CreateAccess

Learning Guide

Create and Edit Photorealistic Models

Introduction

You can create models of real-world objects to add to 3D experiences. This Guide will introduce you to two different tools—Polycam and Luma 3D Capture—that you can use to create realistic models of objects in your environment using a cell phone or tablet. The models you create can be added to a range of 3D experiences, including Fortnite islands using Unreal Editor for Fortnite (UEFN).

This Guide focuses on a few specific approaches for making 3D models with each tool, and provides strategies for editing models created with each tool so they can be used in a 3D experience.

Video Learning Guide for this Lesson:
https://www.youtube.com/watch?v=dcb7UtEFjTA

Contents

Step 1 (Option 1): Create photogrammetry models with Polycam

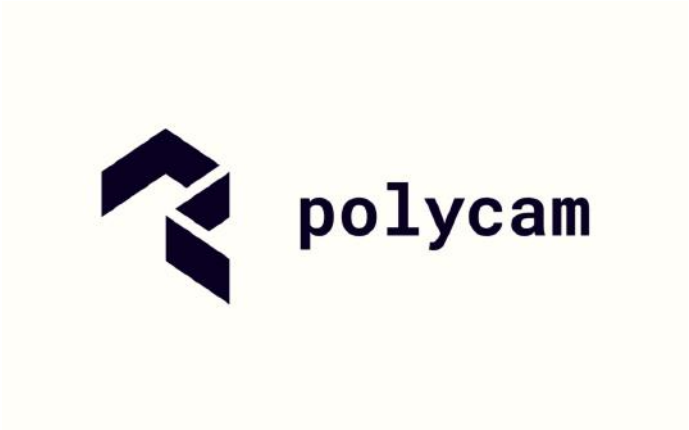
Preview

Photogrammetry is a technique that stitches together multiple overlapping photos of an object or environment to create a 3D model. The 3D models are typically highly detailed and realistic-looking. Polycam is a multi-platform app that lets users create photogrammetry models of objects and people easily.

Experiment

PREPARE TO SCAN

Locate a mobile device with a camera. Install the Polycam app. You will need to create an account. You *do not* need to accept the free trial or subscribe - you can decline and begin making models for free.



CHOOSE SOMETHING TO SCAN

Because of the way photogrammetry stitches multiple images together, not all objects will create a perfect 3D model. Objects likely to scan well typically:

- have various textures, materials, and colors
- are not symmetrical
- are not reflective or transparent
- allow you to take photos from every angle

If you are scanning a person, ask them to wear multicolored/patterned clothing with texture, and consider wearing a hat/headband, rings, and other accessories. You have some flexibility - just do your best to find an object that has at least some of these characteristics.

FIND AN AREA TO COMPLETE YOUR SCAN

Try to find an area with even, balanced lighting and minimal shadows.

Choose a non-reflective background when possible - for example, scanning an object on a wooden table will work better than scanning on a glass one.

COMPLETE YOUR SCAN

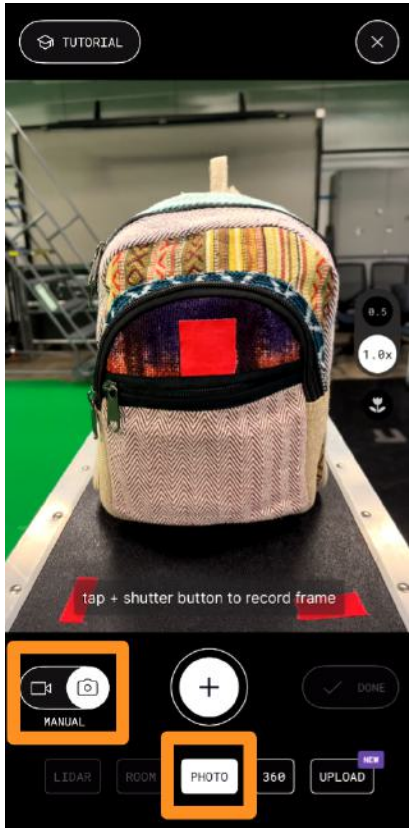
Do not move the object or person you are scanning at any point during the process. People being scanned should do their best to be as still as possible, and should ideally stand in an **“A” pose**.

Launch the Polycam app on your mobile device. The app should launch in Capture Mode.

Select **Photo Mode**.

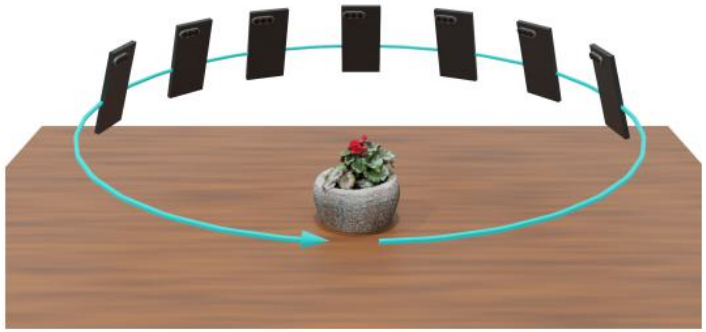
Choose either Auto Mode or Manual Mode.

- **Auto Mode:** the app will take photos for you as you slowly move around the object
- **Manual Mode:** you will decide when to take photos



Begin taking photos by clicking the white circular button. Take photos from above, below, and all sides of the object with at least **50% overlap** between photos. Make sure you take *at least two* overlapping photos of every area on the object.

