

Requirements

Hardware Requirements

⚠ Warning

Meshroom requires an NVIDIA GPU card with a CUDA compute capability ≥ 2.0 for the MVS part. You can check your [CUDA Properties here](#) or on the [NVIDIA dev page](#).

In case you do not have a CUDA GPU, you can use the draft meshing option which uses the CPU for meshing.

Here are the minimum requirements for Meshroom:

Minimum requirements	
Operating systems	Windows x64, Linux, macOS (some work required)
CPU	Recent Intel or AMD cpus
RAM Memory	8 GB
Hard Drive	~400 MB for Meshroom + space for your data
GPU	NVIDIA CUDA-enabled GPU (compute capability ≥ 2.0)

To obtain better performances on a desktop/laptop machine the recommended requirements are:

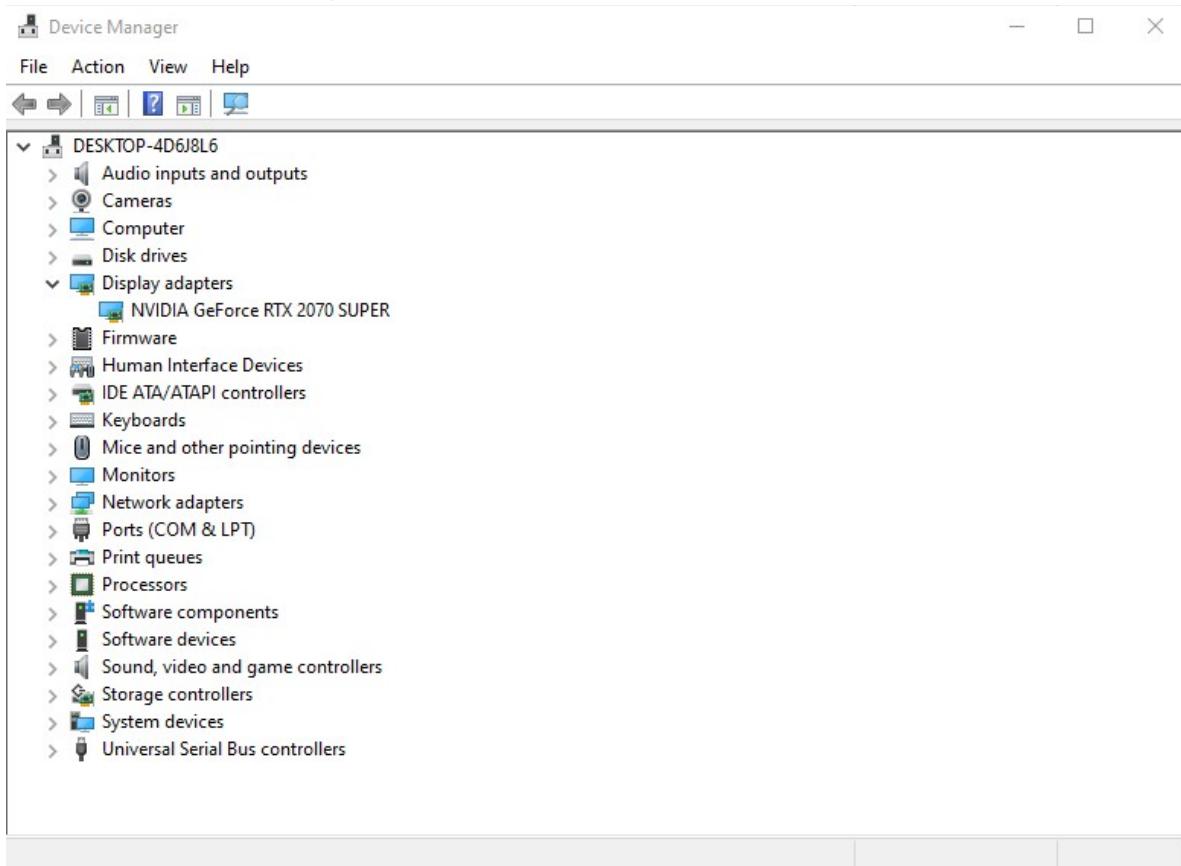
Recommended requirements	
CPU	Intel Core i7 or AMD Ryzen 7
RAM Memory	32 GB
Hard Drive	20 GB+ HDD or SSD
GPU	NVIDIA GeForce GTX 1070

Software Requirements

Meshroom is a Python application and it relies on the [AliceVision](#) framework. If you are using the pre-built binaries everything is shipped with the package, so you do not need to install anything else.

