

Start

top

Images

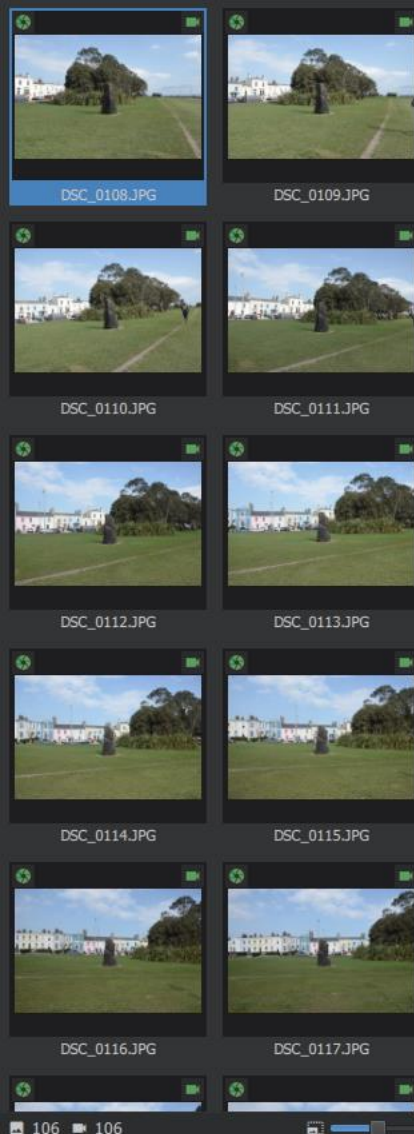


Image Viewer

C:/Users/Gareth W. Young/Desktop/Head/Head/DSC\_0108.JPG



# Virtual Field Trips

Meshroom Set Up Tutorial

Gareth W. Young

3D Viewer



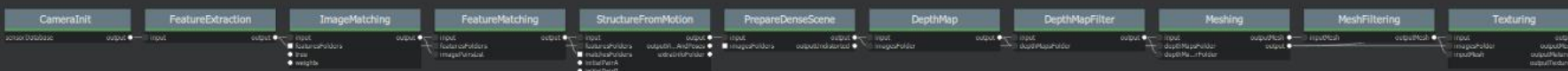
SETTINGS



SCENE

StructureFromMotion  
54,371 106

Graph Editor



Node

Select a Node to access its Details

Attributes Log



# Ground Truthing: Capturing a Scene in 3D

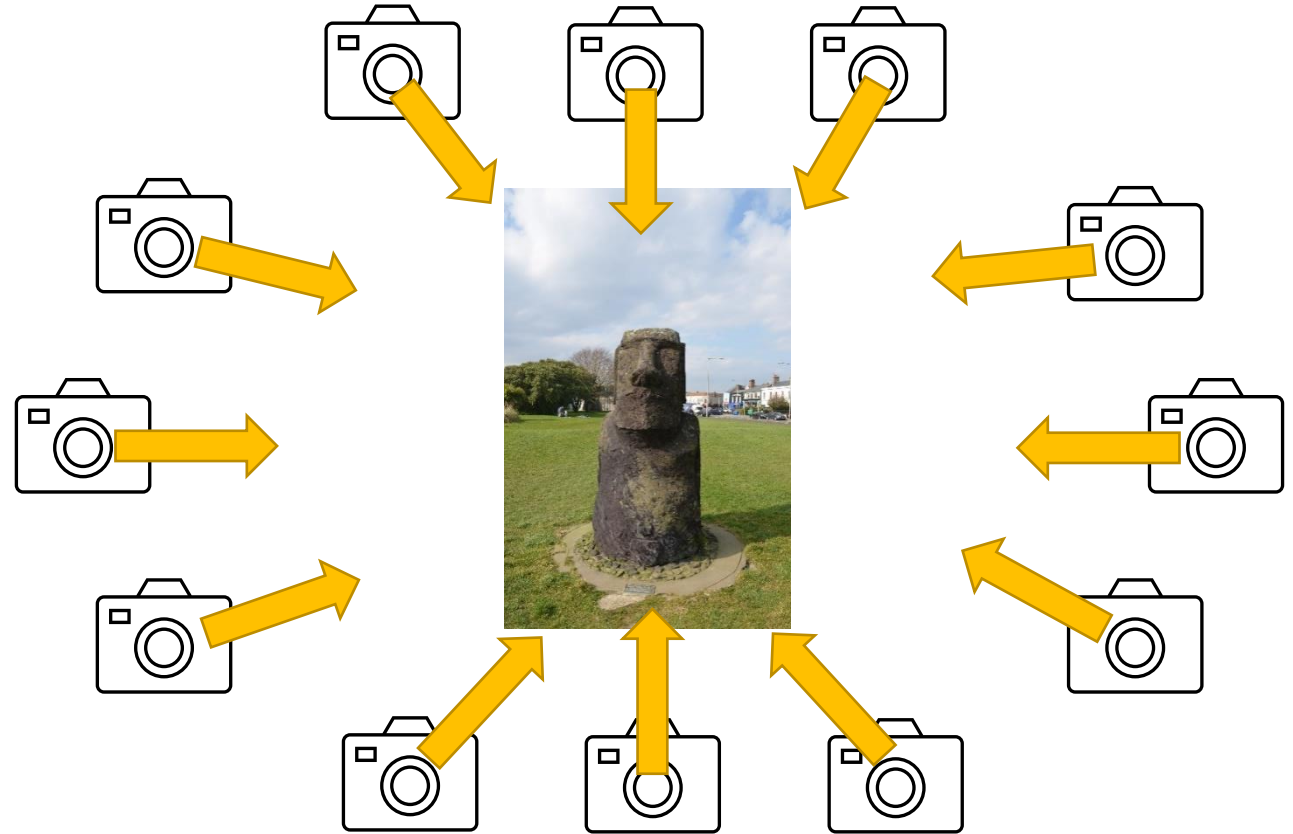


- Select a place you have easy access to.
- The technique works best with features you can photograph from as many different angles as possible.

# Image Capture

- Take pictures from all possible angles
- Take overlapping images
- Fill each image with the object
- Include the background to help the Meshroom software identify camera orientation
- The object or area should be well lit
- Ideally shoot in indirect or diffused light (a slightly cloudy day is good)
- Avoid using flash
- Avoid reflections and transparent objects
- Avoid single colored surfaces
- You can take close-ups for added detail where needed
- Moving objects don't work
- More images are better than less. Images that don't work can be omitted later.
- Avoid changing focal length and shallow depth of field
- Consider using manual camera settings

**The quality of your images is the most important and possibly challenging part of the process as it will have dramatic effects upon the quality of the final 3D model**





