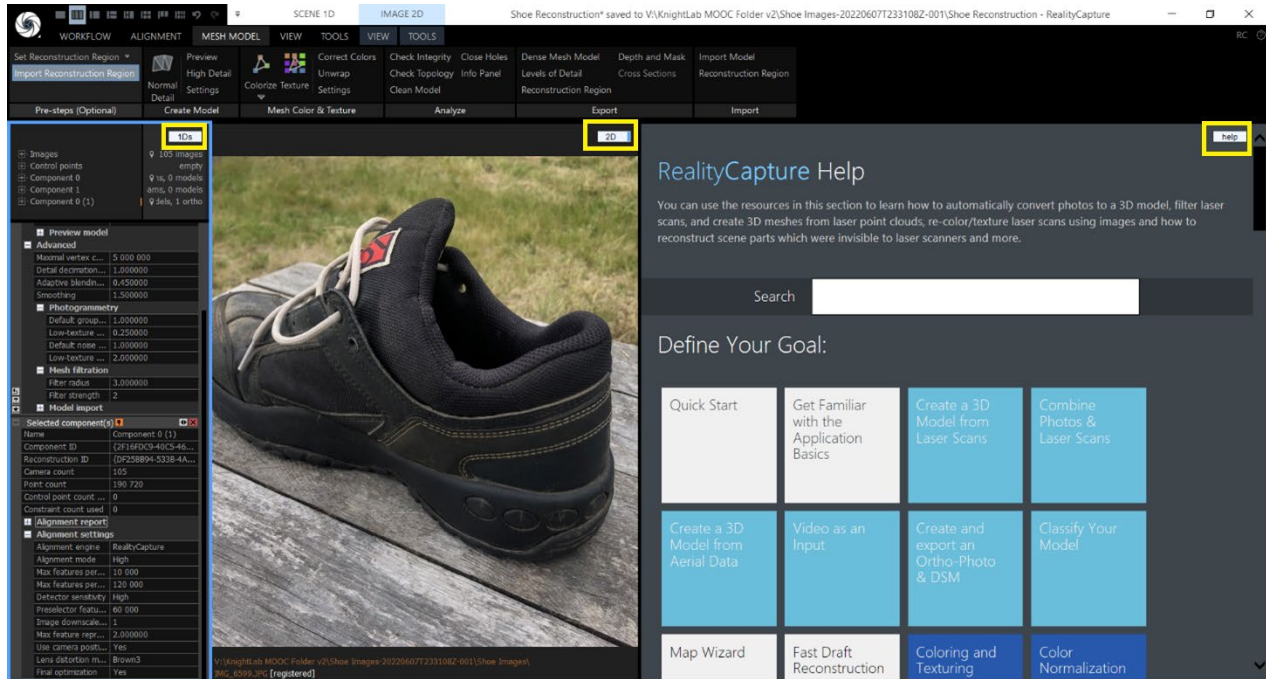# RealityCapture How-To Guide for Photogrammetric Image Processing

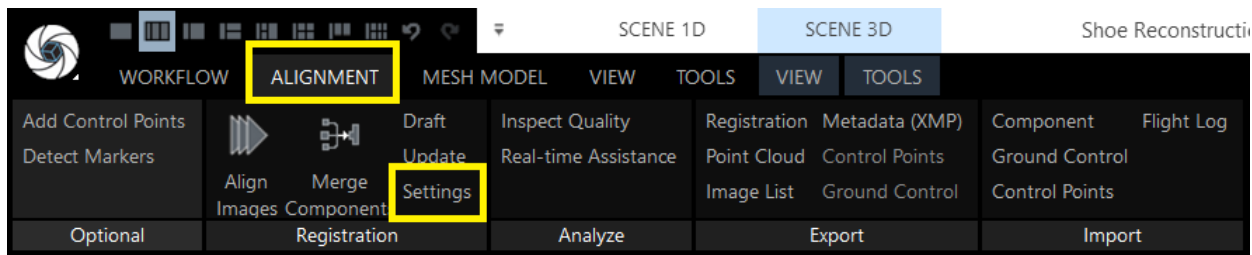Note: RealityCapture has a very useful 'RealityCapture Help' feature inside the program, which I recommend using for in-depth information and help with software settings. You can access 'RealityCapture Help" from the white drop-down menus (highlighted in yellow).