In case you are still planning to use the sources, see the paragraph *Software Environment* in the [Building Meshroom](#) section

- The most important hardware to verify is your GPU (Graphics processing unit). Here's how you can verify that:
 - Search "device manager" in Windows search bar in the bottom left
 - An intimidating window will open, don't worry! You just need to find the tab "display adapter" and note down which GPU you have. I believe CUDA is only supported by [Nvidia graphics cards](#), so if you have a AMD GPU, it will most likely not work, unfortunately.



- You may then use this [wikipedia page](#) to see if your GPU appears in the list (look for "GPUs supported" tab). It needs to have compute capability of atleast 2.0+ but higher is strongly recommended.
- If you meet the hardware specification, awesome! Now we can jump to the next phase.

Setting up Meshroom

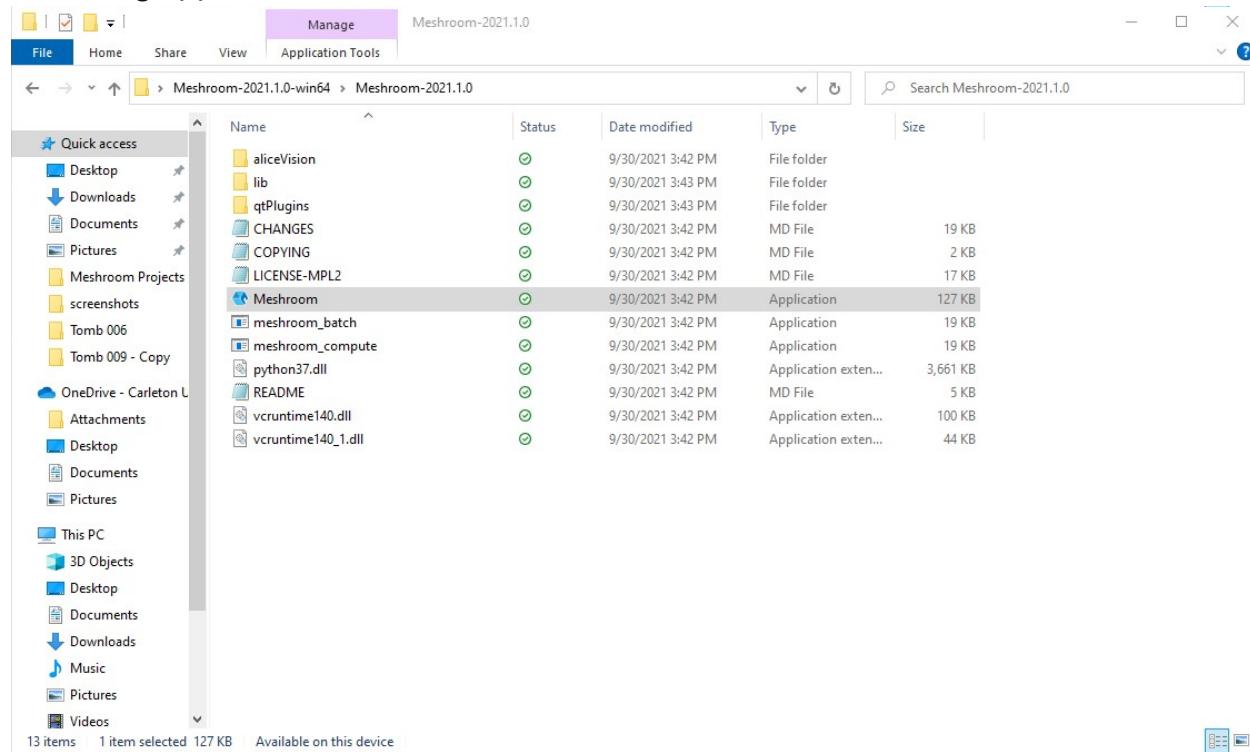
- Setting up Meshroom is super easy and intuitive. Download the meshroom file on

the official [website](#)

- The download will start automatically, you don't need to click anything else.