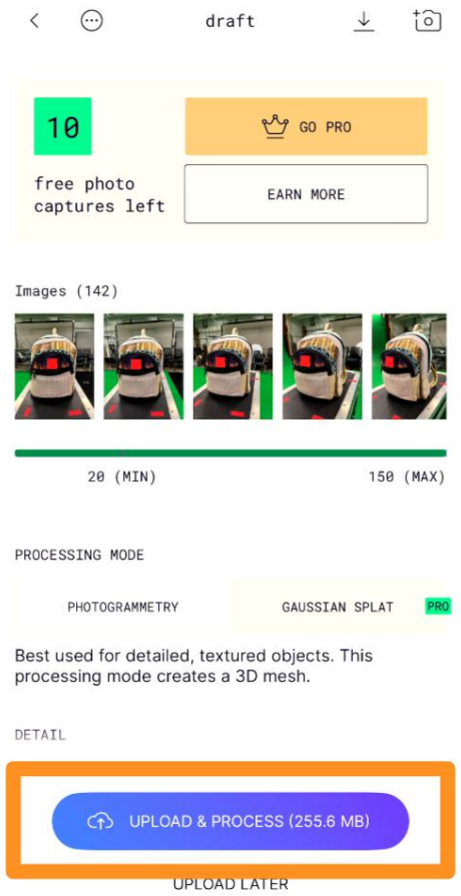
It's ideal to take your photos in circles around the object so you can be more certain that you've captured every area on the object. Take extra photos of any areas with irregular shapes, undersides, or more uniform textures or colors.



PROCESS YOUR SCAN

Click the **"Done"** button when you are finished taking photos.

Click **"Upload and Process."** Make sure to ***keep the app open*** during processing.

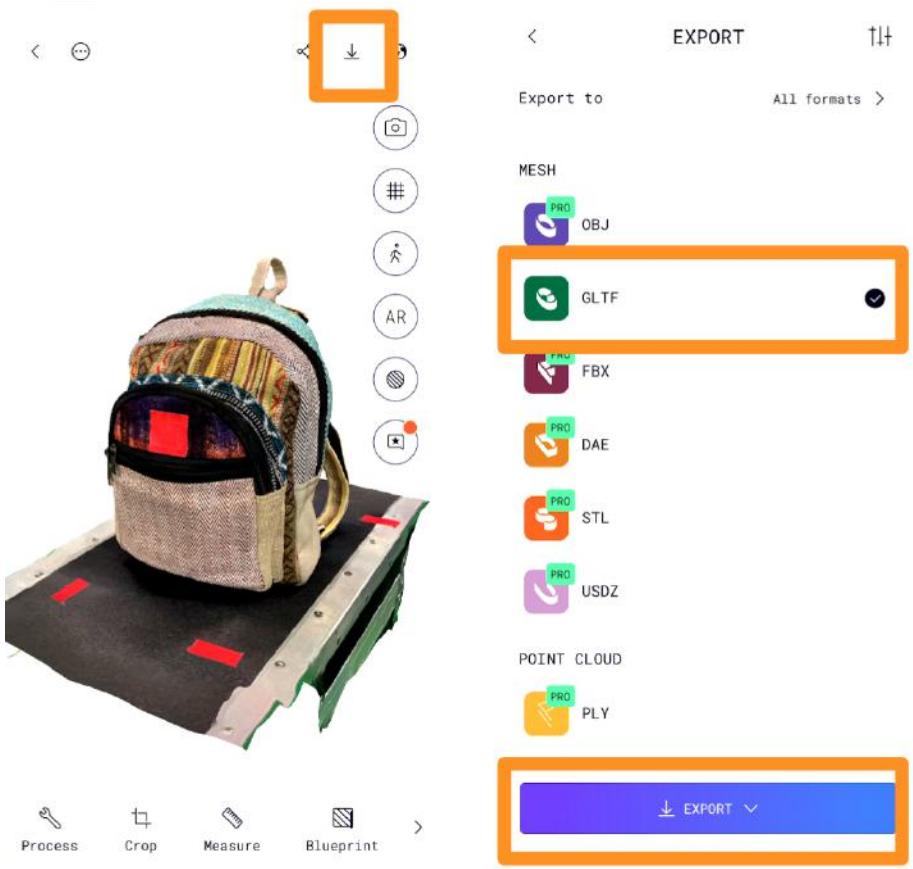


EXPORT THE MODEL

To export your model, click the small **download icon** at the top right of the screen.

Select **GLTF** and click **“Export”**.

Choose a location to export. For example, you can email the file to yourself or save it to Google Drive.



Self Check

Were you able to scan the object you wanted? Try using multiple objects for photogrammetry scans and see which types of objects scan well and which ones don’t. Trying to scan an object that you know may not scan well can be a great exercise to help you understand how photogrammetry works.

Step 1 (Option 2): Create models using NeRFs with Luma 3D Capture

Preview

Luma 3D Capture allows you to create 3D models using neural radiance fields, or NeRFs. It can sometimes be a good alternative to Polycam, especially when creating models of objects that are challenging to scan with photogrammetry technology (due to lack of details, shininess, uniform colors/textures, etc).

Experiment

PREPARE TO SCAN

Locate a mobile device with a camera. Install the Luma 3D Capture app. You will need to sign in with a Google Account.

Choose something you would like to scan - a person or an object. Choose something that can remain still during scanning, with minimal background movement.

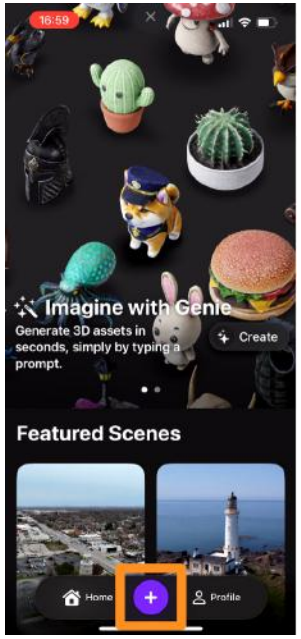
COMPLETE YOUR SCAN

Open the Luma 3D Capture app on your device. The app might have a slightly different interface based on your device.

