Mesh Extractor

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What's it good for?

If you are like me then over time you have purchased a lot of awesome assets on the AssetStore. But often you only need a small part of it.

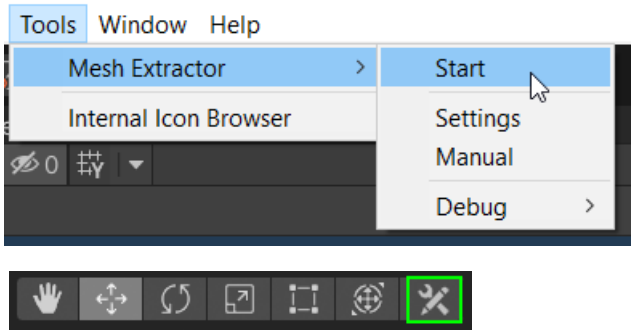
Let's take this asset from TidalFlask for example. It's a great looking asset but what I need is just one sheet and a nail. Sadly it's all delivered in one single mesh.

With Mesh Extractor I can get the what I need within one minute. No modelling software is needed.

Usage

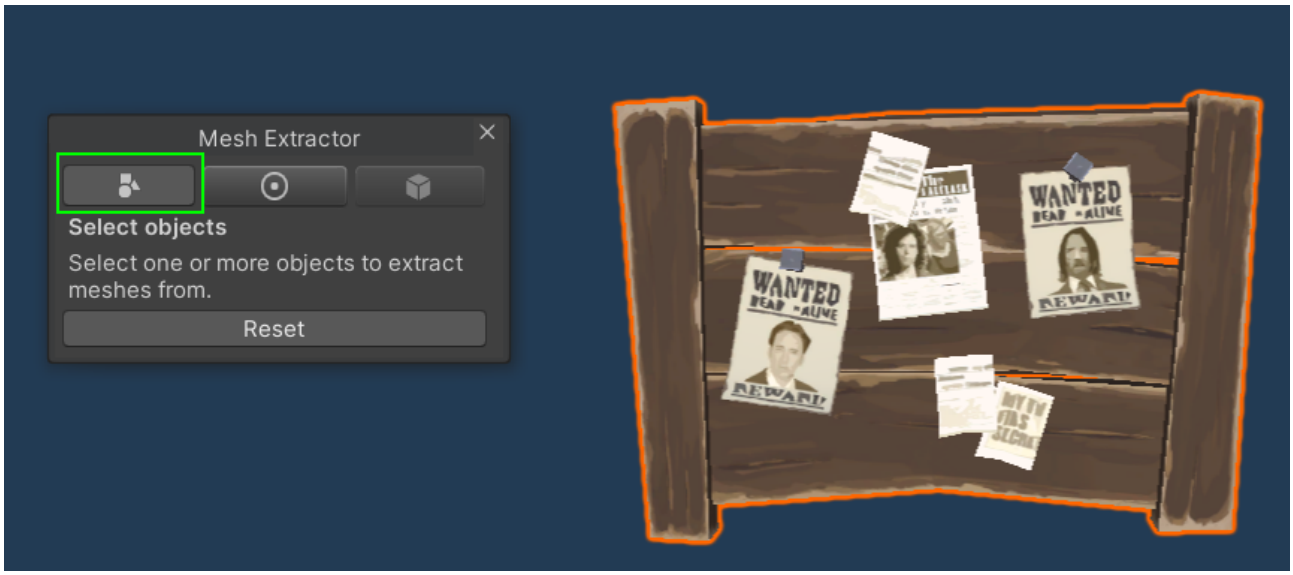
Start the tool

Open the tool via **Tools > Mesh Extractor > Start** (or via the Tools bar).



Select objects

Usually the tool starts in the „Select Objects“ mode.
Here you should select one or more objects to extract from. We do this so we don’t accidentally select parts of other meshes behind the object.



Reset: Clears the current selection, deselects any object and resets all configurations to default.

Select triangles

Once the object is selected you can start selecting the triangles which you want to extract. Simply click or drag your mouse over the object. Press **CTRL** to erase you selection.