Drag the file where you want, and extract it. To launch Meshroom, click on the launching application.



Taking the pictures

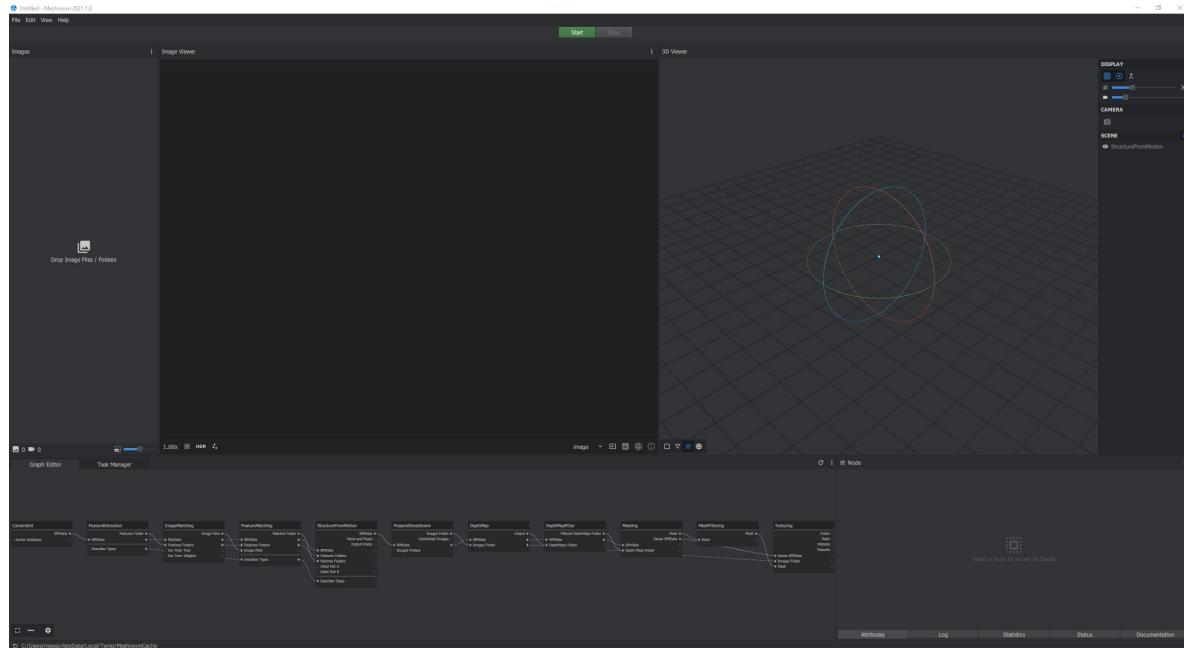
- Before using Meshroom, we will need pictures. Good pictures.
- When taking pictures, I try to visualize a dome around the object I want to photoscan. The camera just moves around it keep the same distance.
- I recommend taking pictures from three heights in a ring pattern. So a low revolution, one facing straight, and one looking from above. Make sure there is a

lot of overlaps so the software can pick up on those formations and stitch the photos together.

- Around 20 pictures can do just fine, but I recommend taking more if you are looking for better results.
- With the pictures taken, we can start preparing the program.

Getting familiar with the GUI

- You don't need to know everything, just the basics.
- To the right, that's where you drop your images. Next to it is the image viewer where you can check if your pictures are blurry or not good. To the left is the 3D viewer. That's where you will be able to see the model!
- The bunch of boxes below is where you can control the process. It uses a 'node' workflow; you can think of it as steps that can individually be completed.