If you are using an Apple device (left image), select the **+** option at the bottom of the screen to start a capture.

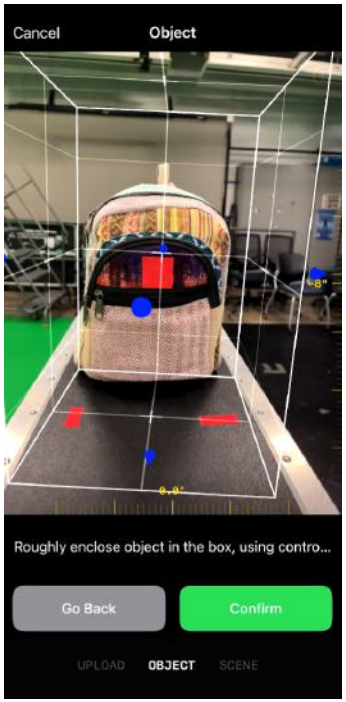
If you are using an Android device (right image), select the **Create (+)** option and choose **Guided** before following the prompts to capture.

The Luma app is sensitive to device rotation, so it would be beneficial to disable “Auto Rotate” by going to your mobile device’s settings before starting your capture.



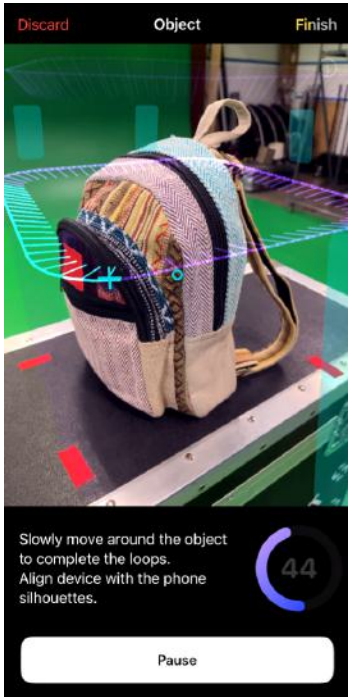
Keep in mind that the interface of the app and the prompts on screen may differ depending on devices used. This Guide will be showing examples from an iOS device.

Follow the prompts on screen and tap on the middle area of your object on the front and back to create a rectangular volume that will cover the entirety of your selected object.



Then follow the on-screen guides to walk around your object multiple times while positioning your phone at different angles and heights.

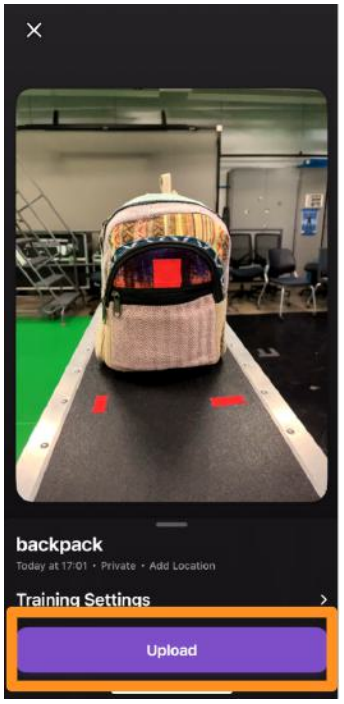
The guides on screen will change color as you cover the required angles. When you capture all sides of your object, your capture will be complete.



PROCESS YOUR SCAN

Once finished, change the title of your scan and click on **Upload**.

The app will then begin to upload and process your scan. The process might take a few minutes depending on the app's current capacity.



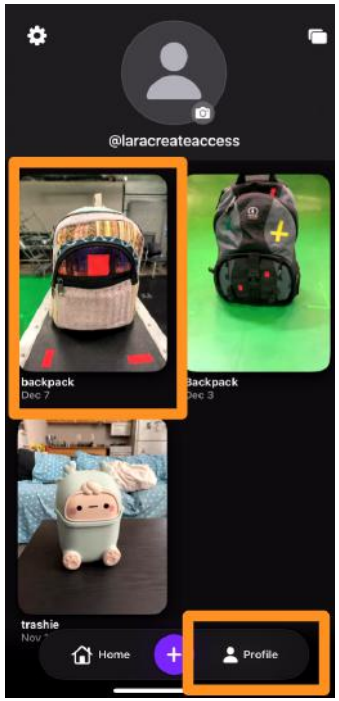
EXPORT THE MODEL

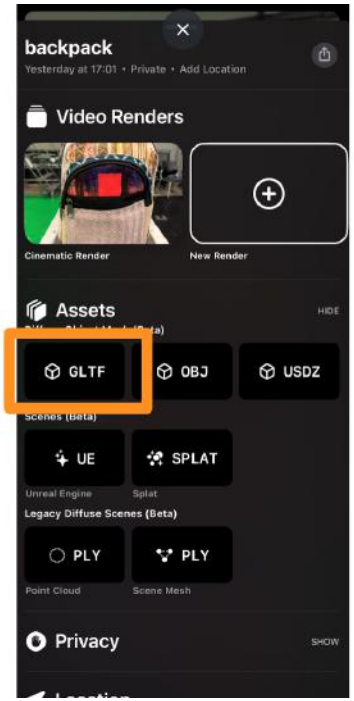
When the model has finished processing, you can access the model via the **Profile** section within the app.