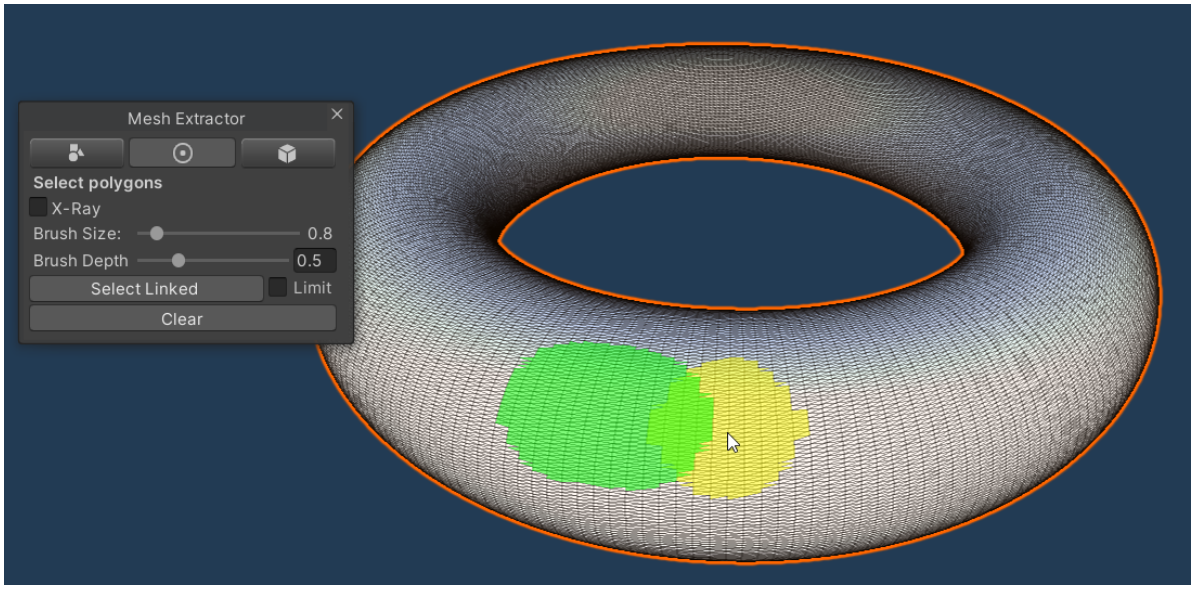
🤫 HINT: You can add new objects to extract from while painting if you hold CTRL and click an object. Though to remove it you will have to switch to the select objects mode.

X-Ray: X-Ray mode allows you to select front and back facing triangles at the same time.

Brush Size: Reduce the brush size to 0 to select only one triangle at a time.
You can also use **SHIFT + MOUSE WHEEL** to change the brush size.

Personally I mostly use brush size 0 in combination with the „Select Linked" button (see below).

Brush sizes greater than zero are useful for high poly meshes where selecting single triangles would be too cumbersome. Like in this scenario:

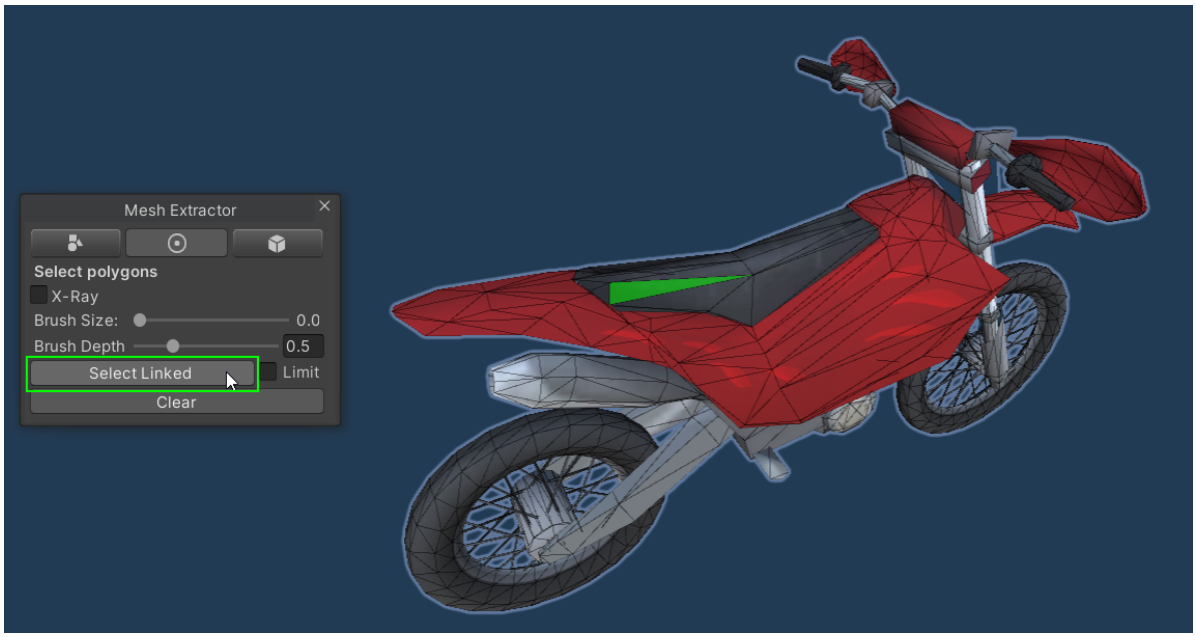


Brush Depth: Brush depth defines how far into the object the selection will go. This helps to avoid selecting background polygons by accident. If you want infinite depth then simply turn on X-Ray.

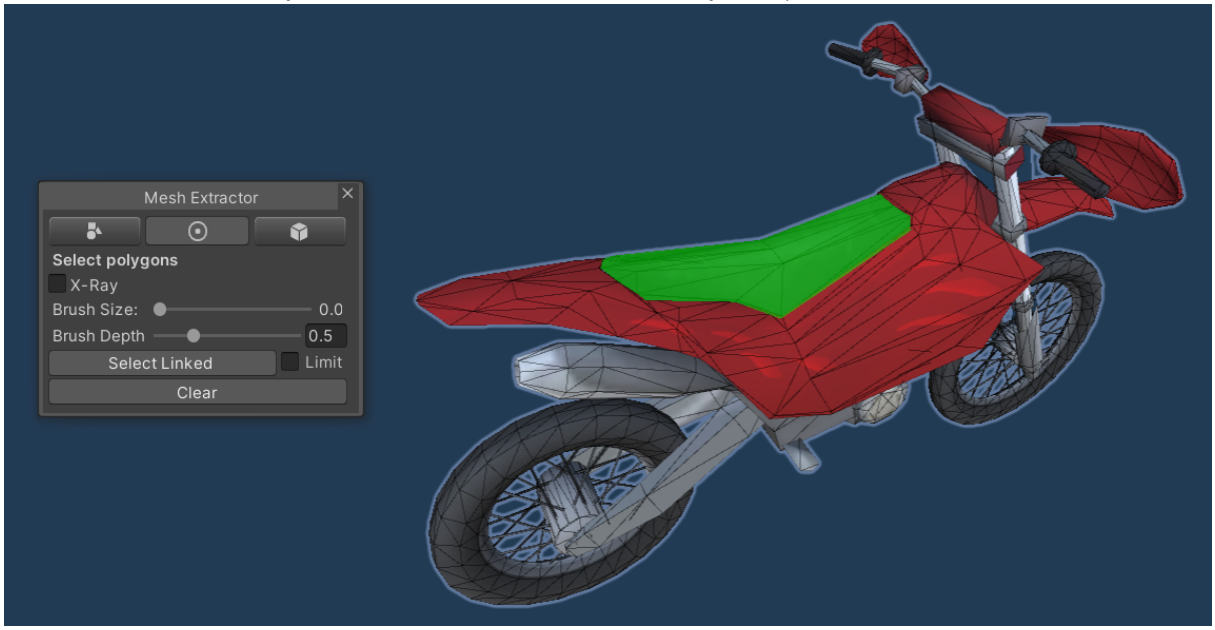
Select Linked: Selects all triangles which are connected to the last selected triangle.

This one may need some more explanation. In many cases selecting single triangles is a lot of work and actually what you want to select is a part of a mesh which has triangles sharing the same vertices (meaning one triangle is connected to another triangle with at least one shared corner point).