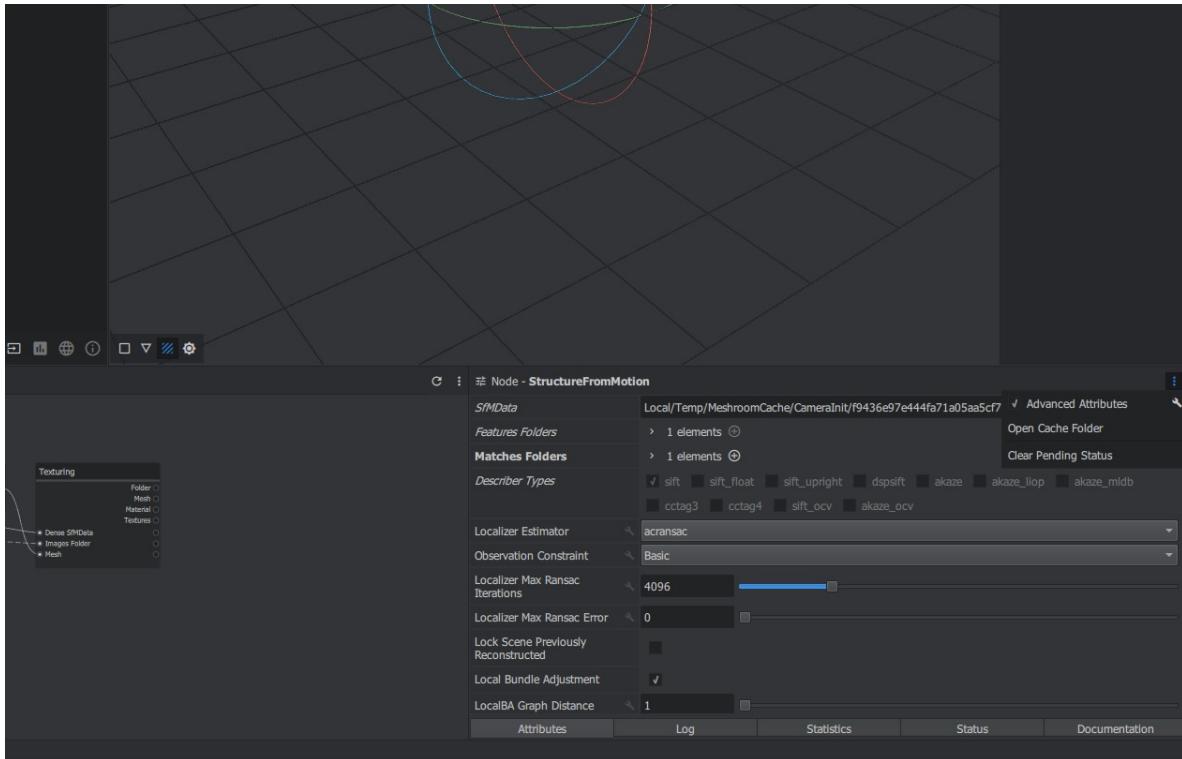
Navigating the GUI

- 3D viewer:
 - Hold left click and move to rotate around the model.
 - Hold middle mouse button to move left to right.
 - Use scroll to zoom in or out
- Graph Editor (where the nodes are):

- Hold middle button to move
- Use scroll to zoom in or out

Preparing a photoscan

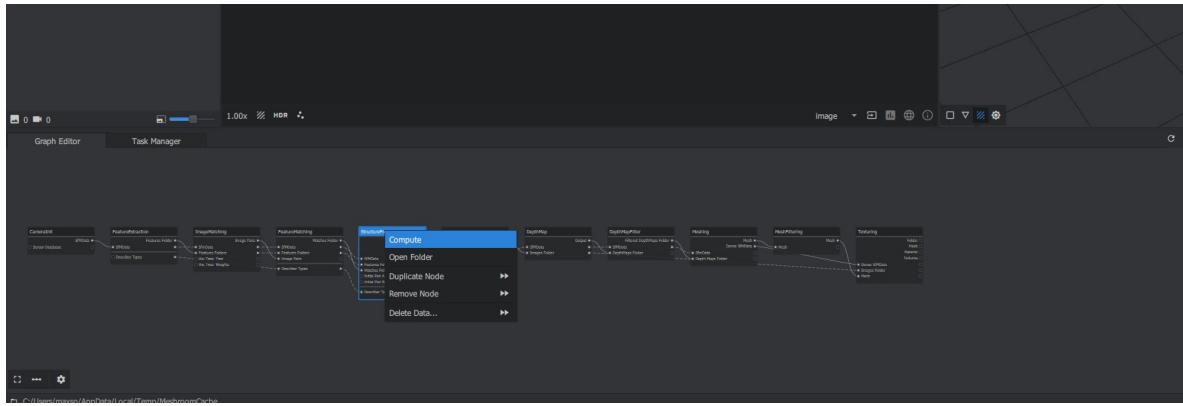
- Start by saving your file with a name of your choice.
- There are a few settings I recommend ticking or unticking in the node workflow. First, tick "Advanced attributes" to be able to see some extra options.