Step 1: Import Your Images into RealityCapture
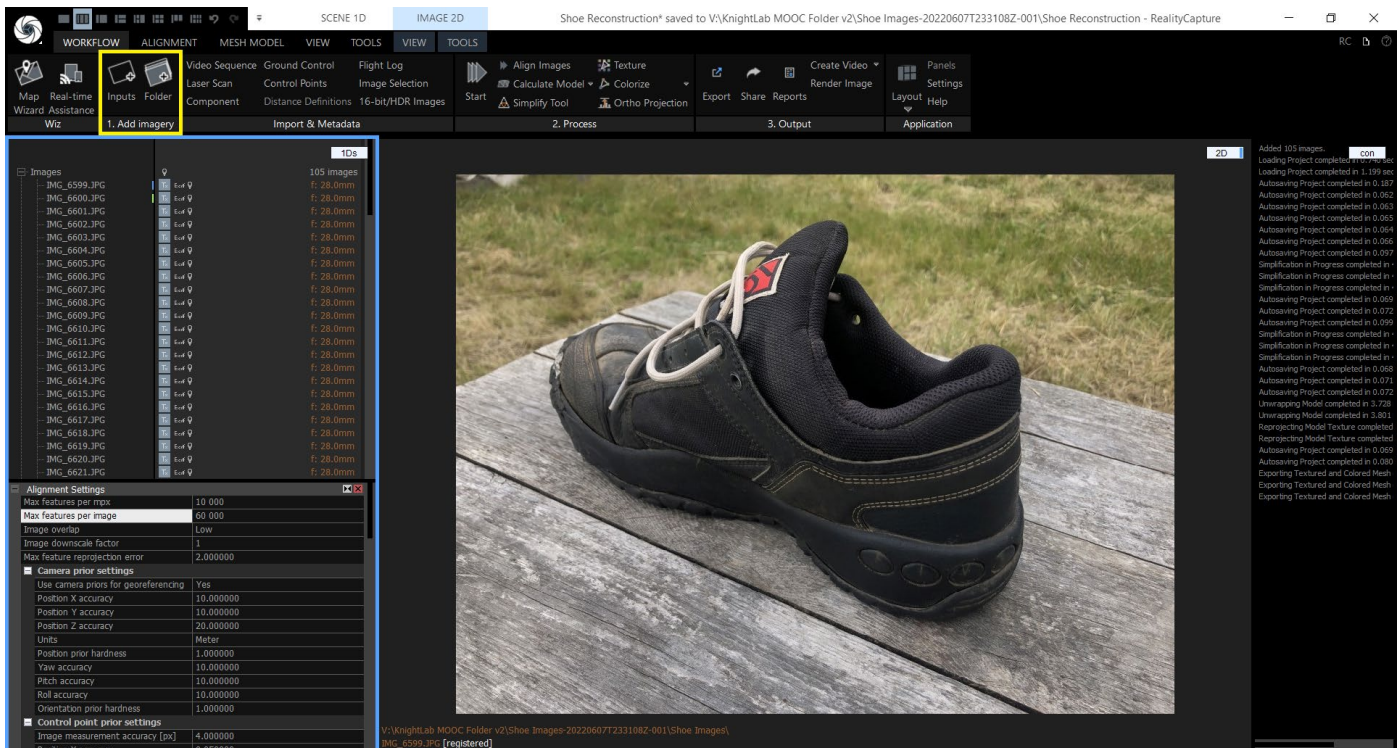
Step 2: Align the Images

I recommend using my 'Alignment Settings' seen here. I usually set my 'Max features per image' to 60,000 (60k) and my 'Preselector features' to 30,000 (30k) when running the alignment step.

The 'Max features per image' is always double that of 'Preselector features'. In the case of processing this shoe at the 60k/30k setting, I had two images not align into a component, so I increased the setting to 120k/60k, and had complete alignment. Two images not aligning is not going to be a problem assuming you have thoroughly captured your subject. You will run into problems if high numbers of your image are not aligning. I generally try to have at least 95% of my images align. When I don't hit the 95% threshold then I increase 'Max features per image'/'Preselector features' to a maximum of 120k/60k. Raising these numbers greatly increases the workload for the computer. If you still don't reach 95% image alignment then you should capture more images of your subject.