# Example



1



2



3



4



5



6



7



8



9



10



11



12



13



14



15



16



17



18



19

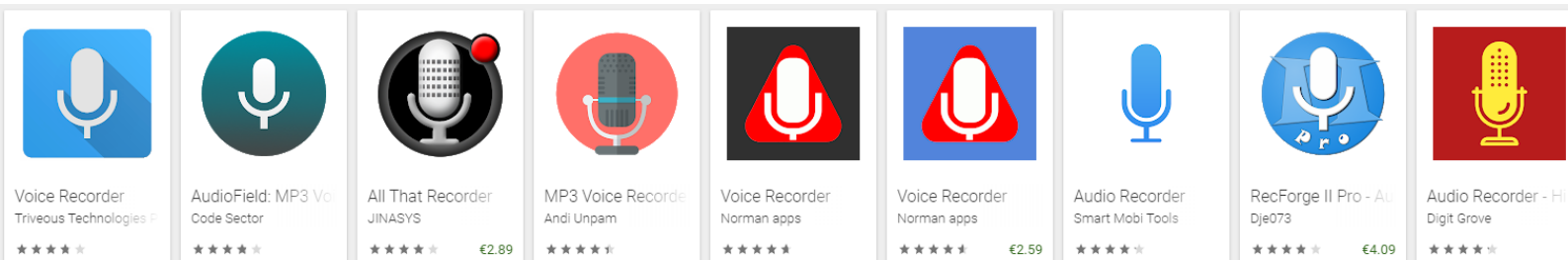


20



# Sound capture

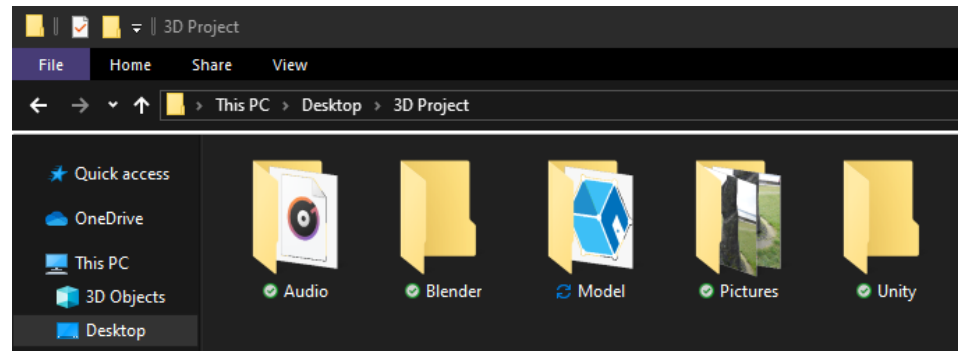
- Set your mobile phone or audio recording device next to the monument and record 3 minutes of ambient sound
- Find the microphone on your phone (most smartphone microphones are located near the bottom of the handset)
- Ideally you should find a flat surface and carefully place the phone down
- Some devices come with a voice recording app pre-installed, but there are also several different apps available (Smart Recorder, Tape-a-Talk, etc.)
- Hit the red record button when you want to start the recording, and then once again to stop it
- Try not to handle the device when recording and you might also need to shield it from the elements on a windy day!
- You can transfer short recordings by simply sending the audio file to yourself via email, open the email on your computer, and then download the file
- For longer recordings, you can connect your phone to your computer via a USB cable to transfer the files



# Project File Structure

- Create a folder on your computer and call it “3D Project”
- Within the “3D Project” folder create subfolders

- “Audio”
- “Blender”
- “Model”
- “Pictures”
- “Unity”

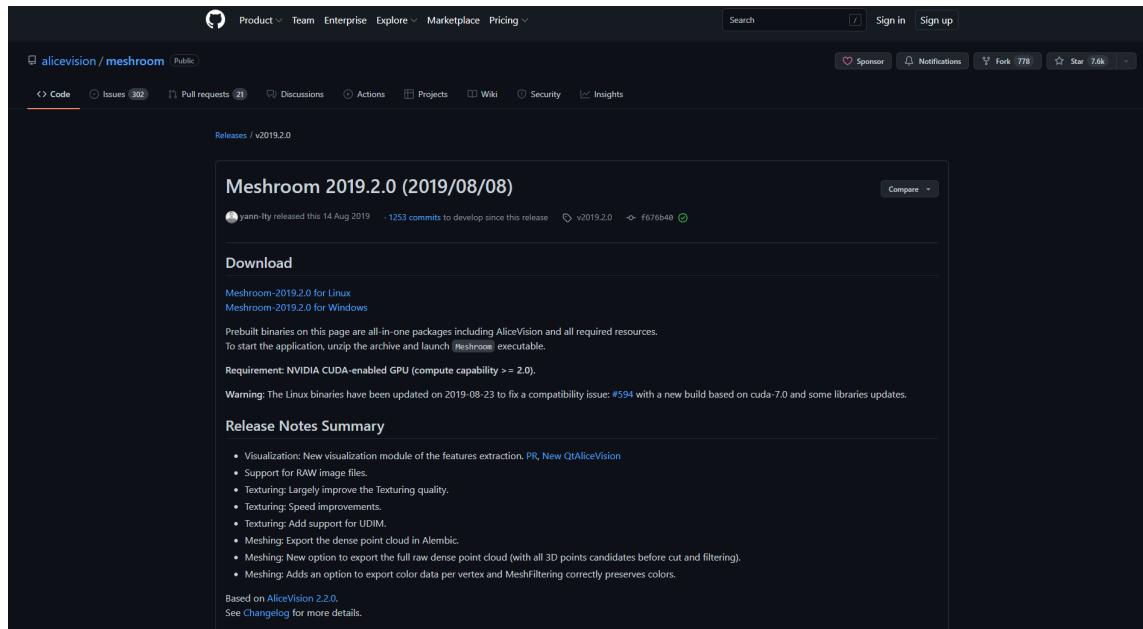


- Copy the pictures from your camera over to the “Pictures” folder
- Copy the audio from your recording device over to the “Audio” folder
- You are now ready to start meshing your media together

# Software requirements: Information Only

For this tutorial you will need the following software installed:

- Meshroom [Windows / Linux] (<https://alicevision.org/#meshroom>)
- <https://github.com/alicevision/meshroom/releases>
- [Meshroom 2019.2.0 \(2019/08/08\)](#)



The screenshot shows the GitHub repository page for `alicevision/meshroom`. The page is dark-themed and displays the release page for **Meshroom 2019.2.0 (2019/08/08)**. The release was made by `yann-ty` on August 14, 2019, with 1253 commits since the previous release. The download section provides links for Linux and Windows binaries. A warning notes that the Linux binaries have been updated to fix a compatibility issue. The release notes summary lists several improvements, including new visualization modules, support for RAW image files, and enhancements to texturing and meshing.

**Meshroom 2019.2.0 (2019/08/08)**

`yann-ty` released this 14 Aug 2019 · 1253 commits to develop since this release · v2019.2.0 · f676b40

**Download**

[Meshroom-2019.2.0 for Linux](#)  
[Meshroom-2019.2.0 for Windows](#)

Prebuilt binaries on this page are all-in-one packages including AliceVision and all required resources. To start the application, unzip the archive and launch `meshroom` executable.