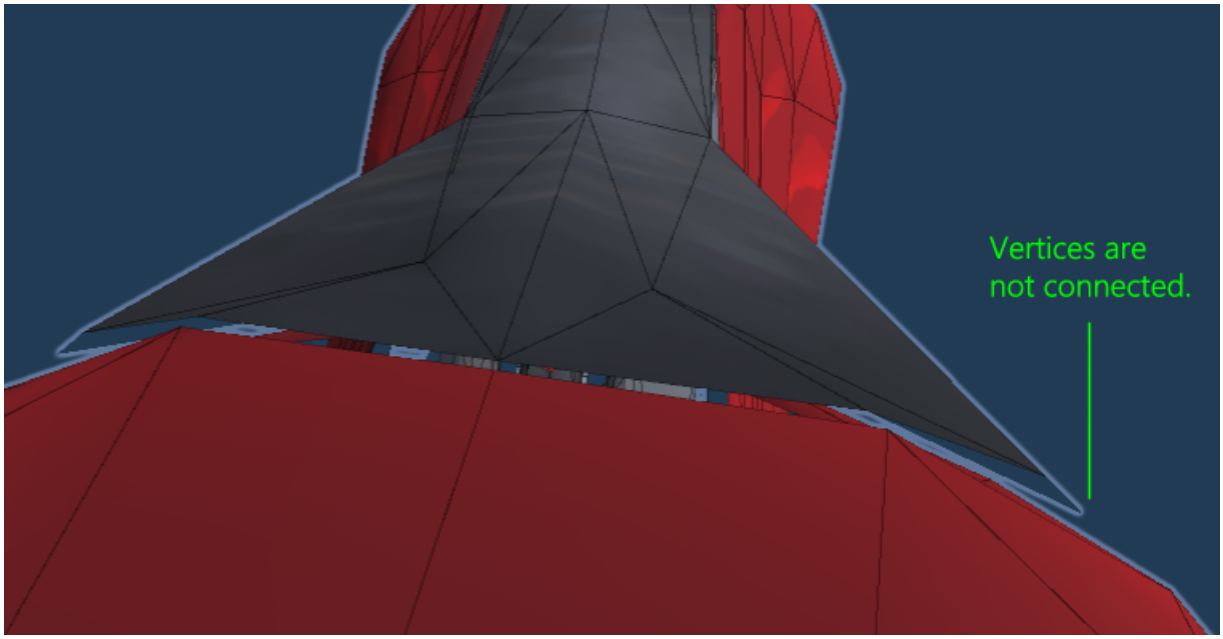
Example: Here we want to select only the seat of the bike.
We select only one triangle of the seat and then hit the „Select Linked" button.



Et voilá, the tool analyzed the mesh and selected only the part we wanted. .... but HOW?

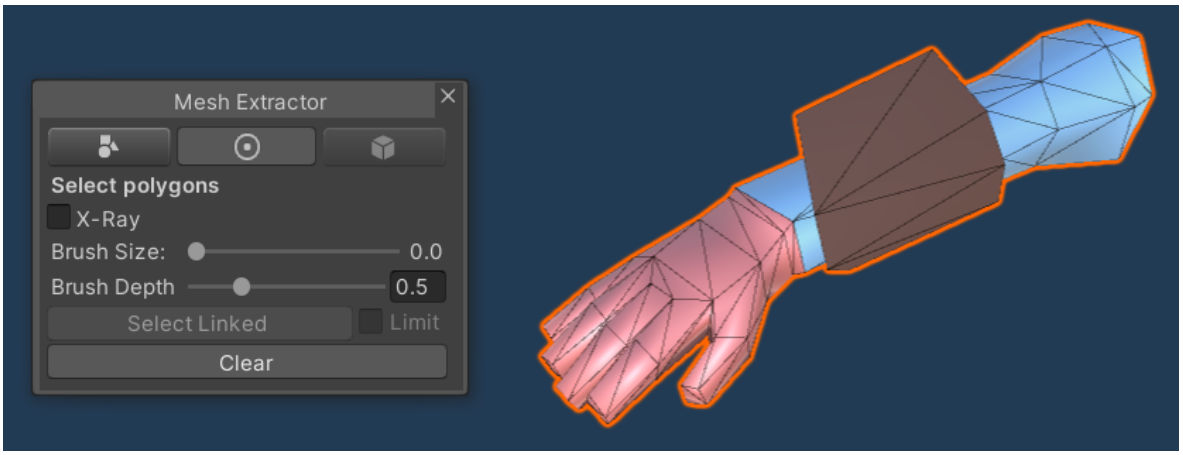


If we look closely we see that the seat mesh actually does NOT connect with the bike body. The tool can use that information.