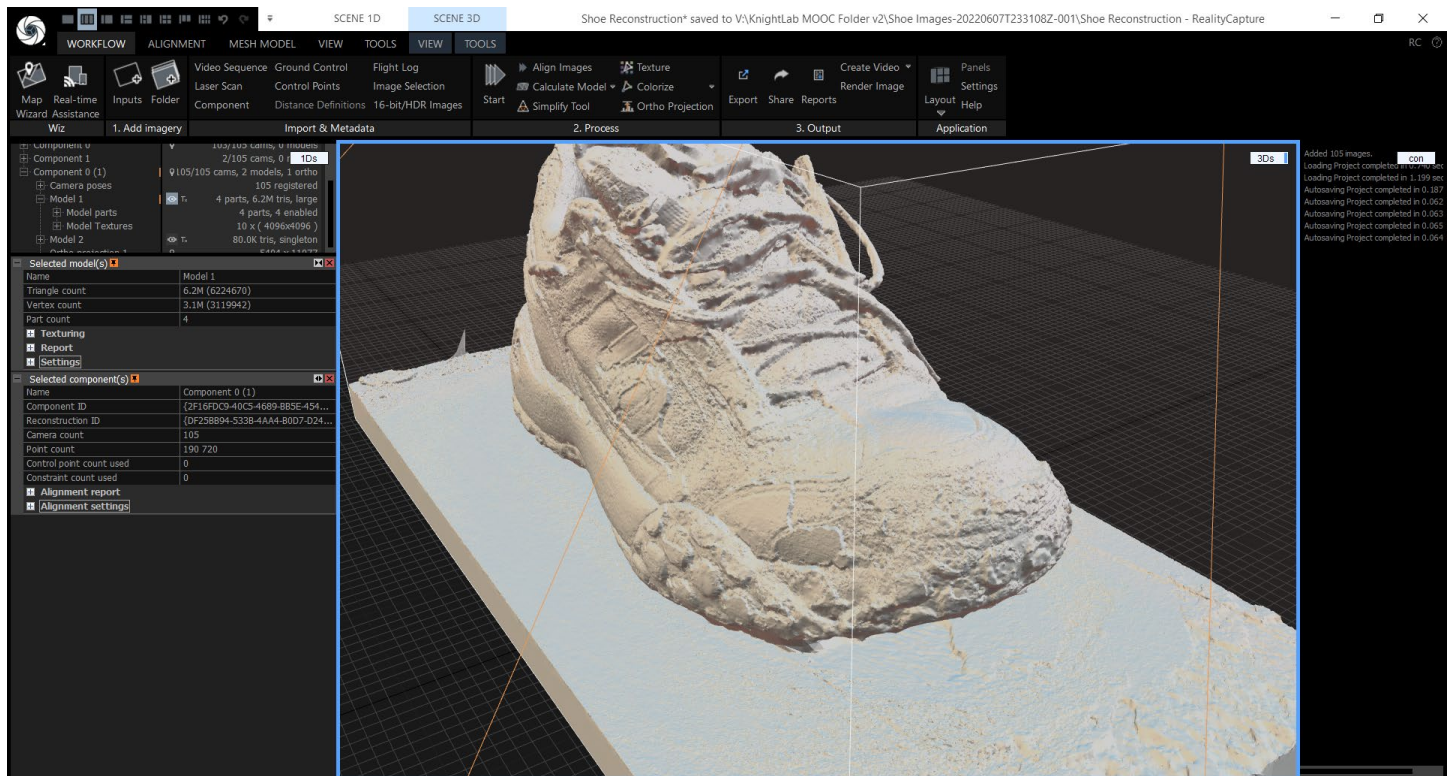When alignment is finished you will have a point cloud, as seen below.
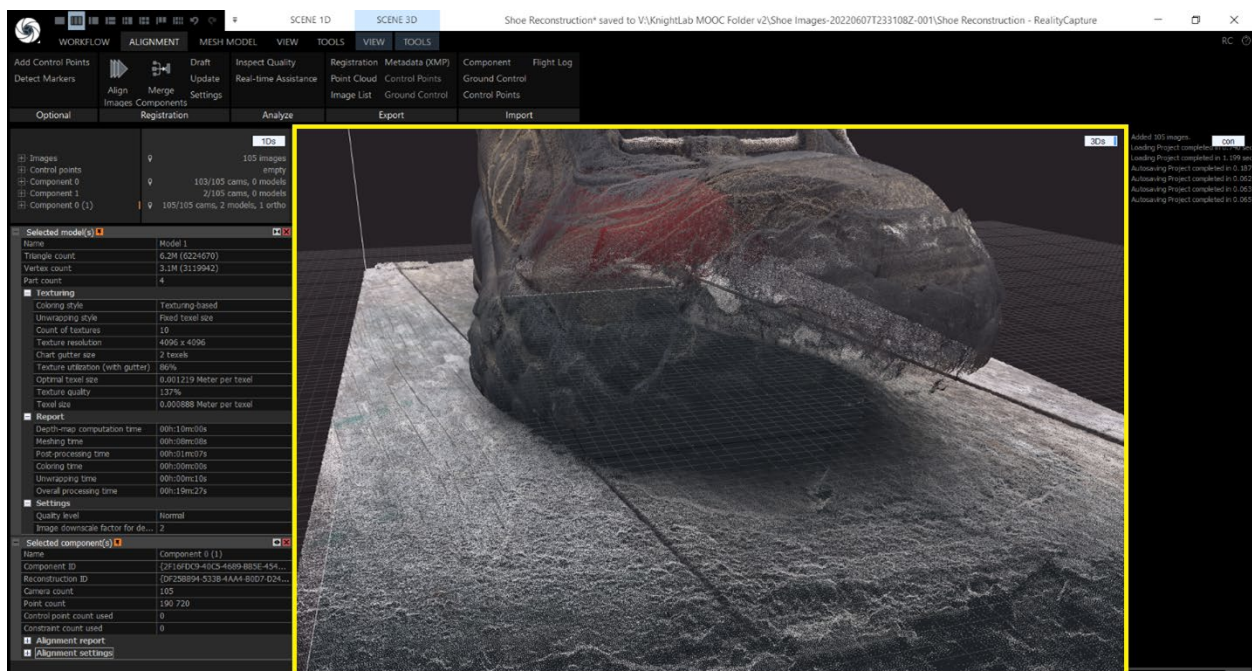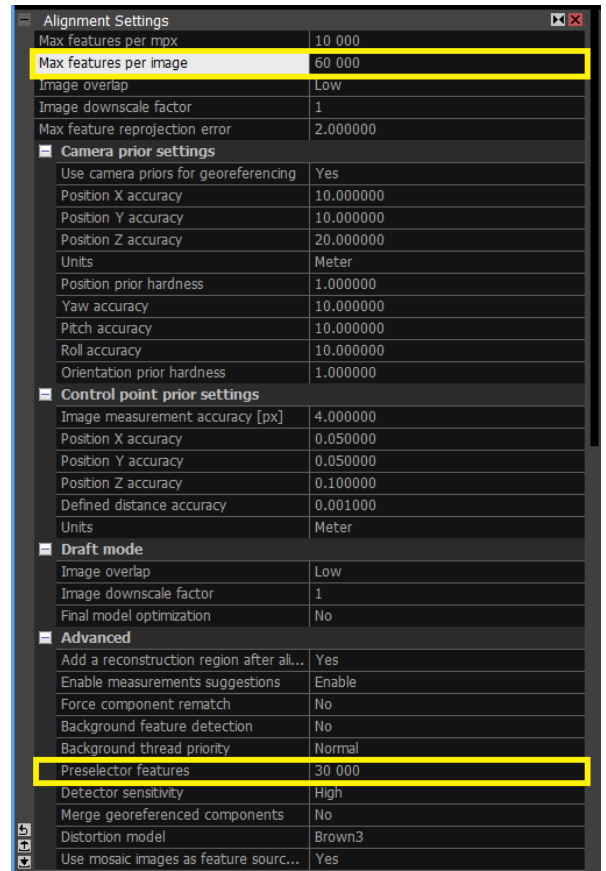
Step 3: Create the 3D Mesh
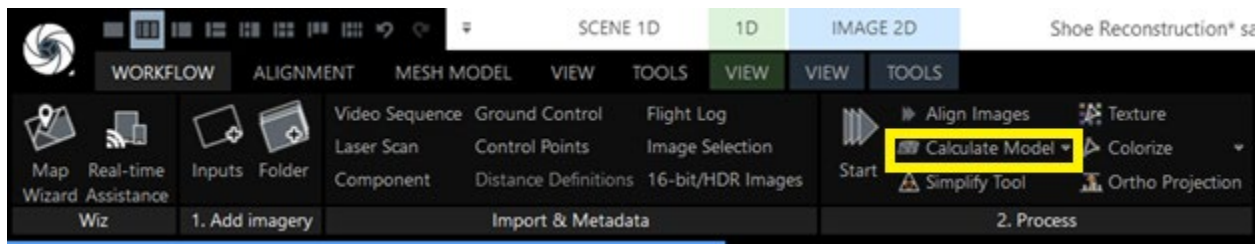
I use the default settings, and simply click on 'Calculate Model' to begin the process. When the process is complete you will have an off-white 3D mesh of your object, as seen below.


Step 4: Texture Your Mesh

Before opening the 'MESH MODEL' menu and clicking 'Texture' I suggest opening the 'Mesh Color & Texture' 'Settings' and using the 'Default unwrap parameters' values I show here in the