Scroll to the bottom of the screen to the **Assets** section.

Select the **GLTF** option to download the model. The downloaded model will be saved to your mobile device.

You can upload the model to Google Drive or email it to yourself to access it from a computer.





Self Check

Try scanning the same object or person with Polycam and Luma 3D Capture. What do you think the strengths and weaknesses are for each app?

Step 3: Edit models in Blender

Preview

Creating a photorealistic model of an object will naturally include parts of the surrounding environment - usually the surface that the object was standing on. You can use additional tools and softwares to edit or “clean up” your model before its final use.

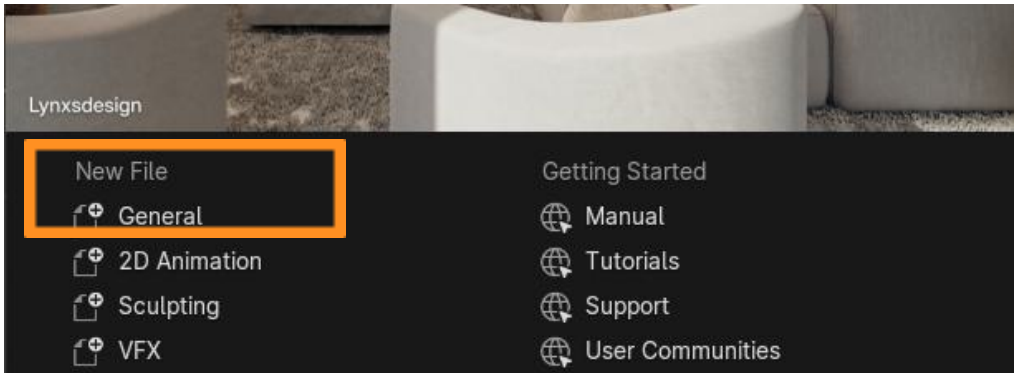
Experiment

EDIT THE MODEL IN BLENDER

Blender is a free, commonly-used 3D creation suite that can be used in many areas of 3D creation. For this lesson, you will need to use a few functions in Blender to clean up your 3D model.

Download the model file to your computer. If you have a zip file, extract the file in the File Explorer.

Download Blender and follow the prompts to install it on your computer. Once installed, launch Blender and select **General** from the New File options.

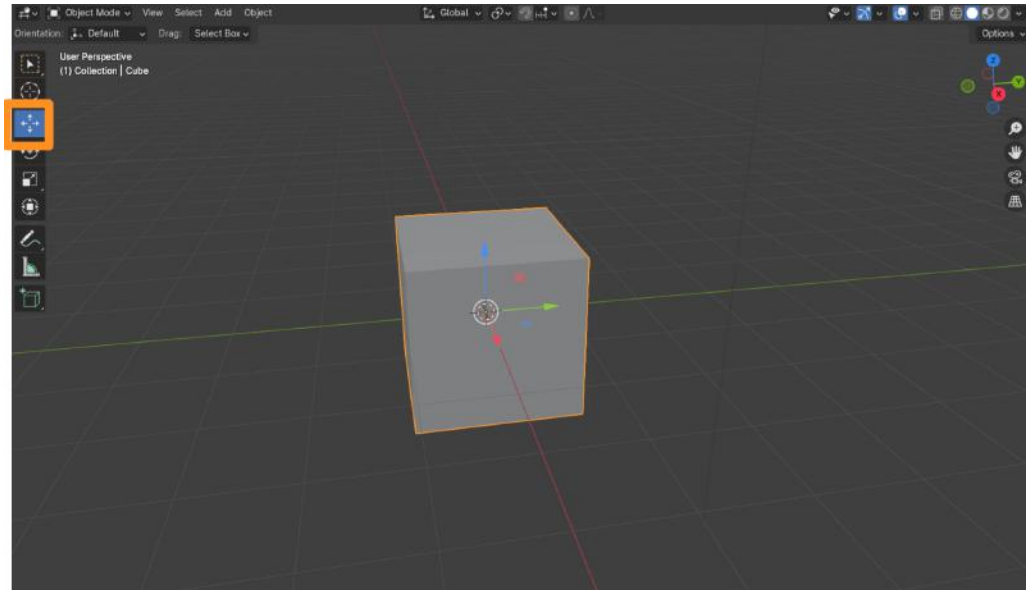


To navigate in the Blender viewport, hold down the **SHIFT key** and **Middle Mouse Button** together and move your mouse.

To rotate around an object, hold down **Middle Mouse Button** and move your mouse in the viewport.

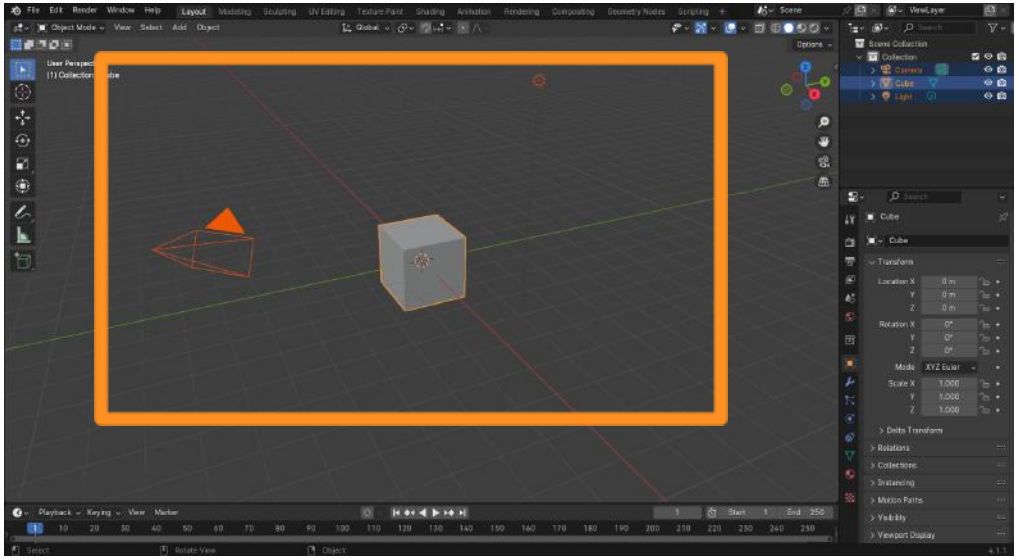
To zoom in or out, use the **scroll wheel** on your mouse or hold down **CTRL** and use the **Middle Mouse Button**.

