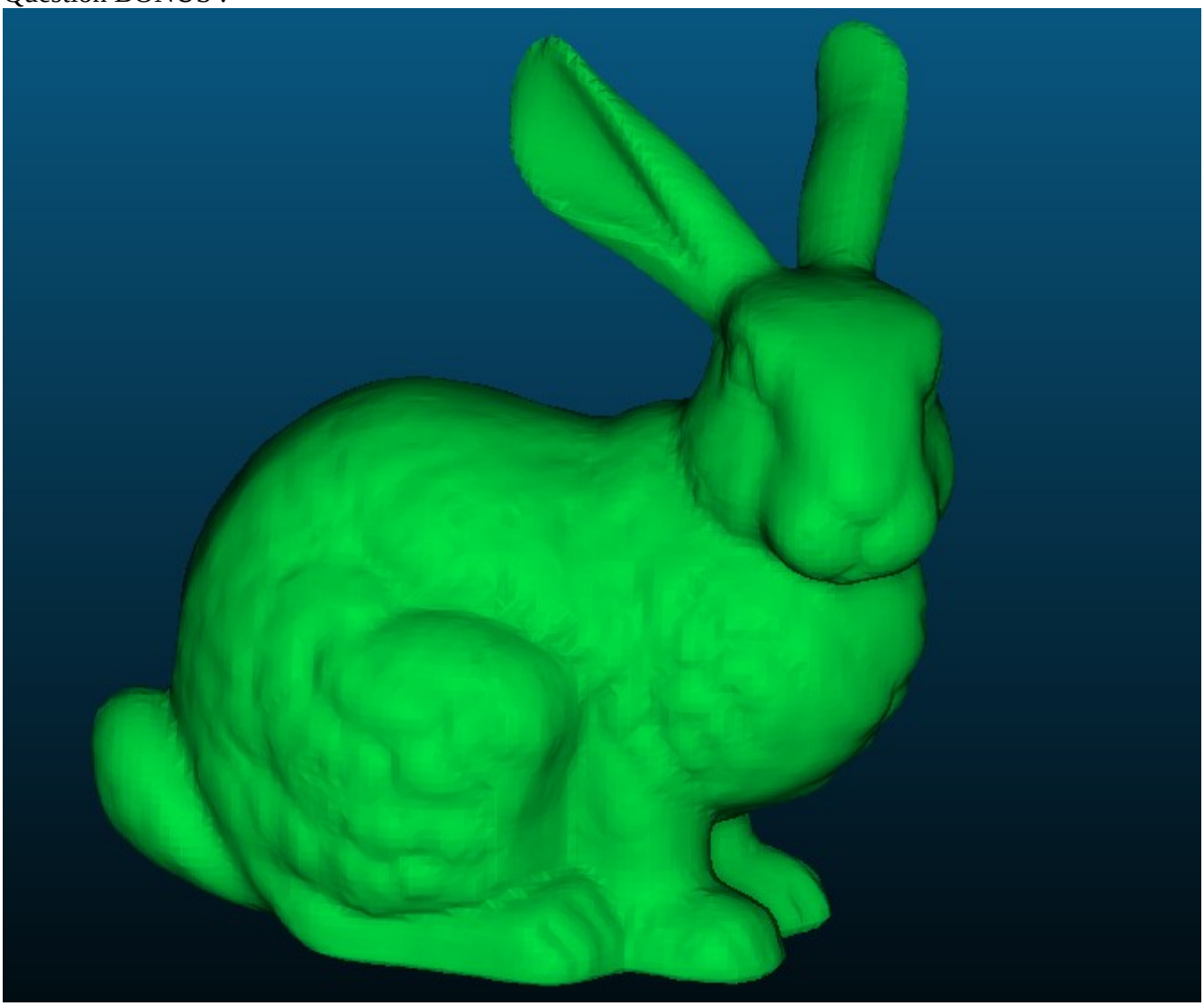


Question 4 :
With a resolution of 100, computation takes approximately 24 seconds.



The discretization is much less visible when we augment the resolution, which makes sense. Still, we can see that the fur isn’t well rendered (due to the fact that Hoppe function isn’t continuous).

Question BONUS :



In that case (IMLS), computation takes 40 seconds (with a grid resolution of 100).

The quality of the mesh is much better, the fur for example feels more well rendered. The whole rabbit is smoother (right above the bunny’s leg, for example, the imperfection is very visible with Hoppe function but not at all with IMLS reconstruction).