screenshot. After using these settings, when you click 'Texture' the software will unwrap the model and start to create the texture. The result is your textured mesh.
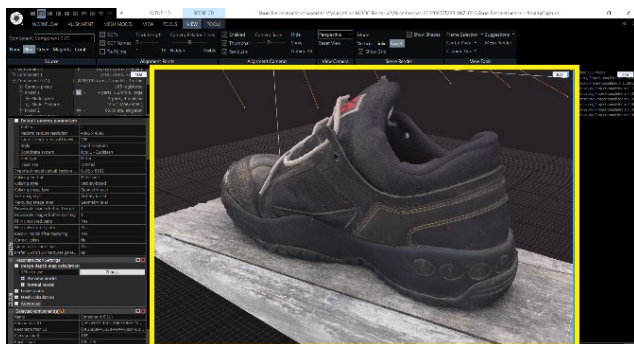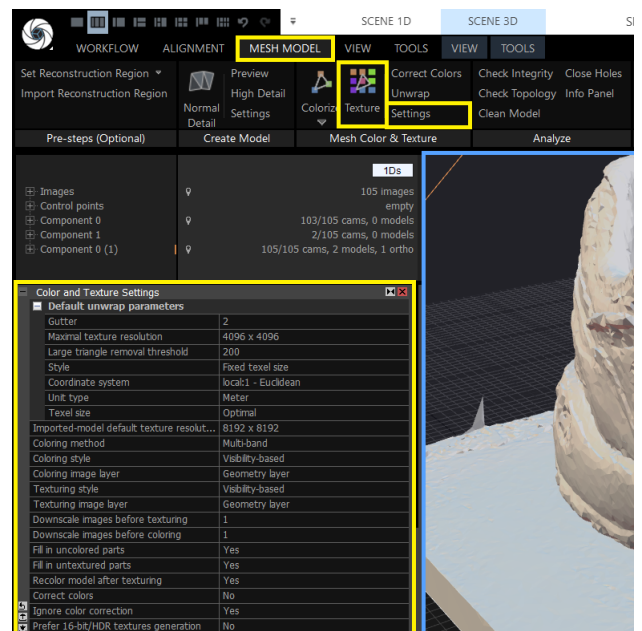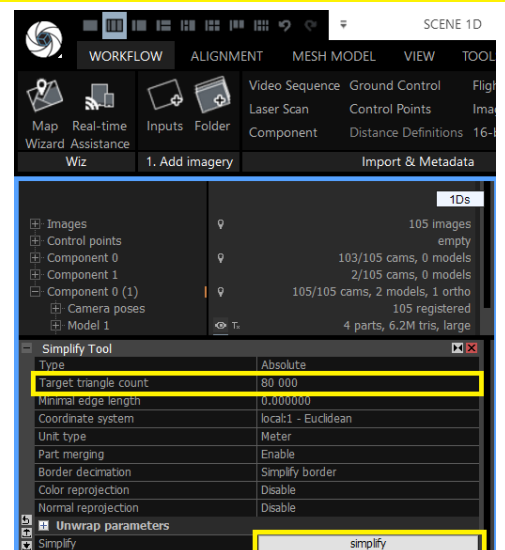
Step 5: Simplification

Think of simplification (also known as decimation) as the process of lowering the resolution of a photograph, but instead of reducing the number of pixels you are reducing the number of polygons in a 3D mesh. Looking at 'Model 1' I can see that my shoe 3D mesh consists of 6.2 million 'tris' triangles, or polygons. That's a lot of triangles! You can see the individual triangles when zooming into the untextured 'Solid' mesh.
