

1. **You should not stare directly into the Kinect's laser sensor. Retinal damage may occur if you stare directly into the sensor.**
2. The Skanect Pro program in use at Makerspace is the commercial single user license. It has an unlimited polygon export which should allow fairly detailed exports of 3D models.
3. Occipital Corp does maintain support pages and states email support is available. See: <https://skanect.occipital.com/support/> There are tutorials and basic instruction on-line; <https://web.faa.illinois.edu/app/uploads/sites/6/2021/05/Skanect-Scanning-Guide.pdf> , <https://www.instructables.com/How-to-3D-scan-with-Skanect/> ,
4. I could not get other software to work with the Microsoft Kinect at Makerspace. A newer version of the Kinect should work with Microsoft's software kit as well as other commercial software. I could not get any of that software to work with a used "version 2" Kinect I purchased from Gamestop or the Kinect at Makerspace. If someone has a newer version Kinect, I would be happy to try to make it work. **Skanect will NOT work with the newer version of the Kinect scanner.**
5. There are commercial scanners available in the < \$2,000 range and even the iPhone has a "time of flight" sensor and can be used for 3D scanning.
 - A. The setup seems to be geared to working with larger objects. You set the "bounding box" (how big the thing is you are scanning) in the software. I was scanning a small bust (about 6" tall) and had difficulty completing an adequate scan. After backing away about 1 meter from the object I finally succeeded. When scanning, the Skanect program shows the object in green when it is successfully collecting data and red when there are problems. Moving too fast or jerking or jittering while scanning usually results in failure. **Patience and Smoothness are necessary.**
 - B. The hole-filling and smoothing algorithms tend to distort flat surfaces as well as smooth over distinct edges. You may want to perform a second crop again after hole-filling and smoothing.
 - C. I printed 2 objects that I posted on the showcase. One was quite smooth and it had well over 500,000 faces and vertices. The other was a quick scan and had as few faces and vertices as possible. That configuration produces a model that shows the triangles the program uses to build the model. Here are the two models I printed.

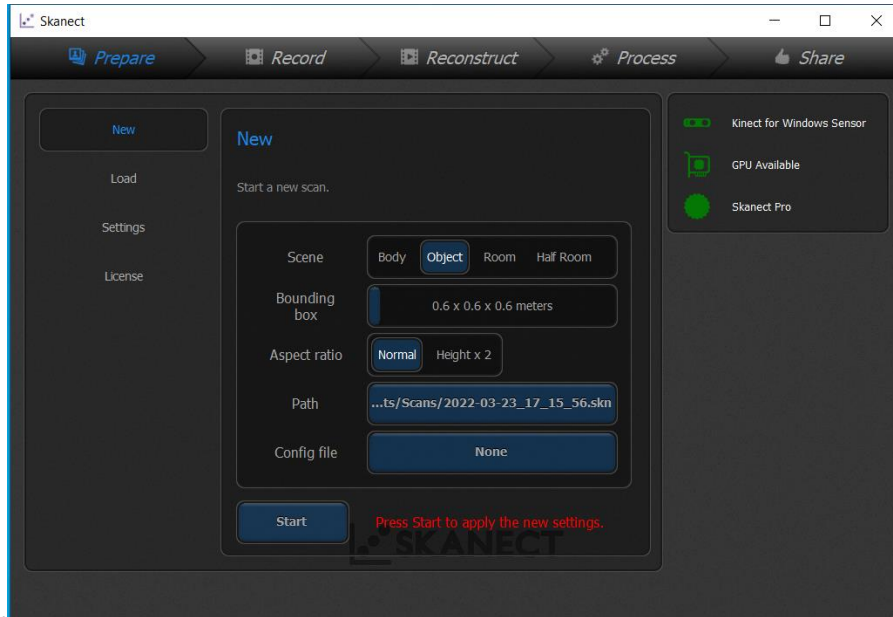


D. I believe the smaller diameter filament used increased the reflectivity and also enhanced the Moiré pattern evident on the smooth print.

E. I had problems with holes in the models I created and had to manually fill holes in the STL models I exported from the Skanect program. I used the MeshMixer program somewhat successfully.

