

# CleanerWolf Avatar for ChilloutVR

## Documentation

Updated 2023/07/20



Thank you for purchasing my avatar! This documentation should help you to create and upload your own customized version as quickly as possible. To do that it is important to understand the basics of Unity but also be aware of some special features concerning the texturing process.

This documentation only covers the specific information about my avatar, it is *not* a Unity tutorial, please refer to other sources to get at least a basic understanding about the Unity editor and Chillout CCK.

Make sure to backup your Unity project(s) frequently, at some point Unity will corrupt your project, it's like a rule of nature!

## What you need

- The Unity Editor, specifically the currently supported version and the *latest* Chillout CCK. Please refer to the CVR documentation how to set it up correctly.

<https://developers.abinteractive.net/cck/setup/>

- Mochies Shaders.

<https://github.com/MochiesCode/Mochies-Unity-Shaders/releases>

This is a free package of custom shaders for Unity. It is needed for the hair/fur to work correctly.

- Poyomi Shaders.

<https://github.com/poyomi/PoyomiToonShader/releases>

This is a free package of custom shaders for Unity. It is needed for some of the materials.

- Dynamic Bones or Markcreator's Dynamic Bones Container.

If you bought the Dynamic Bones Addon, install it from the Unity store, otherwise use the free Dynamic Bones Container made by Markcreator.

- The „CleanerWolf\_Avatar\_ChilloutVR\_Unity\_vXXX“ package that you find in the download section of the avatar on Gumroad.

Importing this package can take some time, please be patient.

Optional, but recommended:

Some of the files on my Gumroad page are compressed using 7zip (with the file extension .7z)

<https://www.7-zip.org/>

## Getting started

Open the example scene in the project under „Assets/CW\_Avatar/Scenes“. There are 3 variants of the model:

### - CleanerWolf\_Model\_PUB (Public)

This is the „standard“ version. It is configured for good balance between visual quality and performance optimization. Use this version in public worlds and larger crowds.

### - CleanerWolf\_Model\_AD (After Dark)

This version is meant to be used in private situations or small groups, using a few more hair cards and 8K textures for the body to provide the highest level of detail.

It is also „anatomical correct“, offering a certain toggable and sizeable „Red Rocket“ special feature for users who are into that kind of activities.

*Important: NEVER upload this as a public avatar, it would be a clear violation of the ChilloutVR community guidelines. Only enable the „Red Rocket“ in „Invite“ instances! Please act responsibly!*

### - CleanerWolf\_Model\_DEM (Demo)

Similar to the PUB version, but includes a „Skin select“ menu to change the skin ingame and the collar and harness props.