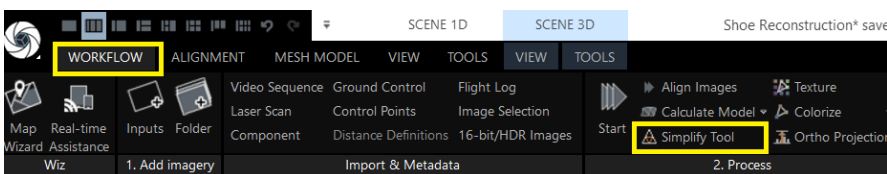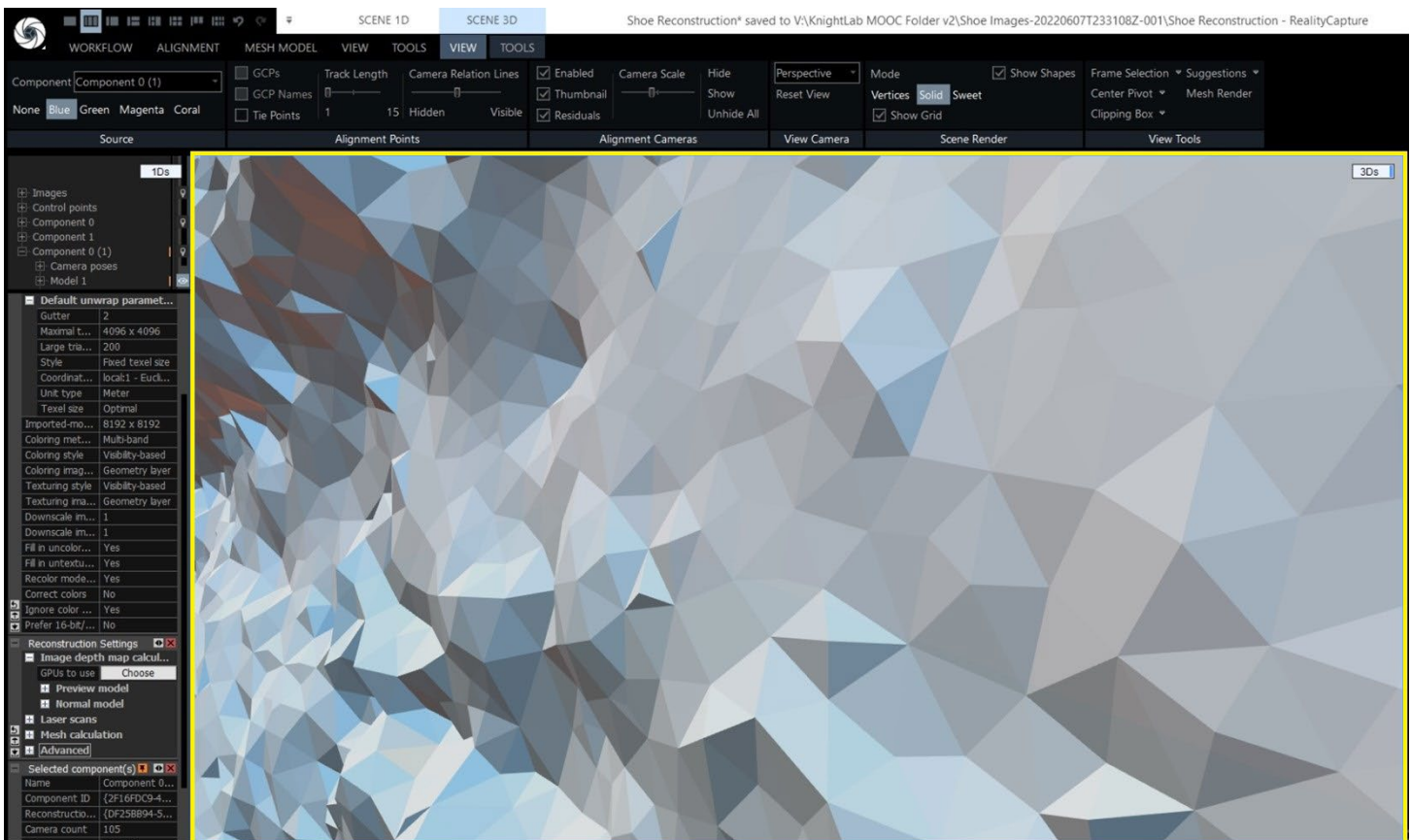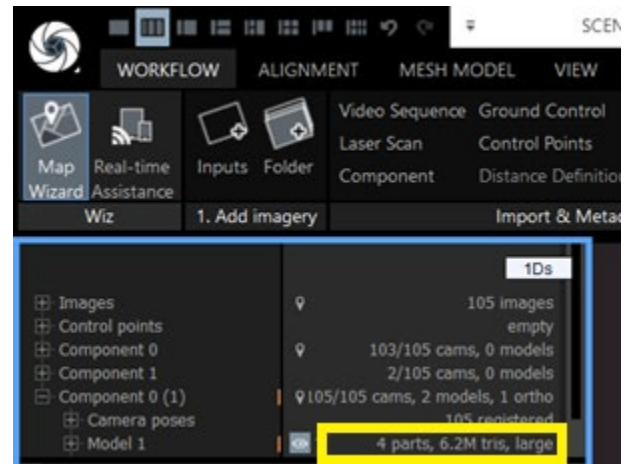

To simplify the mesh, first click on the 'WORKFLOW' menu and then the 'Simplify Tool' where you can set a 'Target triangle count' based on the limitations of where you will export and use the 3D model. In my case, I want to upload the shoe online to Sketchfab and Mozilla Hubs, and so I set the 'Target triangle count' to 80,000. After setting your 'Target triangle count' click the 'simplify' button.

Step 6: Reapplying Your Mesh