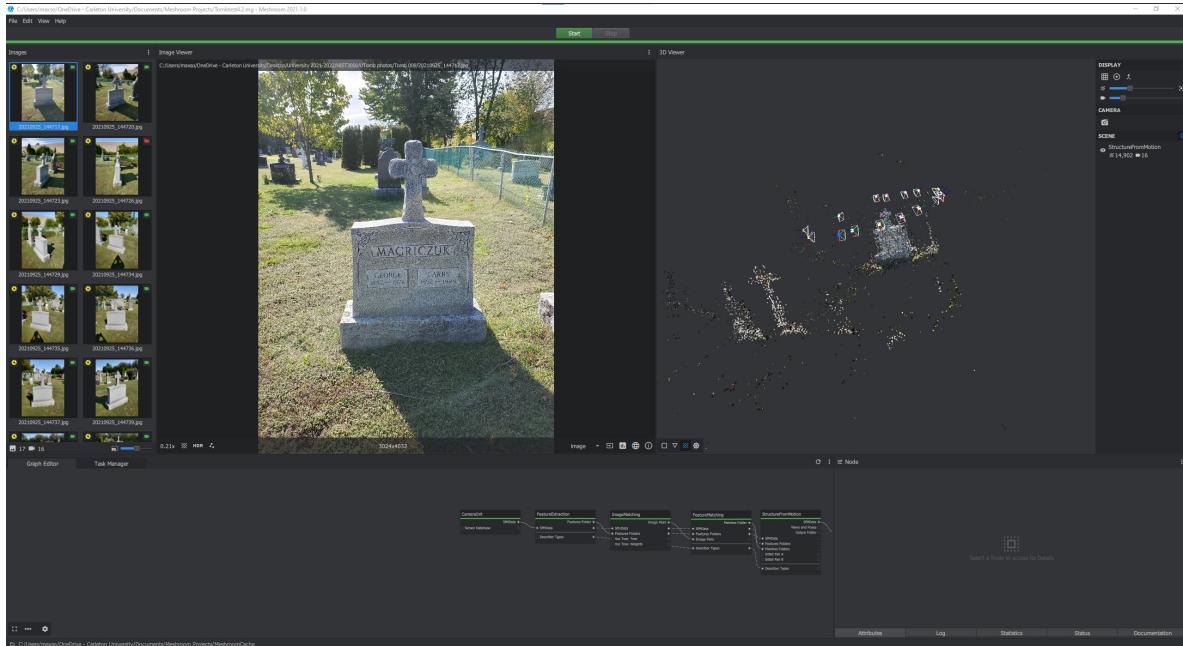
- Click on 2nd node "FeatureExtraction", and untick "Force CPU Extraction".
- Click on 2nd last node "MeshFiltering", you may want to tick "Keep Only the Largest Mesh" if you find that you have a lot of 'islands' floating around the model.
- Drag your photos in the left box, and filter out the bad ones.
- Now, we're ready to start computing the actual model.

Computing the first half of the scan to check for errors

- I recommend only computing the first half to save time and potentially discover some errors. The results may change with every computation, so do it as many times as you want.
- Right click "StructureFromMotion" and select compute.