To move an object in the scene, you can enable the arrow gizmos by selecting the “Move” icon from the left panel.

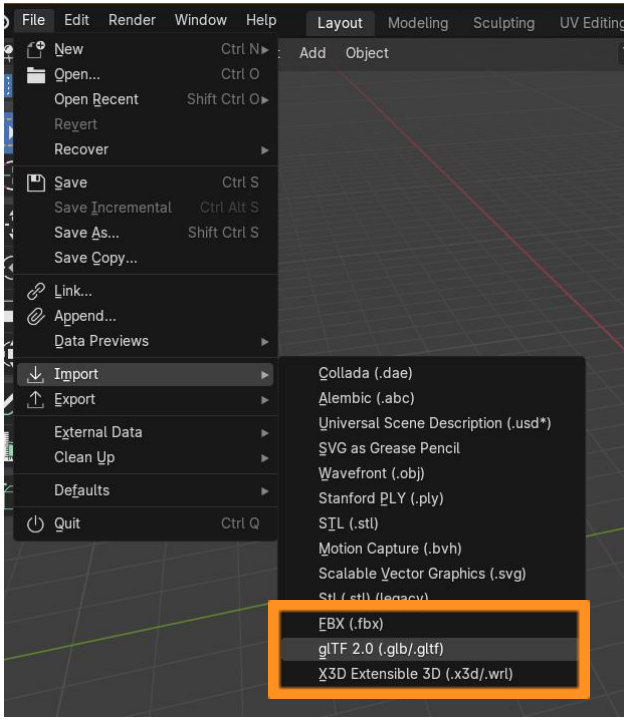


You will see some default objects (cube, camera, light) in the Blender scene that opens. You can delete these objects since they’re not needed.

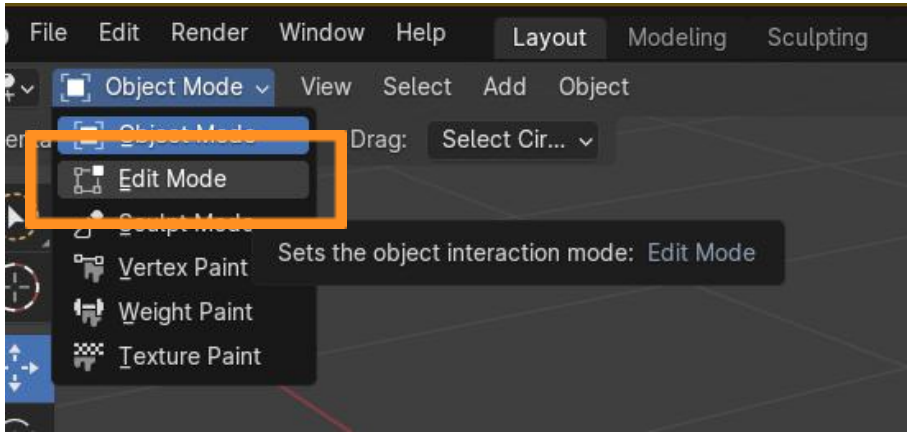
Click on the **“A” key** to select everything in your scene and press **Delete** (or the **“X” key**) to clear the scene.



Navigate to the File section and then **Import** > **GLB/GLTF**. Select your downloaded 3D model.

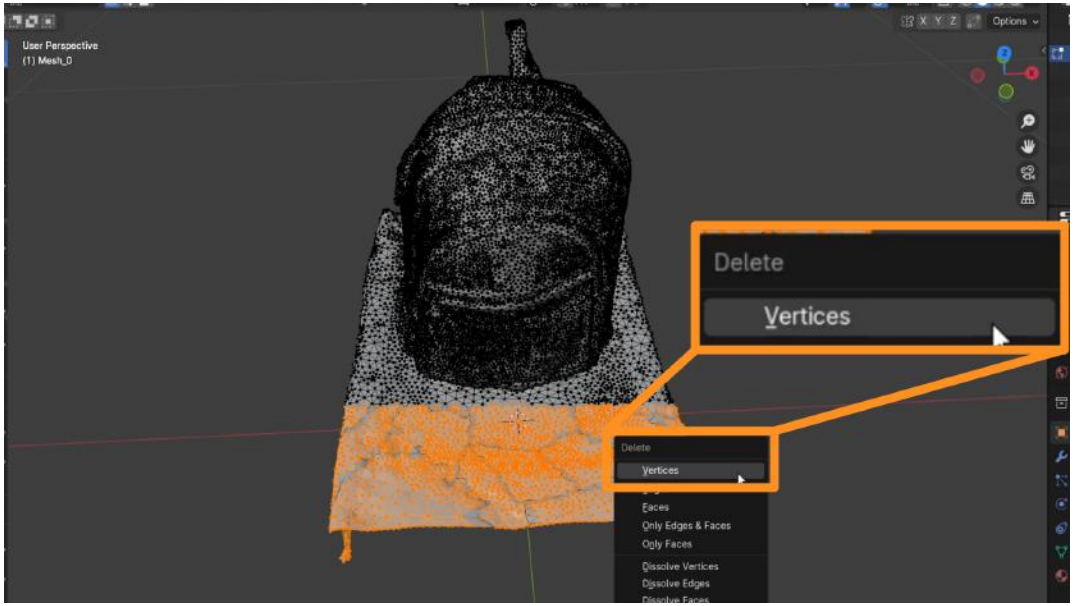


Change the upper left hand dropdown from “Object Mode” to **Edit Mode**.