After using simplification your 3D model will have a texture that looks low-quality.
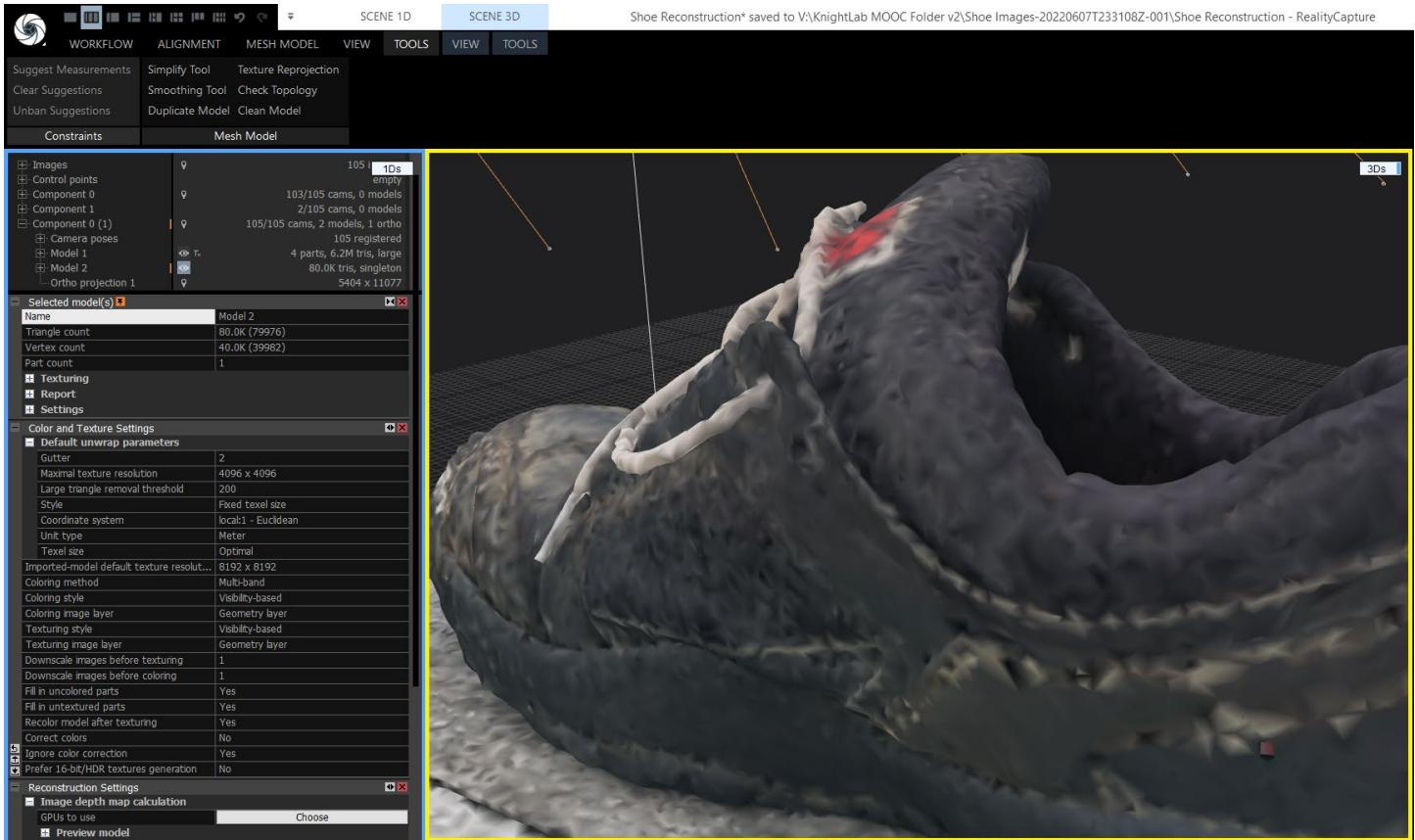

To re-use the high-quality texture that you had before using the 'Simplify Tool' open the 'TOOLS' menu and select 'Texture Reprojection'. Set your 'Source model' to the high triangle count model ('Model 1' for me) and the 'Result model' to your decimated/simplified 80.0K tris version ('Model 2' for me). When you click the 'Reproject' button, RealityCapture will transfer the high-quality texture from 'Model 1' to 'Model 2'. Click 'Yes' when the RealityCapture pop-up asks if you "wish to create Unwrap with current Unwrap configuration?" The software will