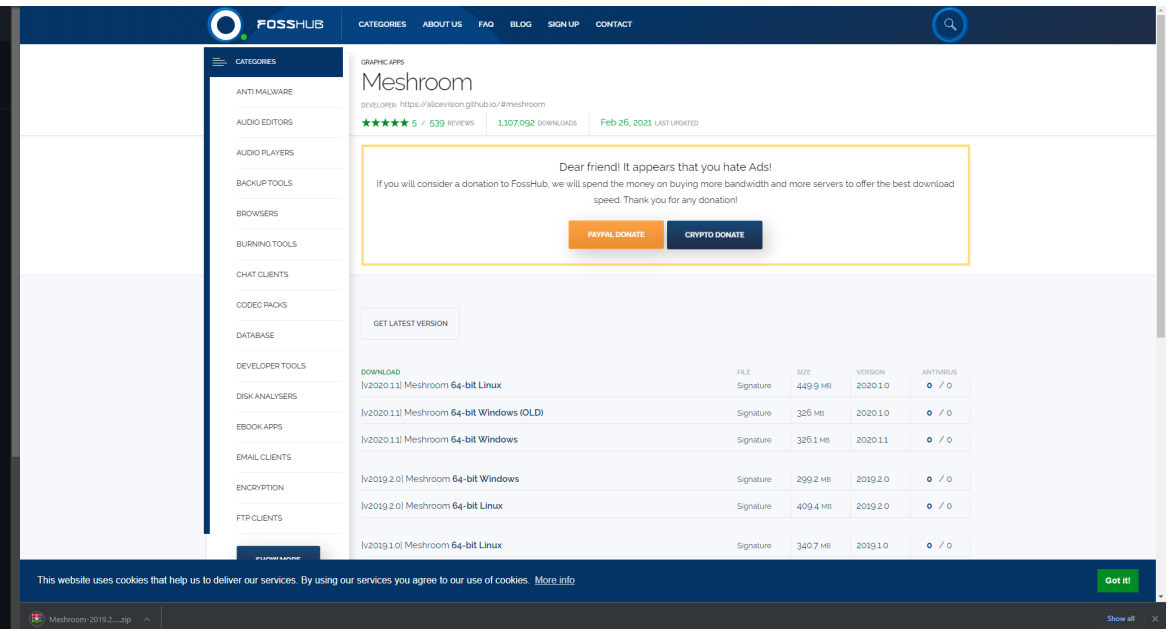
**Requirement:** NVIDIA CUDA-enabled GPU (compute capability >= 2.0).

**Warning:** The Linux binaries have been updated on 2019-08-23 to fix a compatibility issue: #594 with a new build based on cuda-7.0 and some libraries updates.

**Release Notes Summary**

- Visualization: New visualization module of the features extraction. [PR](#), [New QtAliceVision](#)
- Support for RAW image files.
- Texturing: Largely improve the Texturing quality.
- Texturing: Speed improvements.
- Texturing: Add support for UDIM.
- Meshing: Export the dense point cloud in Alembic.
- Meshing: New option to export the full raw dense point cloud (with all 3D points candidates before cut and filtering).
- Meshing: Adds an option to export color data per vertex and MeshFiltering correctly preserves colors.

Based on AliceVision 2.2.0.  
See [Changelog](#) for more details.



The screenshot shows the FossHub page for **Meshroom**. The page is light-themed and displays the download section. A sidebar on the left lists various categories of software. The main content area shows the project name, developer information, and a table of available versions and binaries. A warning box at the top right encourages users to consider a donation to FossHub to support the project's infrastructure.

**Meshroom**

DEVELOPER: <https://github.com/alicevision/meshroom>  
★★★★★ 5 / 539 REVIEWS · 1,307,092 DOWNLOADS · Feb 26, 2021 LAST UPDATED

Dear friend! It appears that you hate Ads!  
If you will consider a donation to FossHub, we will spend the money on buying more bandwidth and more servers to offer the best download speed. Thank you for any donation!

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GET LATEST VERSION

DOWNLOAD	FILE	SIZE	VERSION	ANTIVIRUS
[v2020.11] Meshroom 64-bit Linux	Signature	449.9 MB	2020.10	0 / 0
[v2020.11] Meshroom 64-bit Windows (OLD)	Signature	326 MB	2020.10	0 / 0
[v2020.11] Meshroom 64-bit Windows	Signature	326.1 MB	2020.11	0 / 0
[v2019.2.0] Meshroom 64-bit Windows	Signature	299.2 MB	2019.2.0	0 / 0
[v2019.2.0] Meshroom 64-bit Linux	Signature	409.4 MB	2019.2.0	0 / 0
[v2019.1.0] Meshroom 64-bit Linux	Signature	340.7 MB	2019.1.0	0 / 0

This website uses cookies that help us to deliver our services. By using our services you agree to our use of cookies. [More info](#) [Get it!](#)

# Hardware requirements

You must ensure that your PC meets the following minimum requirements to run the required software.

- Windows 7 SP1+, 8, 10, 64-bit versions only
- 64-bit dual core 2Ghz CPU with SSE2 support
- 4 GB RAM
- 1280×768 display
- Mouse or trackpad
- NVIDIA CUDA-enabled GPU with 1 GB RAM; OpenGL 3.3; compute capability  $\geq 2.0$ ; DX10 (shader model 4.0) capabilities