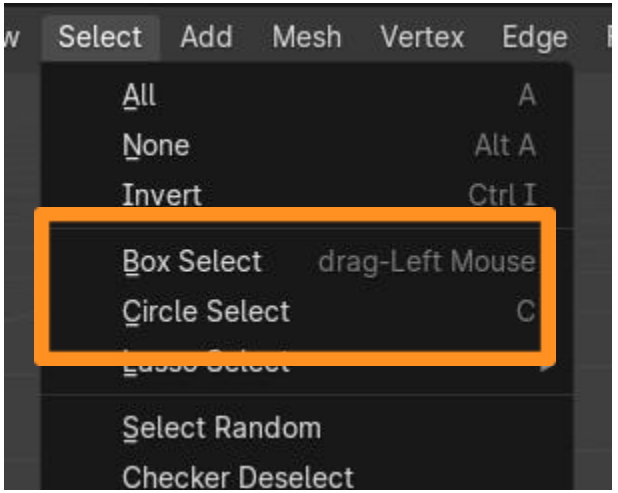


Click and drag on the excess area you wish to get rid of and press the **Delete** (or **“X”**) **key** to remove it. Select **Vertices** from the pop up.

You might need to go over the same areas multiple times to make sure all vertices are deleted.

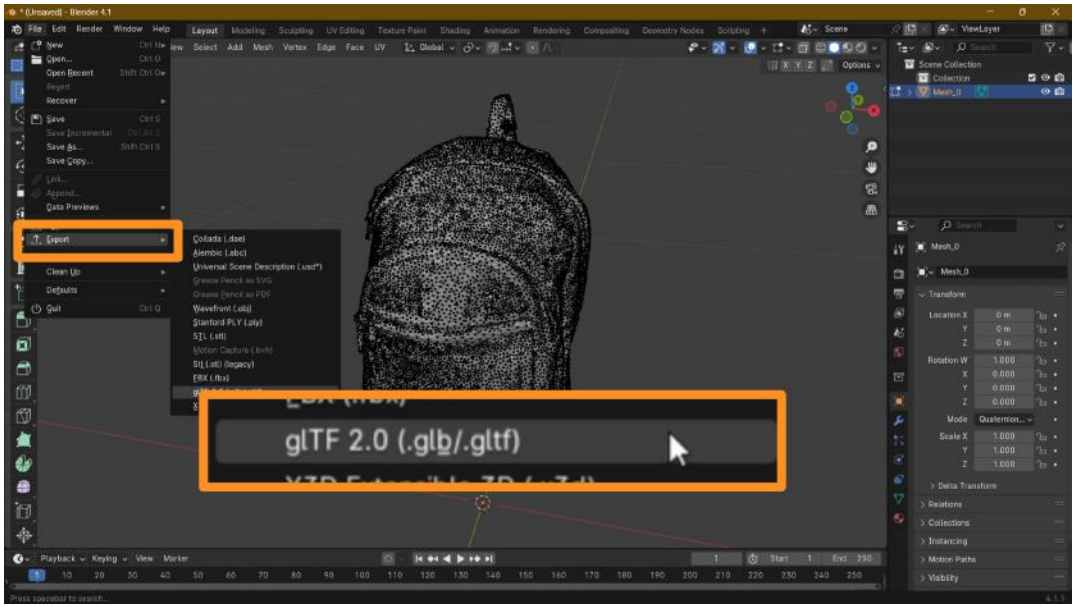


You can also use different tools to select larger areas. After going into Edit Mode, and access **Select > Box Select** or **Select > Circle Select**. Select the area you want to delete and hit the DELETE key.



Once satisfied with your model, navigate to **File** > **Export**. Pick either FBX or GLB/GLTF and **export** your model.

Name your download file and remember where you saved it on your computer for the next steps.



Self Check

At the end of this step, you should have a clean 3D model that doesn't include extra area from its surroundings. What have you found during your editing process that worked well and that didn't?

Step 4: Import models into UEFN

Preview

Now that your models are cleaned up and ready to use, you can bring them into Unreal Editor For Fortnite (UEFN) and add them to your Fortnite experience.