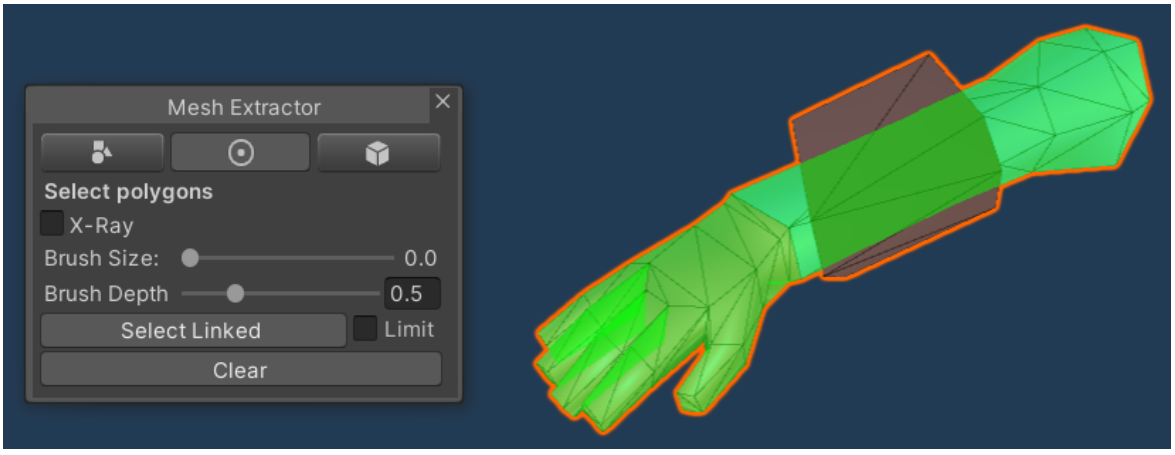


Select Linked > Limit: Enable this to limit the selection to a single sub mesh.
It will use the sub mesh of the last selected triangle.

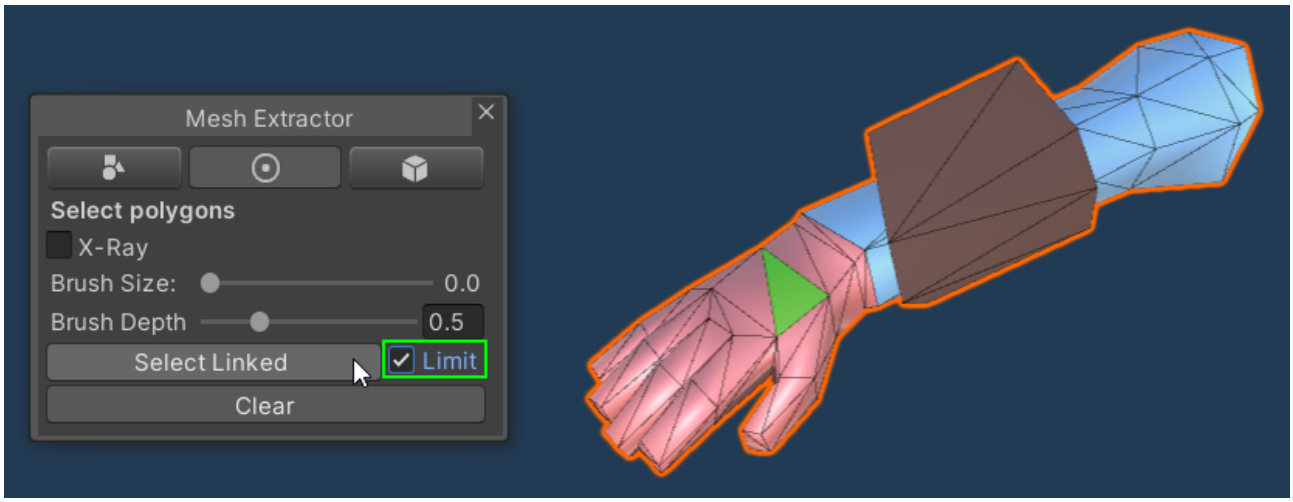
Again this one needs some more explanation. Let's take this mesh for example.