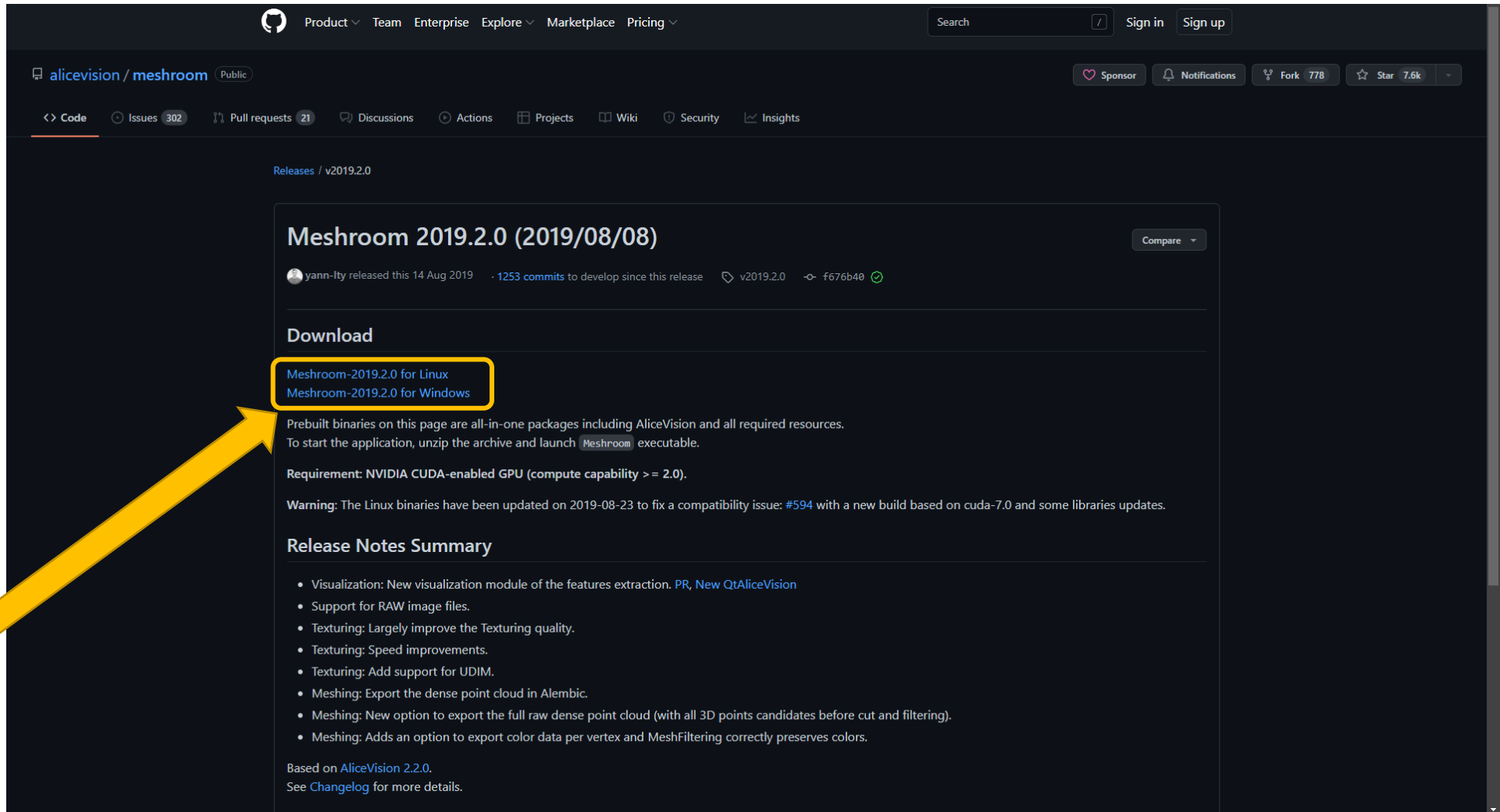


# Download Meshroom:

<https://github.com/alicevision/meshroom/releases/tag/v2019.2.0>

1. Navigate to the Meshroom Website

2. Click to download the latest release for Windows.



# Download Meshroom:

<https://github.com/alicevision/meshroom/releases/tag/v2019.2.0>

Extract the  
downloaded files to  
a folder on your  
computer, e.g.:  
**C:\Program  
Files\Meshroom**

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GRAPHIC APPS

## Meshroom

DEVELOPER: <https://alicevision.github.io/#meshroom>

★★★★★ 5 / 539 REVIEWS 1,107,092 DOWNLOADS Feb 26, 2021 LAST UPDATED

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DOWNLOAD	FILE	SIZE	VERSION	ANTIVIRUS
[v2020.1.1] Meshroom 64-bit Linux	Signature	449.9 MB	2020.1.0	0 / 0
[v2020.1.1] Meshroom 64-bit Windows (OLD)	Signature	326 MB	2020.1.0	0 / 0
[v2020.1.1] Meshroom 64-bit Windows	Signature	326.1 MB	2020.1.1	0 / 0
[v2019.2.0] Meshroom 64-bit Windows	Signature	299.2 MB	2019.2.0	0 / 0
[v2019.2.0] Meshroom 64-bit Linux	Signature	409.4 MB	2019.2.0	0 / 0
[v2019.1.0] Meshroom 64-bit Linux	Signature	340.7 MB	2019.1.0	0 / 0

This website uses cookies that help us to deliver our services. By using our services you agree to our use of cookies. [More info](#)

Got it!

Meshroom-2019.2....zip

Open the .exe  
from the same  
folder

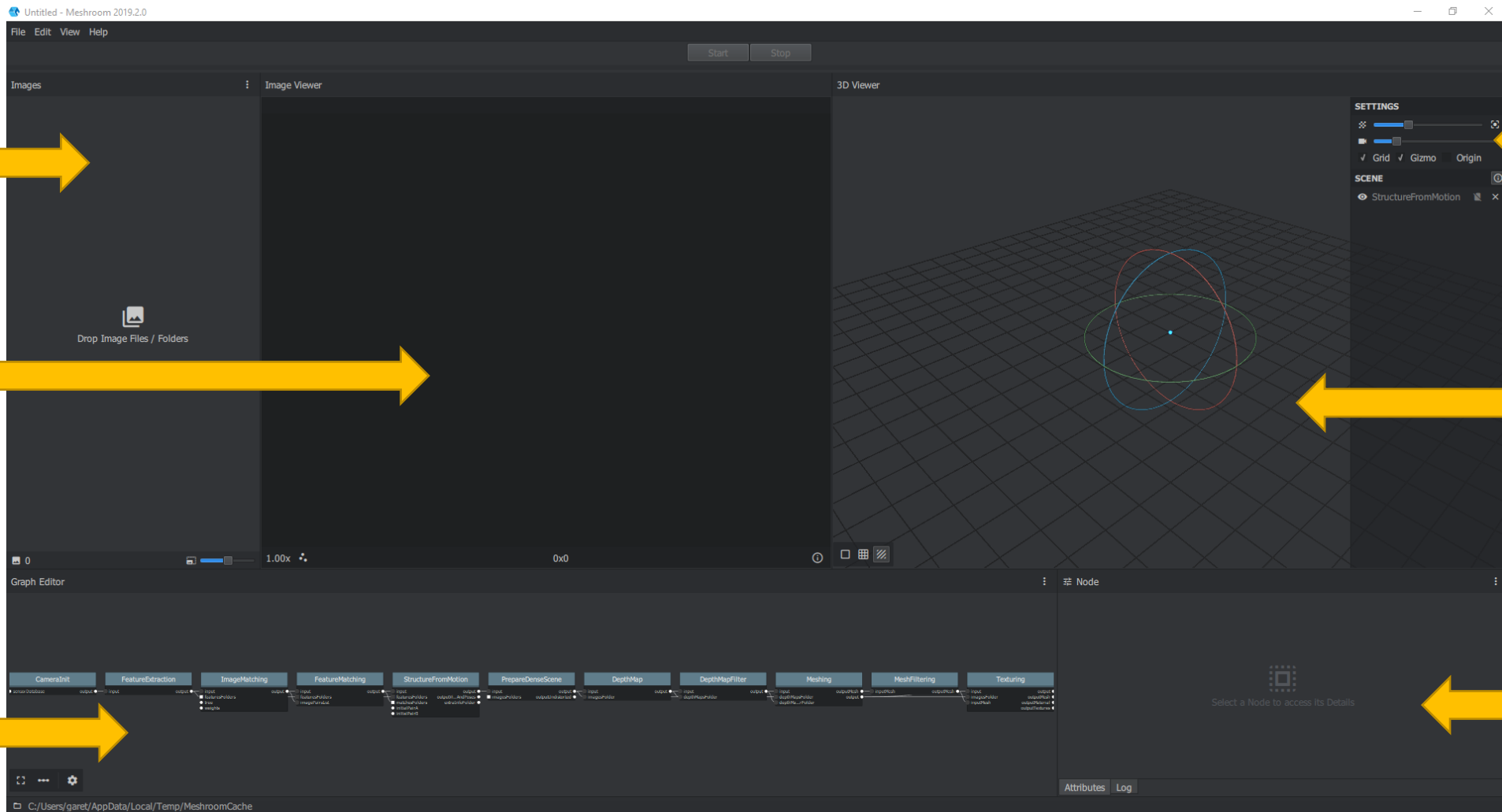


# Using Meshroom – The Basics (User Interface)

Images – this is where you drag and drop images for processing

Image Viewer – selected images appear here

Graph Editor – this is where the 3D reconstruction process is visualized and modified