F. The “closed hull” smoothing and hole filling method seemed to perform best for my work.

A shortcut to the Skanect program is on the desktop. Click it to start the program. When the program successfully loads you should see the following screen. There should be 3 green symbols on the top left showing that the program has located the software license, the Kinect, and the graphics

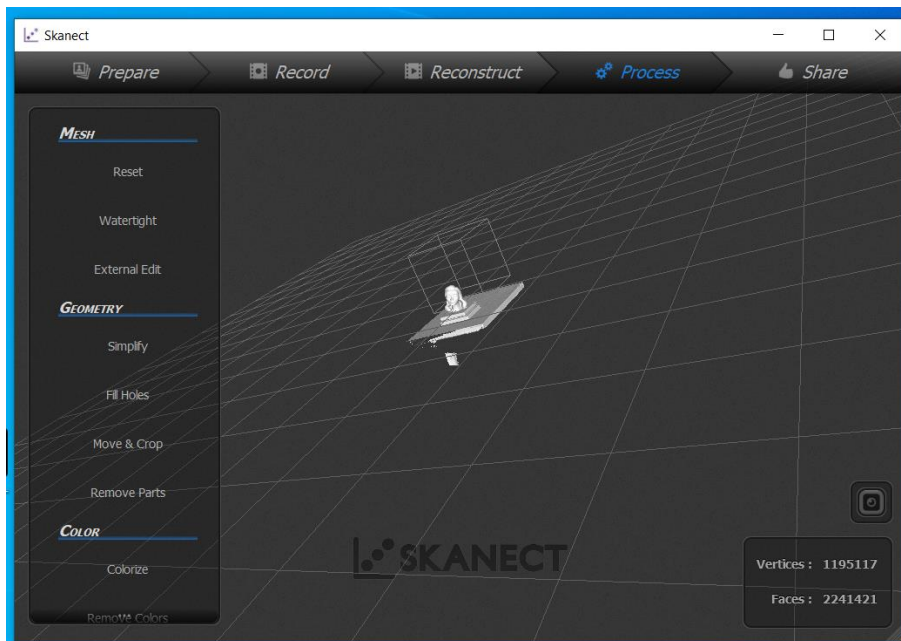


processor.

You can select the object being scanned (object, body, room) and also set the “bounding box” to set the size of the object being scanned by dragging the slider after clicking control. Then click the start button.

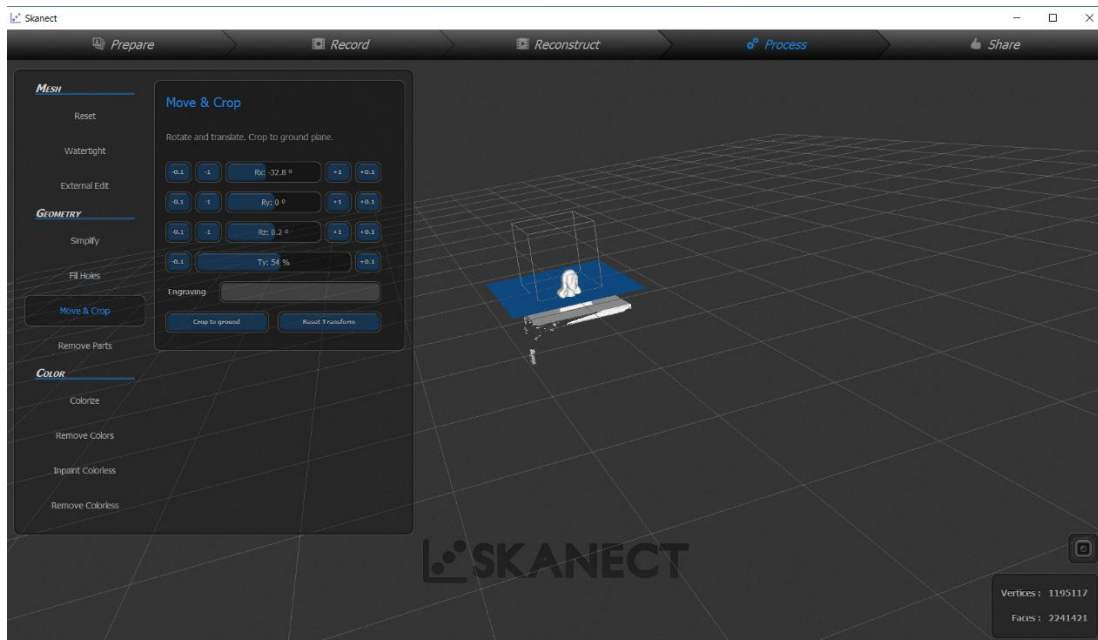
When recording the object being scanned, the object will show green when it is successfully recording and show red when there are problems (either you are too close to the object or the object is beyond the bounding box. If you encounter errors when scanning.