## Adding optional Props

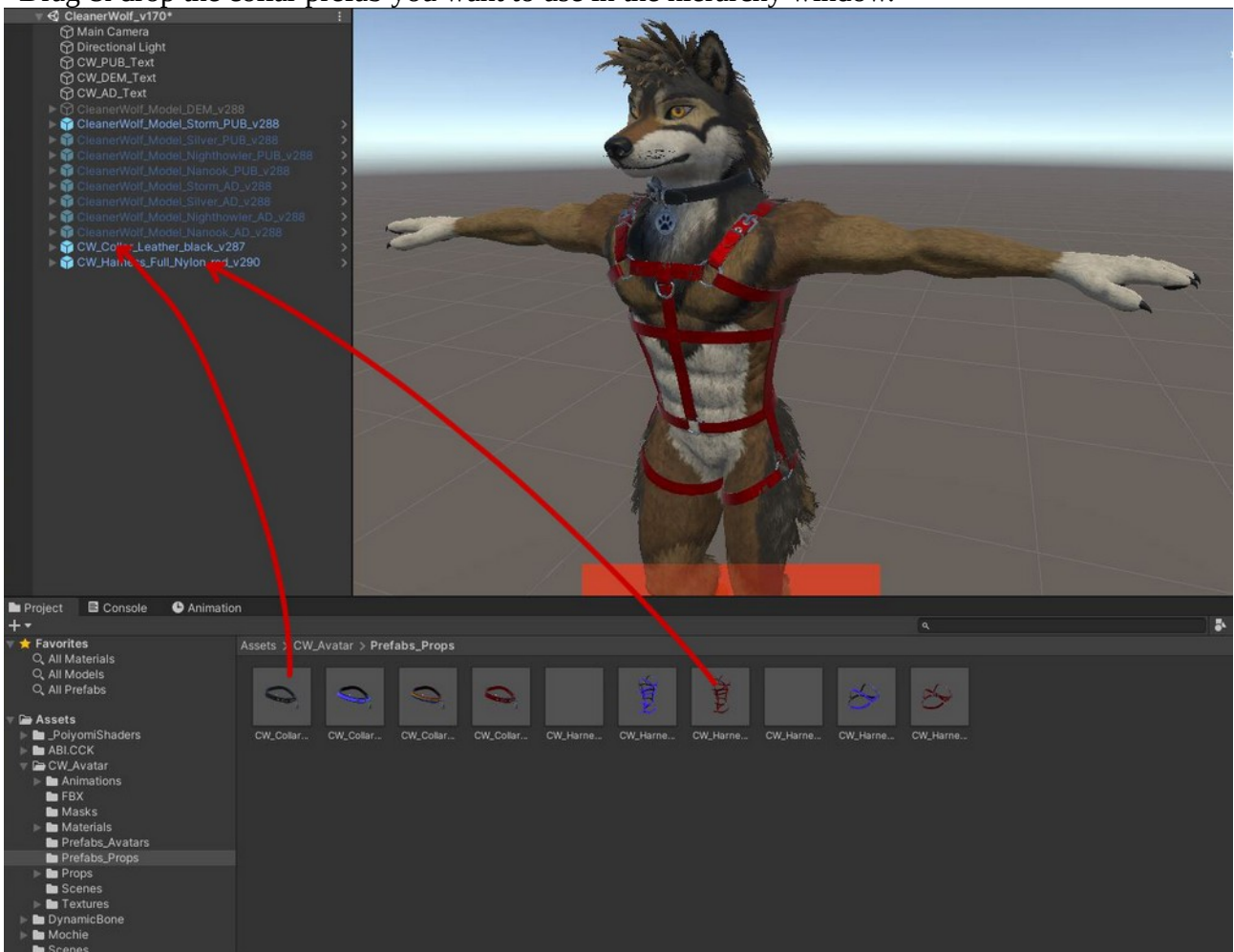
The CleanerWolf avatar comes with some additional props which you can add to the avatar you want to upload. Those props are prepared as prefabs, you can find them in the Project window under „Assets/CW\_Avatar/Prefabs\_Props“. At the moment there are different variants of collars and harnesses available.

The „DEM“ version of the avatar already has the collar and the full harness applied to it, so if you want to have those props on your avatar, I recommend to use this as a starting point. If you want to apply them yourself, use it as a reference.

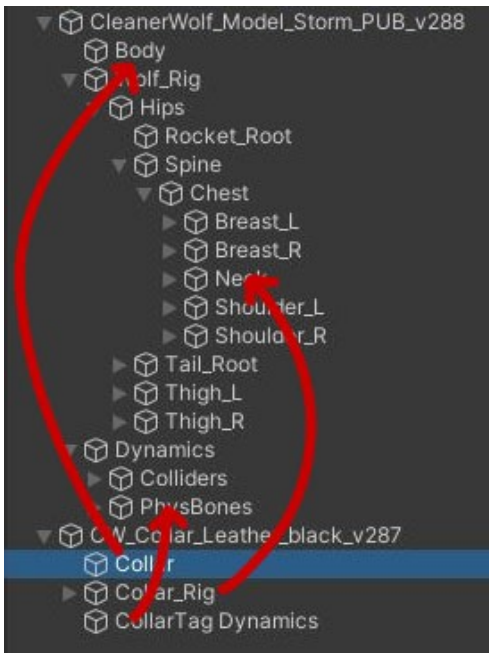
Here is a step-by-step guide how to apply the props:

### Applying the collar

- Drag & drop the collar prefab you want to use in the hierarchy window.



- Unpack both prefabs, the avatar you want the collar being applied to and the collar itself and open their hierarchies to see the child objects.



- Drag the „Collar“ mesh on the avatar so that it is at the same level as the Body mesh.

- Drag the „Collar\_Rig“ on the Neck bone of the avatar rig, so that it becomes a child of it.