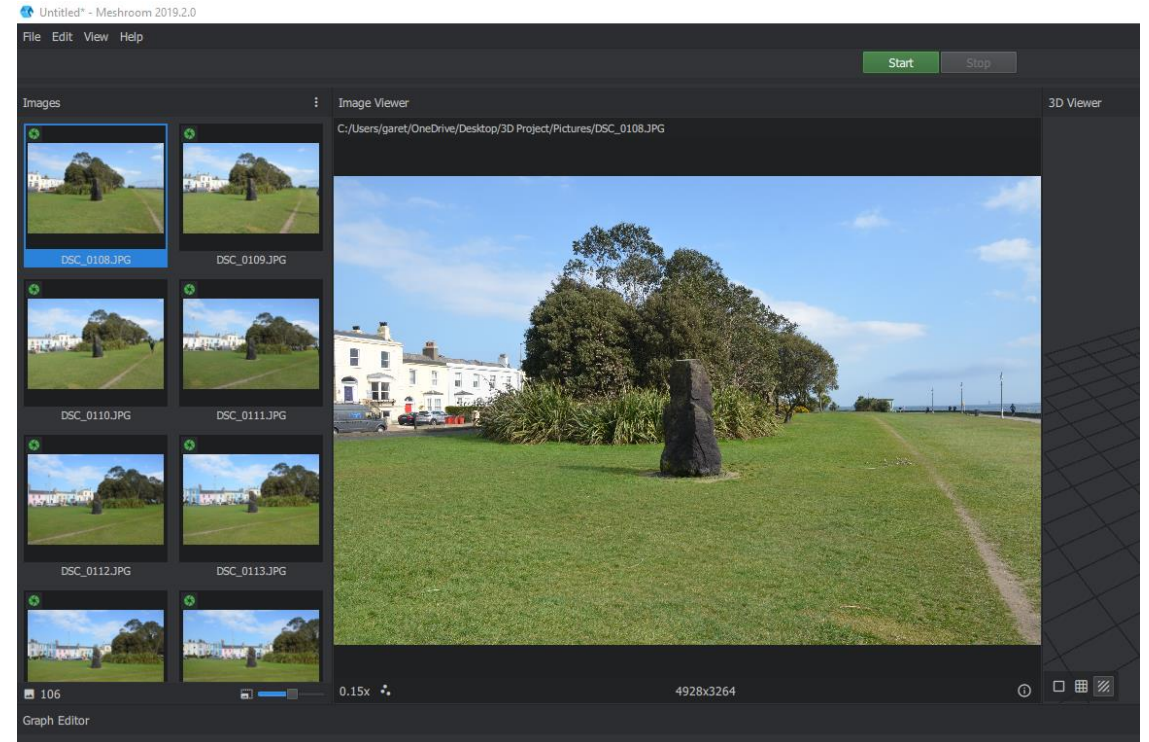
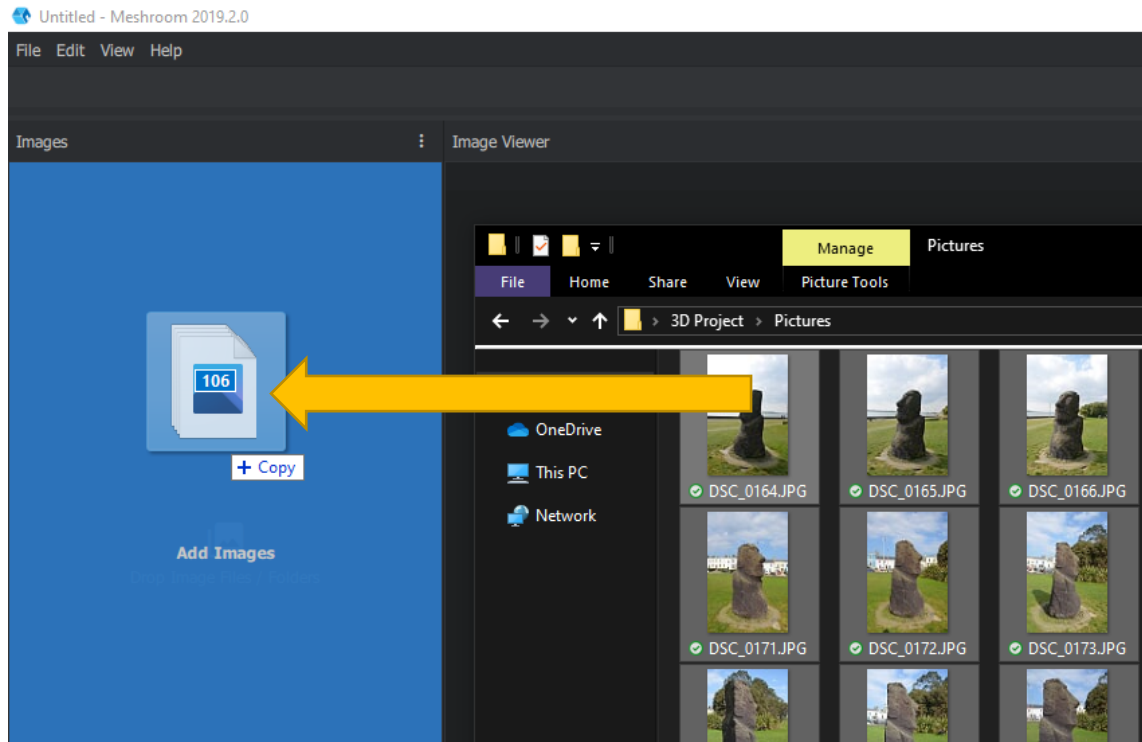
Settings – these are the controls for viewing the 3D model

3D Viewer – where the 3D model will appear

Node – Displays user configurable properties of a selected node in the Graph Editor.

# Using Meshroom – The Basics (select images)

- To import your photos, open the “3D Project” folder from the desktop and navigate to the “Pictures” folder
- Select all the picture you want to use in Meshroom then drag and drop them to the “Images” window in Meshroom