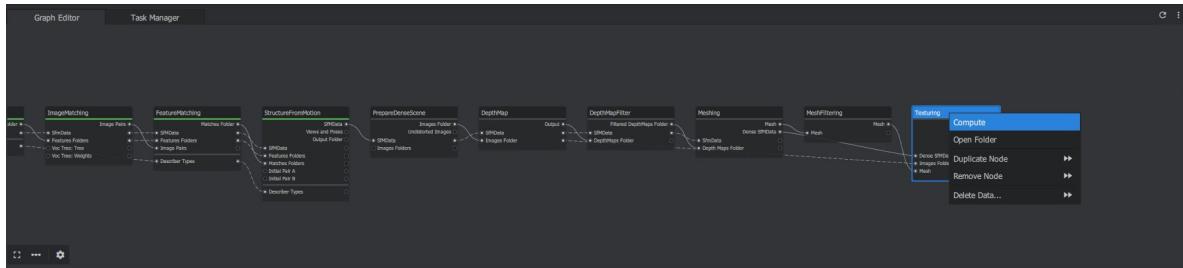


- This process can take a bit of time, so feel free to do something else on your computer in the meanwhile. A complicated series of photos can easily take over 15 minutes, but most will take less than 10 minutes.
- When the computation is done, you want to look at the left box "Images" and check if some pictures did not make the cut. Green camera means it made it, red cameras mean the program couldn't use it. When a photo doesn't make the cut, it's often because the angle is weird, or there was not enough overlaps.
- Take a look at the 3D viewer. You will notice a bunch of dots creating a blurry picture. This is normal! These are reference points the program has created based on the pictures. It's essentially mapping a three dimensional area.
- To see the model more clearly, you can disable the display grid and trackball -> In the 3D viewer tab, under "Display", click on the grid symbol and the circle with a dot to toggle them off.

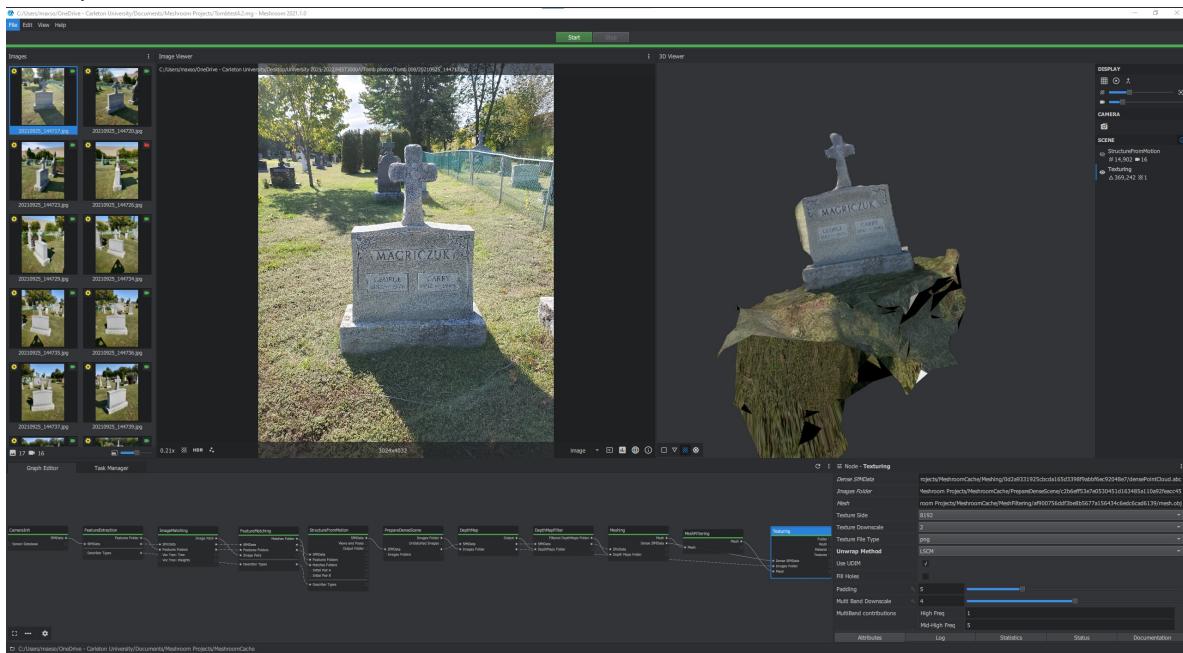


Computing the other half for final results

- Look around with your model and if everything looks good, compute the last half.
- Right click on the last node "Texturing" and select compute.
- This last step is the longest one and can take twice as much time as the first half. It might take 20-30 minutes or even more if your system is a little slow.



- Once everything is done and no error appeared, you can toggle "StructureFromMotion" in the 3D viewer by clicking the eye icon and loading the model.
- To load the model, double click on the "Texturing" node. It should appear under "Scene" in the 3D viewer. Feel free to look around the model, zoom in, zoom out, checking for any errors (there will definitely be some weird errors, but try your best!).