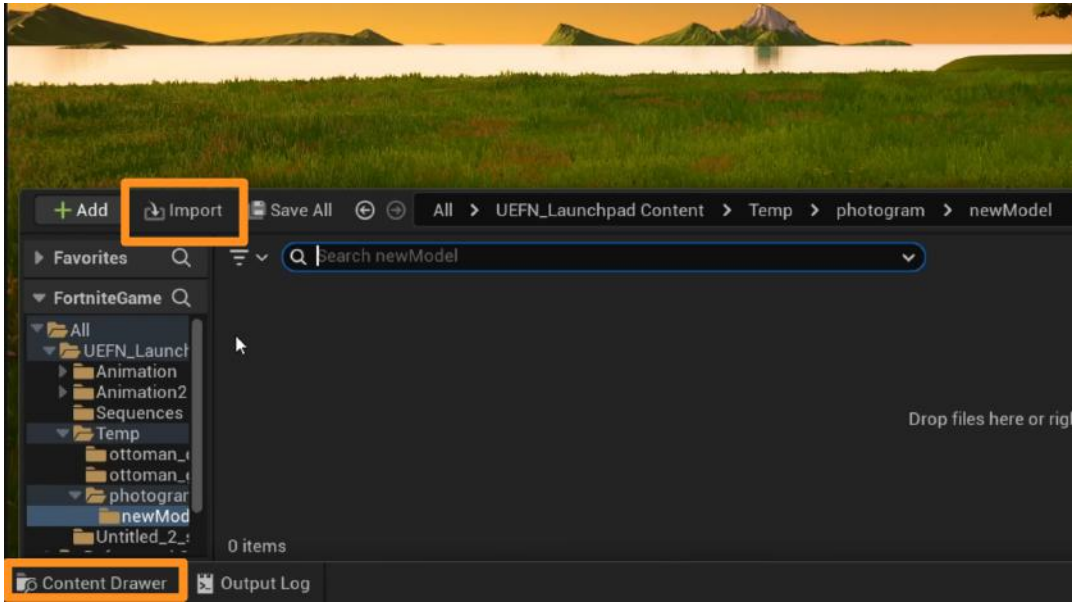
Experiment

IMPORT YOUR MODEL INTO UEFN

Launch UEFN and open an existing project or create a new one.

Open the **Content Drawer** and select your project's folder. Click the **Import** button. You can also right click in the Content Drawer and select the "Import" option.

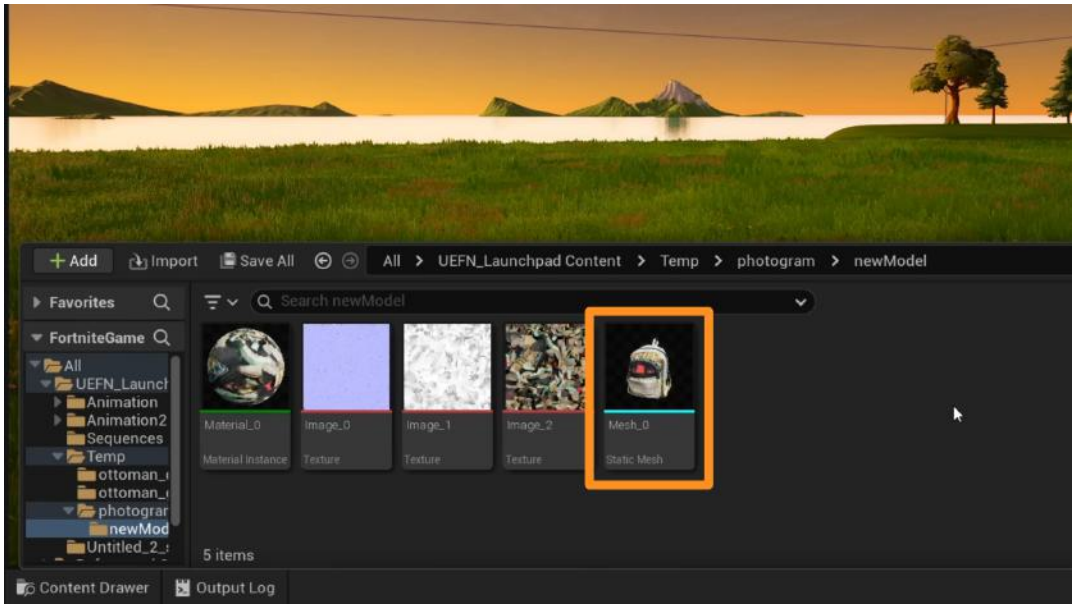
Navigate to the location on your computer where you saved your model and select it. You can leave all settings at default and click **"Import"** to bring your model into the Content Drawer.



Find your imported model in the Content Drawer. It will be labeled as **Static Mesh** with an aqua-color line under the thumbnail.

Click on the thumbnail and drag it into the **Viewport** to bring the model onto your island.

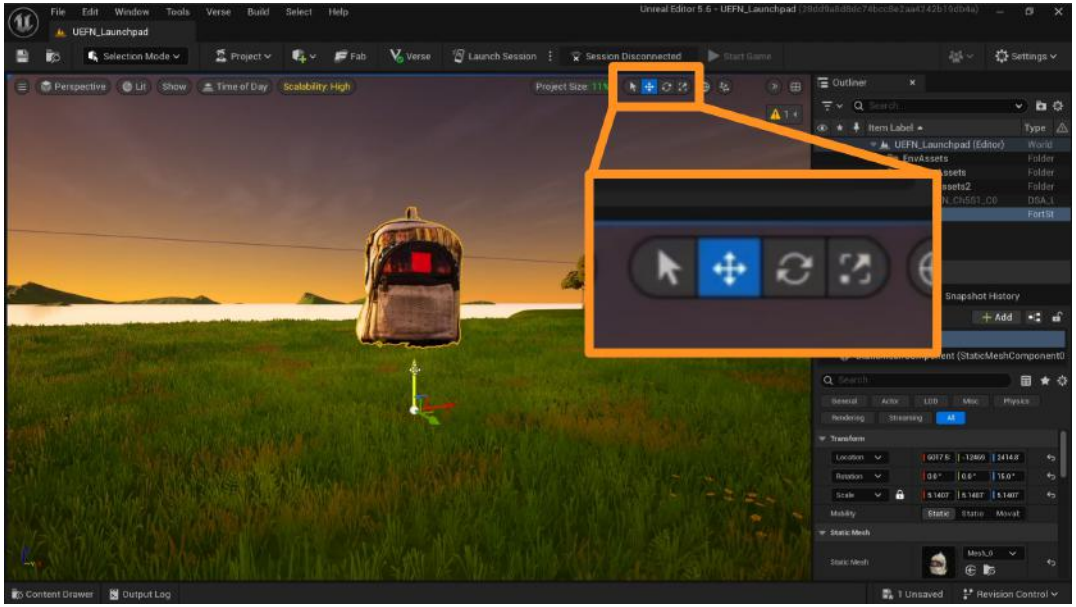
You can use the transform tools in UEFN to place your 3D model wherever you wish on your island and scale it as much as you want.