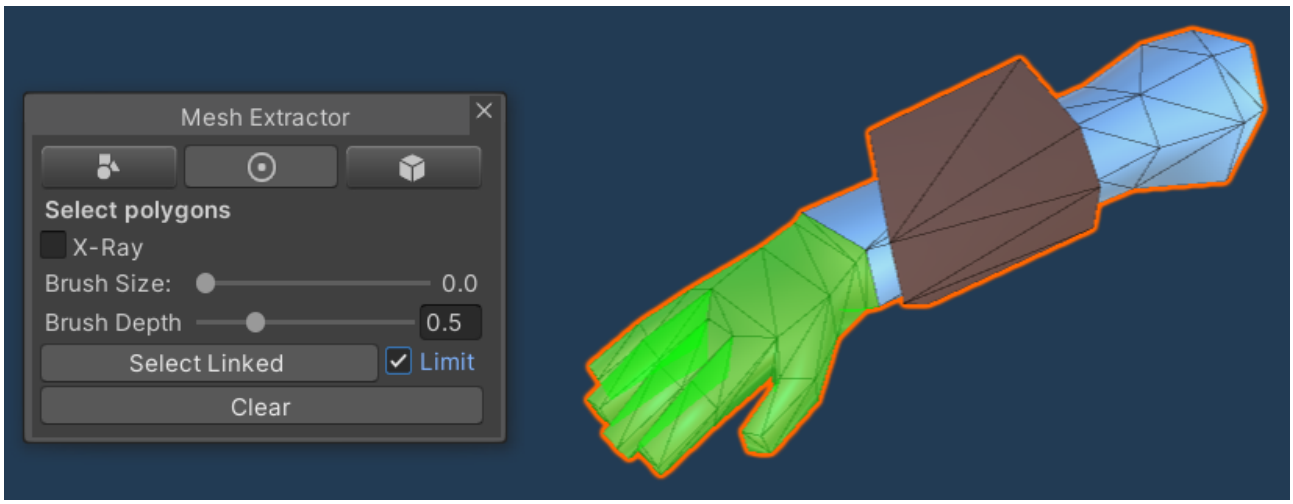
All the arms vertices are connected. If we use „Select Linked" on it the whole arm will be selected. Like this:



We can see from the assigned materials that the arm has some sub meshes (one for the arm, one for the hand). Let's enable **Limit** to limit the connected selection to a sub mesh.



This is the result if the „Select Linked" options is limited to a sub mesh.



Clear: Clears the current selection.

Extract Mesh

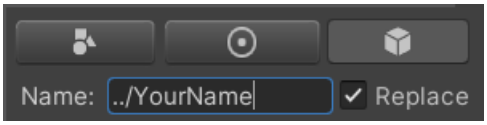
After selecting the triangles we are ready to extract the mesh.

Adjust the Pivot: You will now see a move gizmo. This is the position of the pivot. You can move it to wherever you want.

HINT: You can hold down the V key to snap the pivot to a vertex.

Name: The base name of the newly generate assets. The assets are saved under **Assets/ExtractedMeshes/[TheNameYouEnter]**. You can change the base path „ExtractedMeshes" in the settings (Tools > MeshExtractor > Settings : Extracted Files Location).

HINT: You can use relative paths here too. These are then relative to the „Extracted Files Location". So if you want your assets to be stored directly in the Assets/ folder then simply prepend a „../". Like this:



Replace: If enabled then the new prefab will replace the old. If disabled the new prefab will be stored with a new name.

Preserve SubMeshes: Enable to preserve sub meshes in the new mesh. If disabled then all sub meshes within one renderer will be merged into a single mesh.

Combine SubMeshes by Material: If multiple sub meshes have the same material assigned to them then these will be merged into one submesh if this option is enabled. This has no effect if 'Preserve SubMeshes' is disabled.

Save as .obj: Export the mesh as .obj & .mtl files instead of an .asset file.
NOTICE: The obj format does only support one set of Uvs and no extra info like bone weights.

Extract Texture: Extract the parts of the texture which are used by the selection and creates a new (possibly smaller) texture from it.