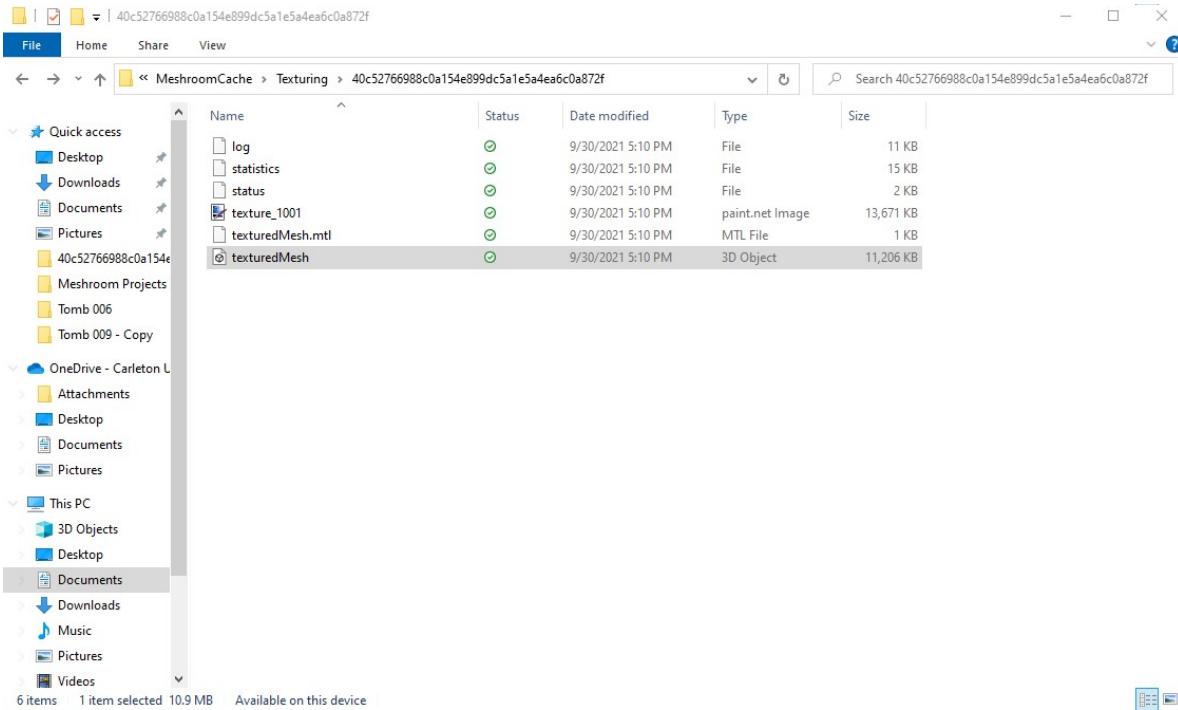


Things you can do with your model and where to access it

- Congratulation, you made it here!
- The final model is saved under a .obj file which is located wherever you saved your project. In the file where you saved your project, you should see a new file called "MeshroomCache", click it, and then click "Texturing". One of the

numbered files in there has your OBJ. If you have many saves, it might be a challenge to find the right one.

- Once you find the right one, look for the file type to find which one is the .obj file. It's usually named "texturedMesh". You can use this file to upload it wherever you want like Sketchfab or even importing it in Blender (a 3D modelling software) to further modify your model.



Summary of what to do

Here's the general steps of how to use Meshroom:

1. Create a save file with your name of choice.
2. Click on 2nd node "FeatureExtraction", and untick "Force CPU Extraction". You may need to activate advanced attributes to see some options. Do so by clicking the 3 dots on the bottom right, and tick "advanced attributes".
3. Click on 2nd last node "MeshFiltering", you may want to tick "Keep Only the Largest Mesh" if you find that you have a lot of 'islands' floating around the model.
4. Drag your photos in the left box, and filter out the bad ones.
5. Right click node "StructureFromMotion" and select compute.
6. Check if there are any missing pictures, or other errors.
7. Right click node "Texturing" and select compute.
8. The model is all done after that!