You can stop and delete the attempted scan by clicking on the trash can and waiting for it to purge the contents.

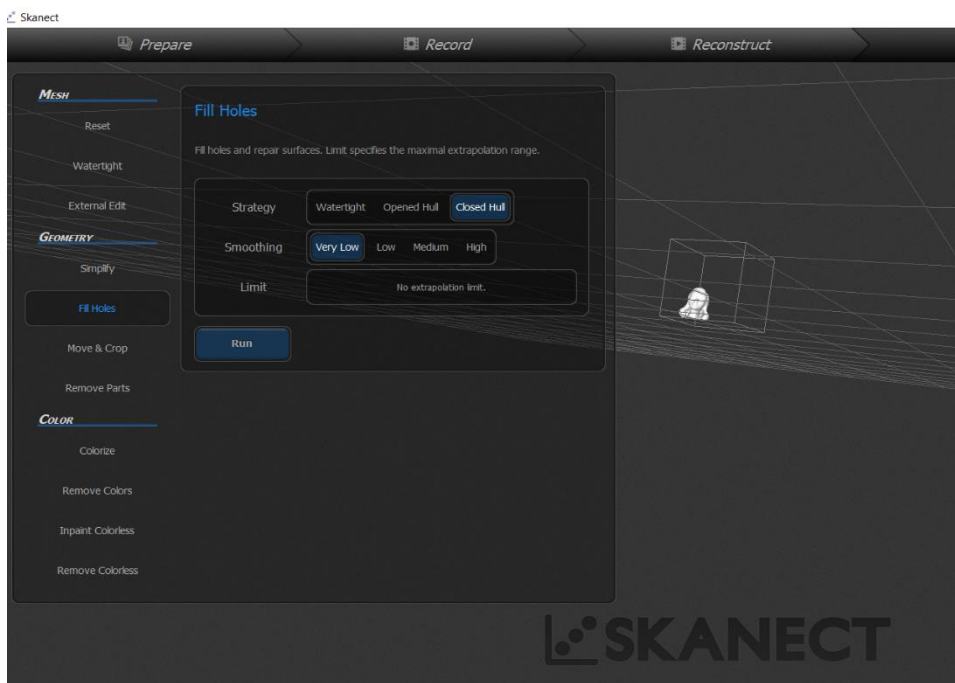


After recording the object you can edit the object to remove junk and select only the portion you want as well as to fill gaps or holes in the model. The following screen shot is the best capture I achieved. Note that it show 2,241,421 faces and over 1 million vertices in the lower right corner

You can crop the object by clicking that option in the right column. A blue plane is shown and you can rotate it on 3 axis (The middle larger controls are sliders and you can click and drag them. Once you determine which directions you want to go, you can use the smaller buttons on the left and right to rotate the plane a small amount. Once the object is positioned you can move the cutting plane up and down with the bottom slider control. It took me several tries to get it the way I wanted.



When you click the crop to ground button it will remove the parts of the object below the plane. The simplify button can remove extraneous parts of the captured model.



It is likely necessary to fill holes in the model. I seemed to have the best luck using the Closed Hull strategy with very low smoothing. Even with very low smoothing, I lost the detailed edges in the model. Mike also noticed that the flat base from cropping became slightly rounded after performing this operation. You may

want to crop again after filling holes.

I did not use the external edit and do not remember what the watertight option did. I also did not pursue the color options.

When you have completed your edits, you can click the share option (top right). You can save your work as you go (I highly recommend that as you can play back your scan and try editing again. From the share option, you can export your model as an STL file to feed to the printing programs.