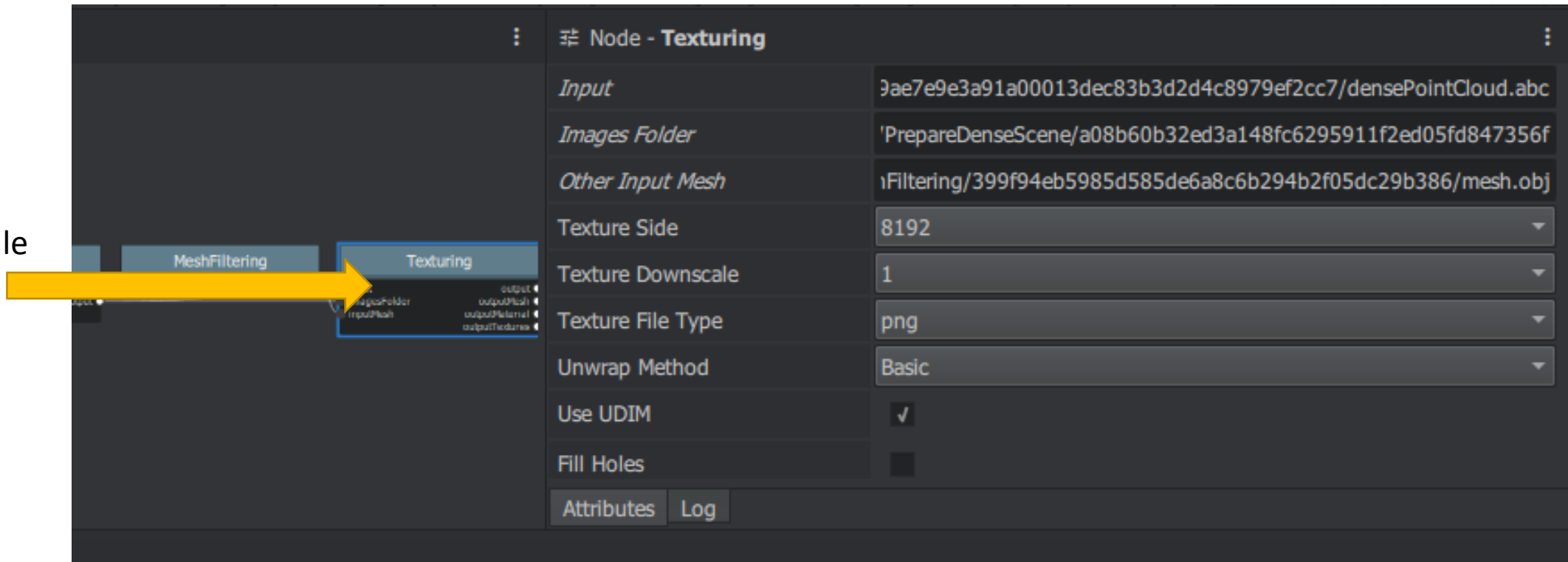




# Using Meshroom – The Basics (set up)

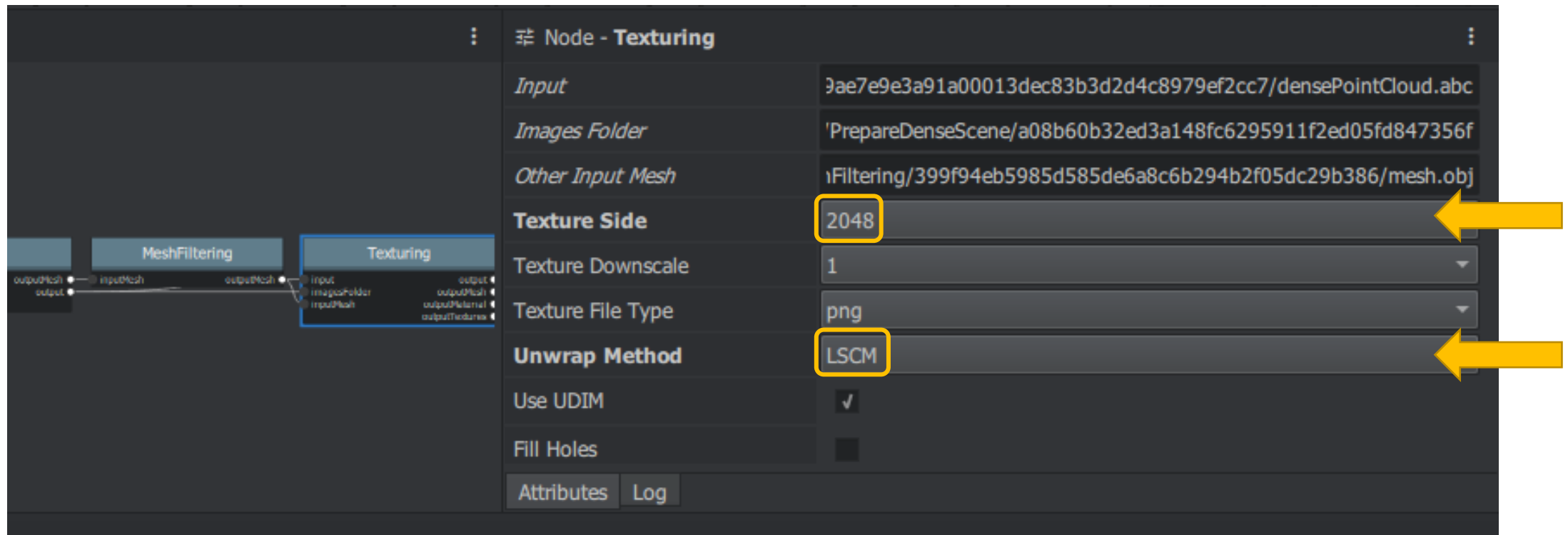
- In the “Graph Editor” window select the “Texturing” module
- The “Node” window will now change to show advanced editing functions for the “Texturing” function