use the same 'Unwrap' settings that we used in Step 4 when first texturing the 3D mesh. When reprojection finishes you will have a high-quality texture on your low-poly mesh.
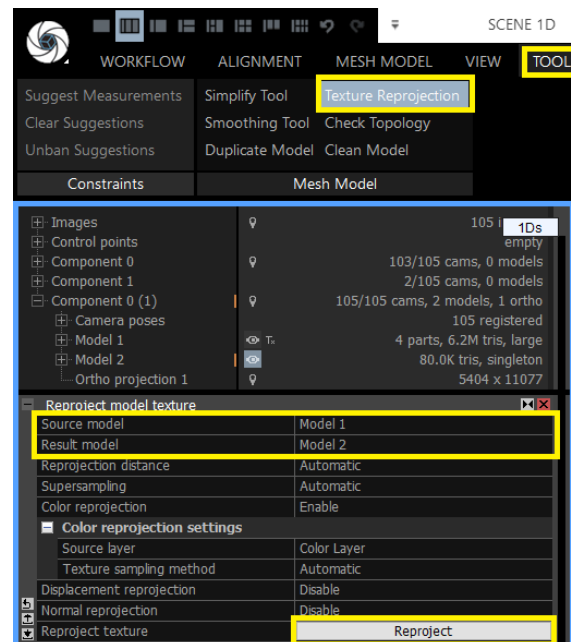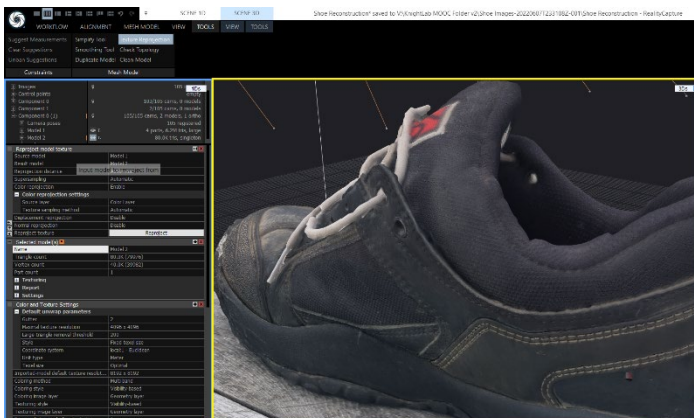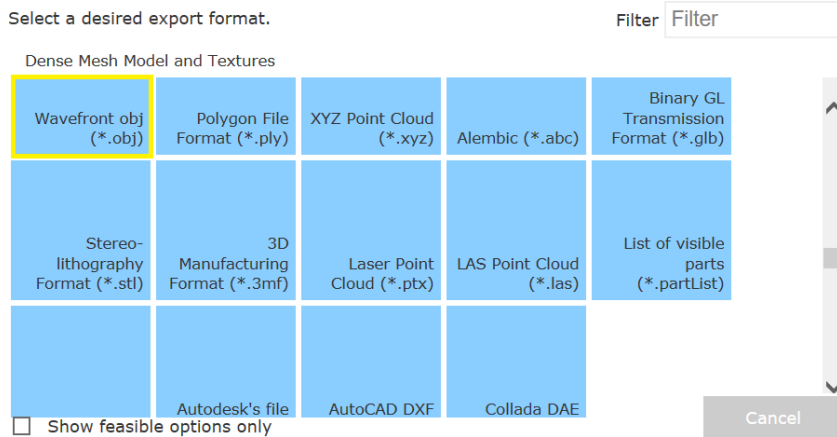
Step 7: Export the Textured 3D Model

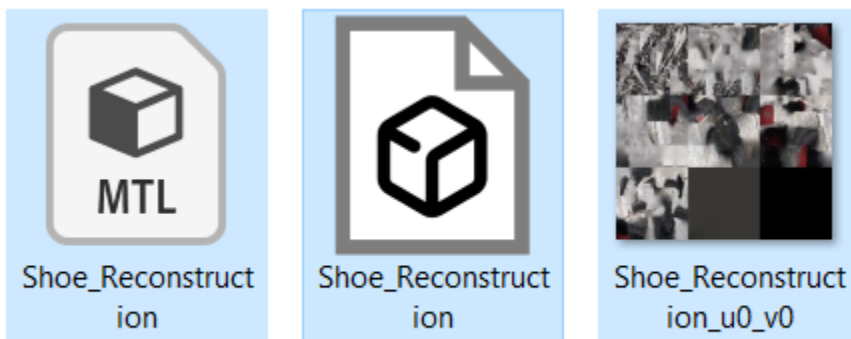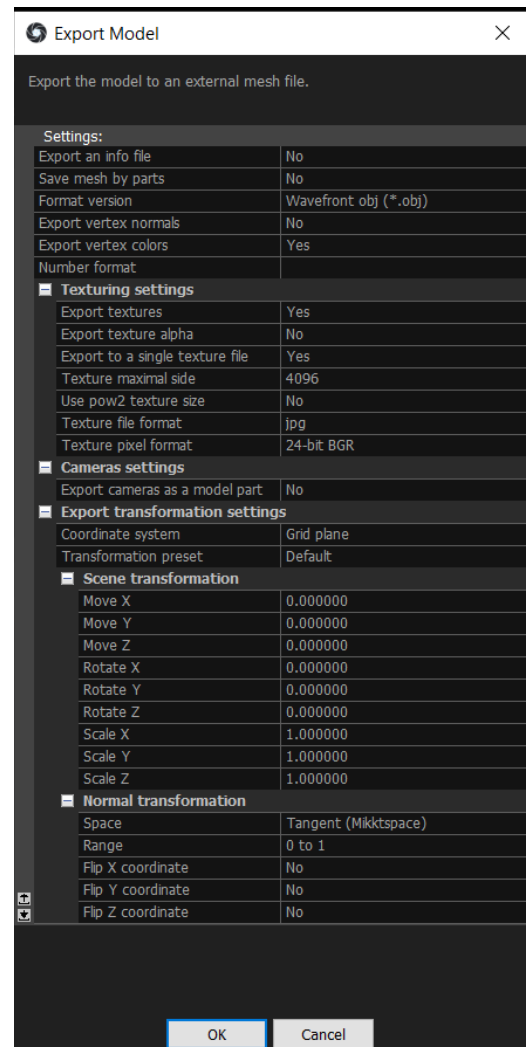To Export the 3D model, open the 'WORKFLOW' menu and click the 'Export' button.
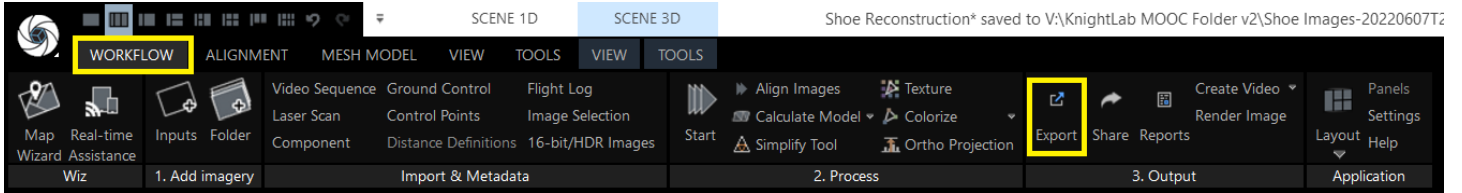
Next, scroll down in the 'Export Your Creation' window until you see the 'Dense Mesh Model and Textures' file export options in blue squares. I suggest exporting as either a .obj or .fbx file.

When you click your desired filetype, a popup window will appear for you to name your file, saving it as a 'Wavefront obj (*.obj)' file. When you click 'Save' you will see an 'Export Model' window. I recommend the settings shown in the screenshot here. These settings will export your 3D mesh and texture in an accessible and portable 3D format. The resulting .obj export will include three files. The .obj files contains the 3D data; the .jpg includes the texture; and the .mtl file tells the 3D viewer how to combine the .jpg texture with the .obj 3D data for displaying the textured mesh.