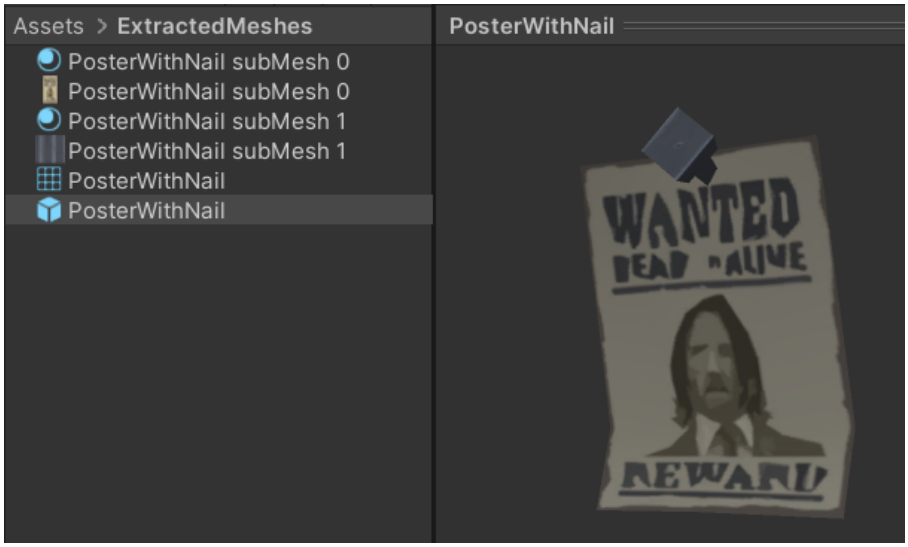
NOTICE: This feature is experimental. The reduction of the texture size depends on the original UV layout (it uses a bounding box).

„Extract Texture" reduces the size of the texture by copying oly the parts that are needed.

(The image is blurry on purpose to not reveal a third party publishers texture).

Center Pivot: Recenters the pivot in the middle of all selected triangles.

And finally this is what you will end up with:



About extracting textures

Textures are connected to 3D models through materials. Each material uses a shader and within that shader are slots (properties) which can take a texture. These slots are named. A common name used by most Unity Standard shaders is „_BaseMap“ for the main albedo texture.

Since every shader developer can pick these names freely it is simply impossible to guess all the names. For example one developer may call the albedo texture „_MainTex“ and another simply „_Albedo“. The Mesh Extractor searches for some of the most common names used by Unity devs. It should work fine with most Unity Standard shaders (though even Unity sometimes mixes up the names). It will probably fail to find textures on custom shaders.

Here is the list of searched shader property names for each texture type:

Albedo (main texture): "_BaseMap", "_MainTex", "_AlbedoMap", "_AlbedoTex", "_Main", "_Albedo"

Normal Map: "_BumpMap", "_NormalMap", "_Bump", "_Normal", "_MainNormalMap", "_ParallaxMap"

Specular Map: "_SpecGlossMap", "_SpecularColorMap", "_SpecularMap", "_Specular", "_MainSpecularMap"

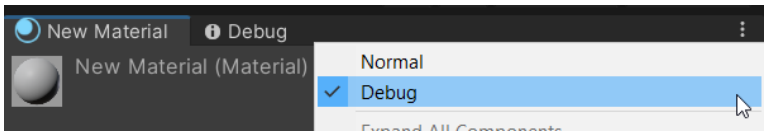
Metallic Map: "_MetallicGlossMap", "_MetallicColorMap", "_MetallicMap", "_Metallic", "_MainMetallicMap"

Emission Map: "_EmissionMap", "_EmissiveColorMap", "_Emission", "_EmissiveMap", "_Emissive", "_MainEmissiveMap"

Occlusion Map: "_OcclusionMap", "_OcclusionColorMap", "_Occlusion", "_MainOcclusionMap"

You can extend this list by editing the „Assets\Kamgam\MeshExtractor\Editor\MaterialPropertyExtensions.cs“ file.

If you are not sure how to find out which property names your custom shader is using then make a new material and assign the shader to it. Then click on the material and in the inspector change the mode to „Debug“.



If you scroll down to the „Saved Properties“ List you will find the property names listed right there.