“Texturing” module  
in the “Graph  
Editor” window



# Using Meshroom – The Basics (set up)

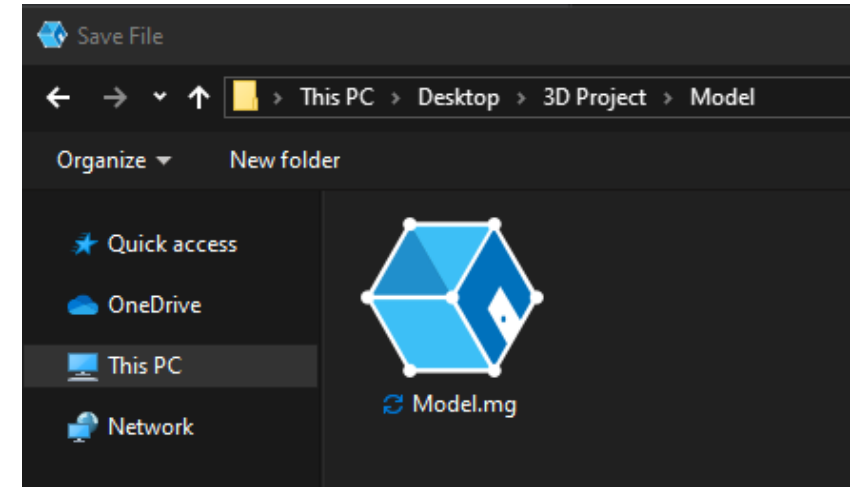
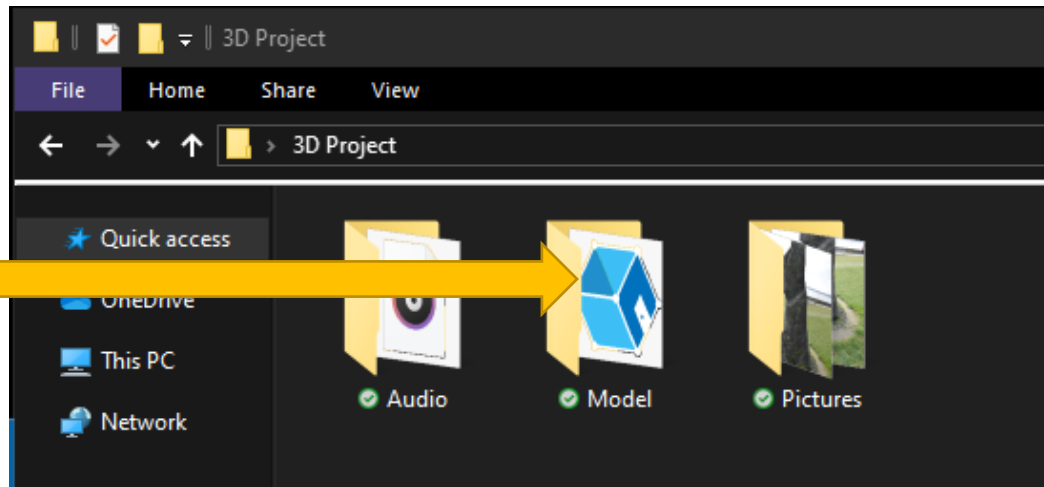
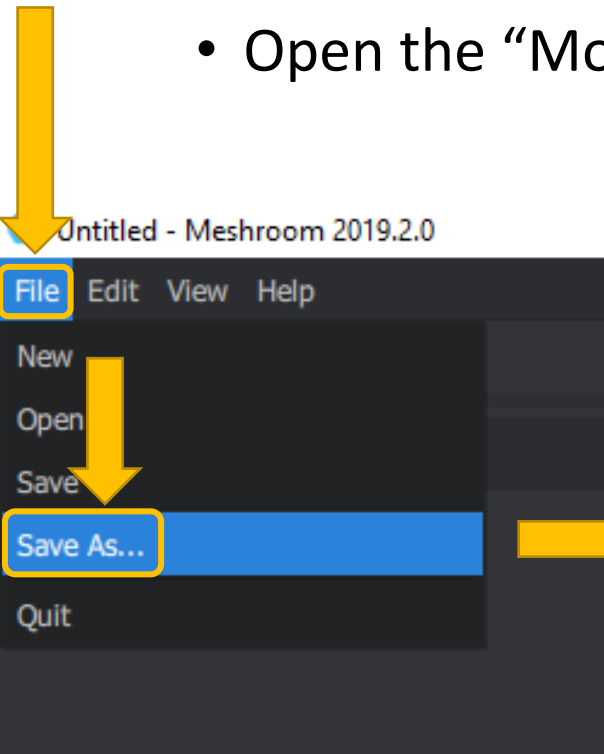
- Reduce the Texture Side parameter to “4096” or less to output a less detailed but more performant texture for interactive visualisation - using “2048” is a good starting value to try
- Set the Unwrap Method to “LSCM” - this is important to ensure that a single texture is created for the 3D model





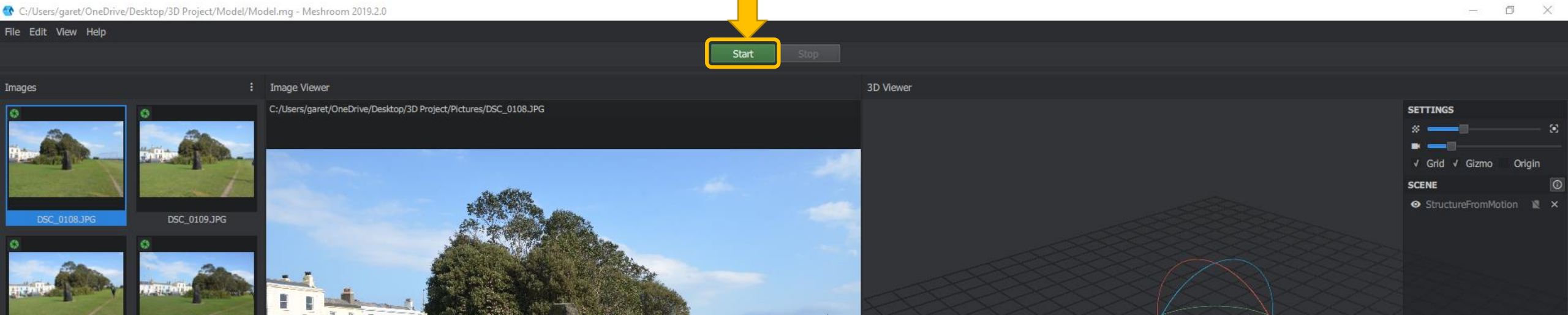
# Using Meshroom – The Basics (save project)

- This will ensure you save your project settings and any data you produce
- Open Meshroom and click “File” -> “Save As”
- A window will then open allowing you to select the location to save your project
- Navigate to your desktop and find the “3D Project” folder
- Open the “Model” folder and save your Meshroom project as “Model”



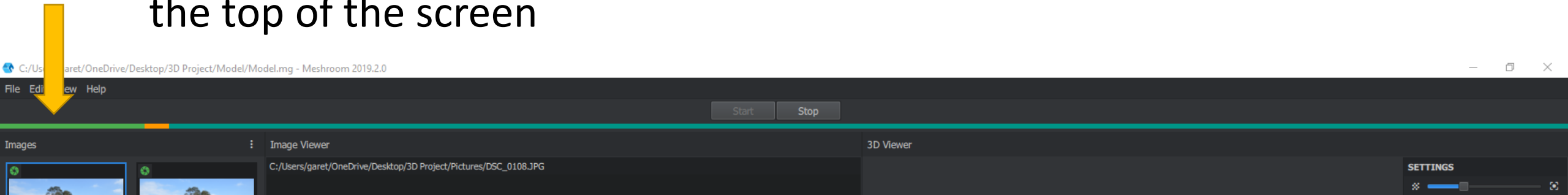
# Using Meshroom – Start meshing!

- The meshing process can take anywhere from 20 minutes to several hours depending on the number of pictures, your Meshroom settings, your computer's memory and your GPU
- You may wish to leave your PC processing overnight - remember to change your Power and Sleep settings to allow this
- When you are ready to start processing, click the green “Start” button at the top of the screen



# Using Meshroom – Checking progress

- When the meshing process has started, a progress bar will appear at the top of the screen