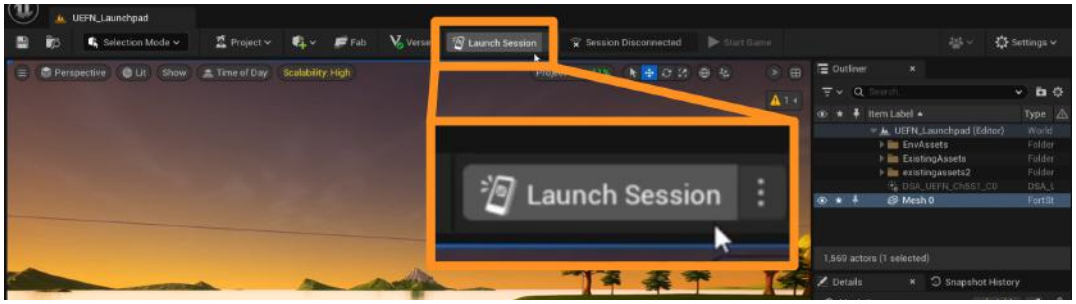
Enable the **Transform gizmos (Move, Rotate, Scale)** using the icons near the top right of the Viewport. You can also use keyboard shortcuts: Move **(W)**, Rotate **(E),** Scale **(R)**.

With each gizmo, use the handles to transform your asset. The “Move gizmo” will help you position your asset across your island, the “Rotate gizmo” will rotate it on 3 different axes, and the “Scale gizmo” will make your asset smaller or larger.

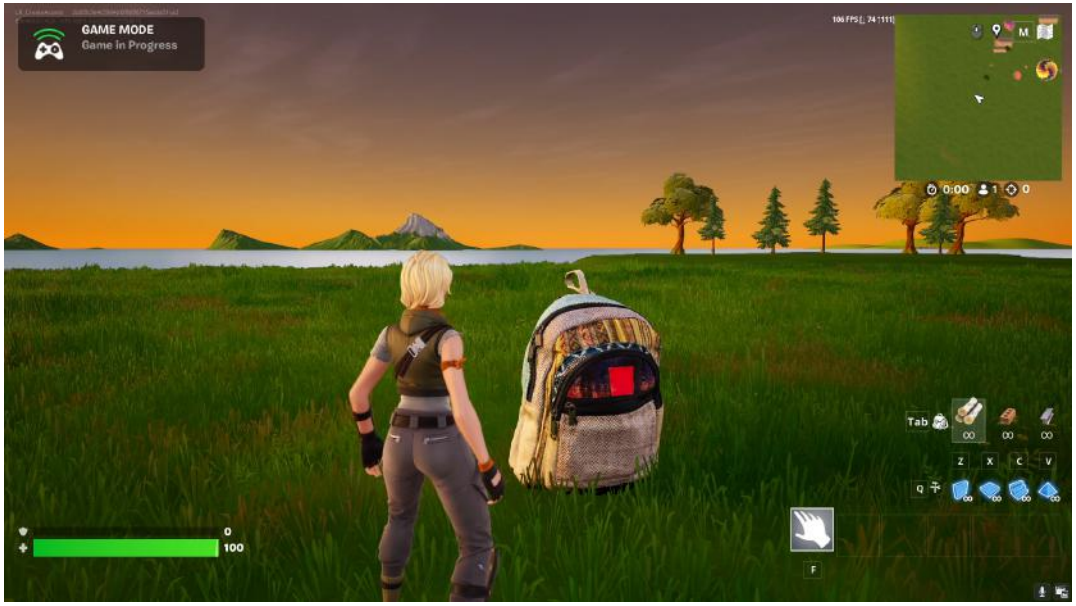
To change the size of your asset uniformly in all directions, hover your mouse over the cube at the center of the Scale gizmo until all handles turn yellow, then click and drag to scale.



When you’re ready to see your model within the Fortnite session, click on the **Launch Session** button at the top of the Viewport.



After the session loads, you will be able to look at the photorealistic model you’ve added to your island.



Self Check

Could you import your model into UEFN and position it as you wanted?

Lesson Closure

Demonstration of Learning

You've learned about 3D scanning techniques and learned how to use two different tools called Polycam and Luma 3D Capture. You created a 3D model of a real-life object or a person and successfully brought it onto a Fortnite island created using UEFN.

Exploration Opportunities

You can scan as many objects or people as you want and populate your Fortnite island with things important to you or to create a cohesive island experience. The skills you've learned in this Guide will help you quickly create 3D assets when you can't find exactly what you're looking for in online asset libraries.

If you'd like to combine the 3D models you've scanned with other 3D models you create or find online, check out the following lessons:

- Pre-Made Asset Libraries Learning Guide
- Pre-Made Assets in UEFN Learning Guide
- Artist Designed Models in UEFN Learning Guide