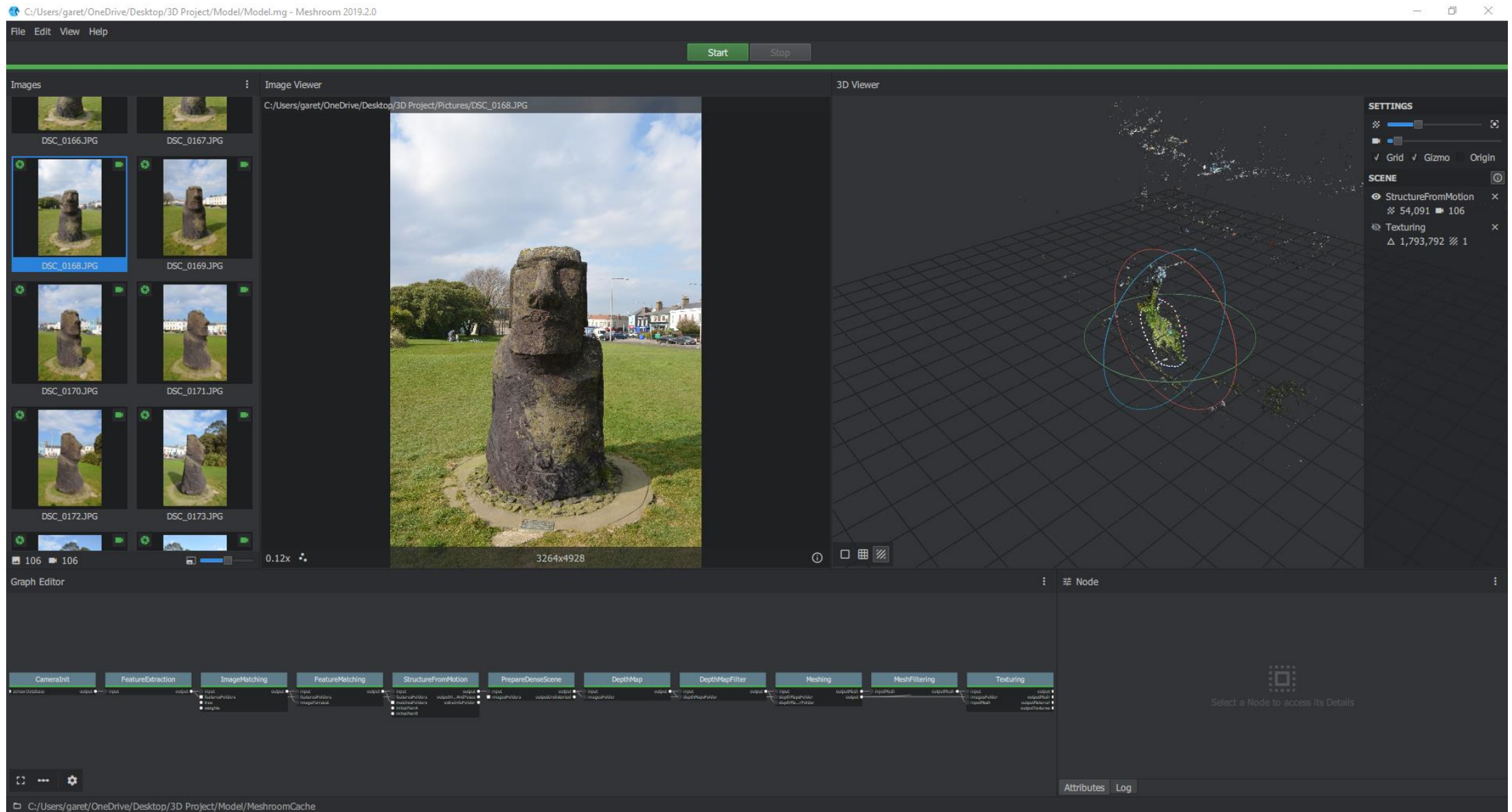


- The individual nodes will also highlight as they advance through the individual processes





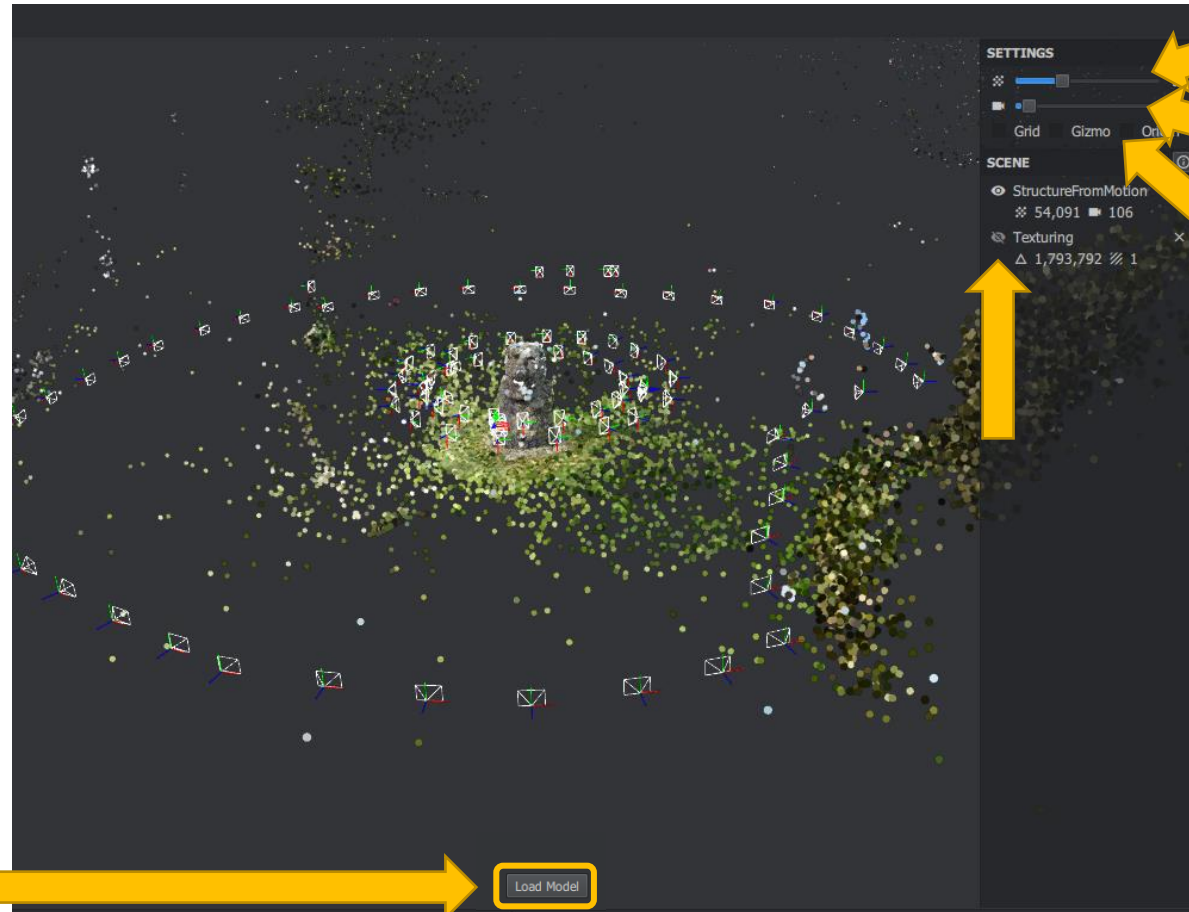
# Using Meshroom – Completed!



# Using Meshroom – Checking the model

The “3D Viewer” window will now allow you to load your 3D model

- Use the left mouse button to rotate the view
- Use scroll-wheel to zoom and pan the view of the model



Change Point Size

Change Camera Size

Show/Hide  
Structure from  
Motion to toggle  
the point cloud

Show/Hide  
Texturing to toggle  
the 3D model

Click ‘Load Model’

Load Model

# Using Meshroom – Checking the model

- You can explore the model in the 3D Viewer window
- Hide the Structure from Motion and show Texturing



Hide Structure from Motion and show Texturing by clicking on the “eye” icon



# Using Meshroom – Checking the model

- The 3D model is going to be larger than necessary and includes a lot of extra data that you may want to remove
- In the next stage we will clean up the model and reduce the file size using Blender



Too many “faces” and  
too much extra 3D  
data around the area  
of interest