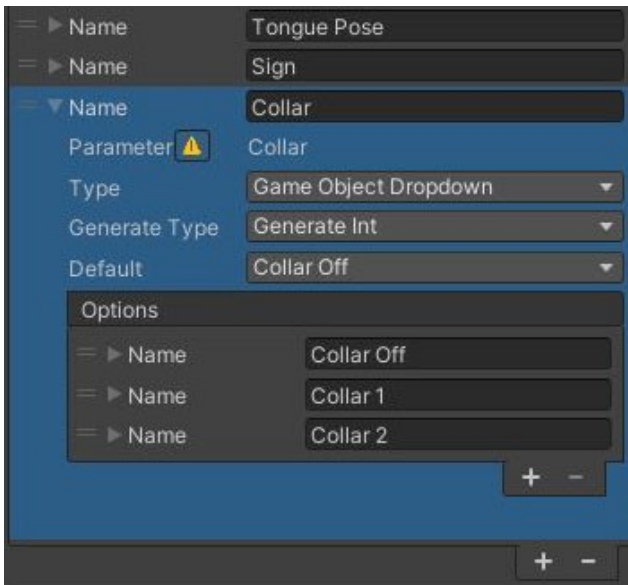
- Drag the „CollarTag Dynamics“ on the „Dynamics“ object of the avatar so it becomes a child of it.

- Select the Collar mesh and drag the Chest bone into the „Anchor override“ parameter.



- Select the „CollarTag Dynamics“ object and drag the „Hand\_L\_Collider“ and „Hand\_R\_Collider“ into the Colliders section.





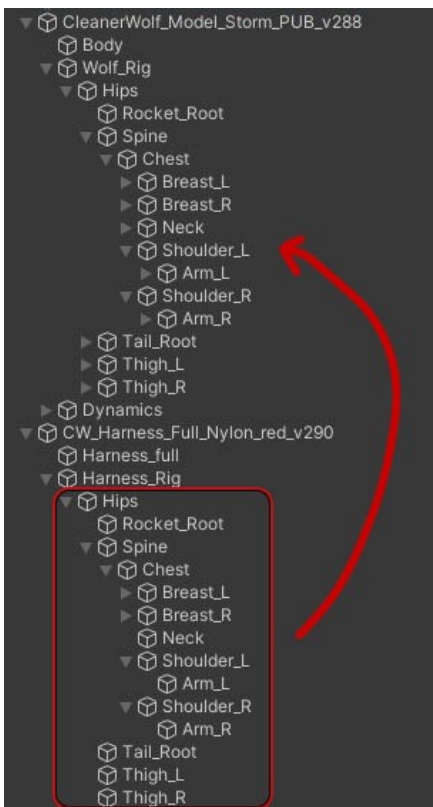
- To make the collar toggable in the game, you should add a menu entry in the „Enable Advanced Settings“ section of the CCK.

- Name the new menu exactly „Collar“, the string will be used to define the parameter which should match the one in the animator controller.

- Set „Type“ to „Game Object Dropdown“, set „Generate Type“ to „Generate Int“ and create the 3 options „Collar Off“, „Collar 1“ and „Collar 2“.

- Do NOT click the „CreateAnimator“ button, the animator already exists, creating a new one will mess up things.

### Applying the harness

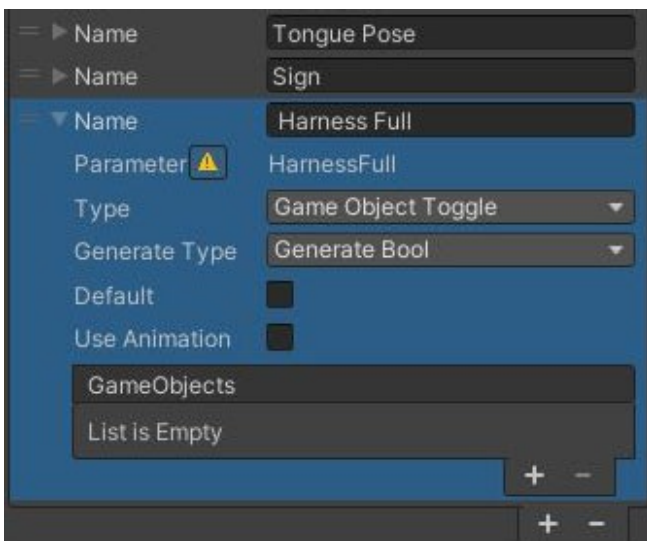
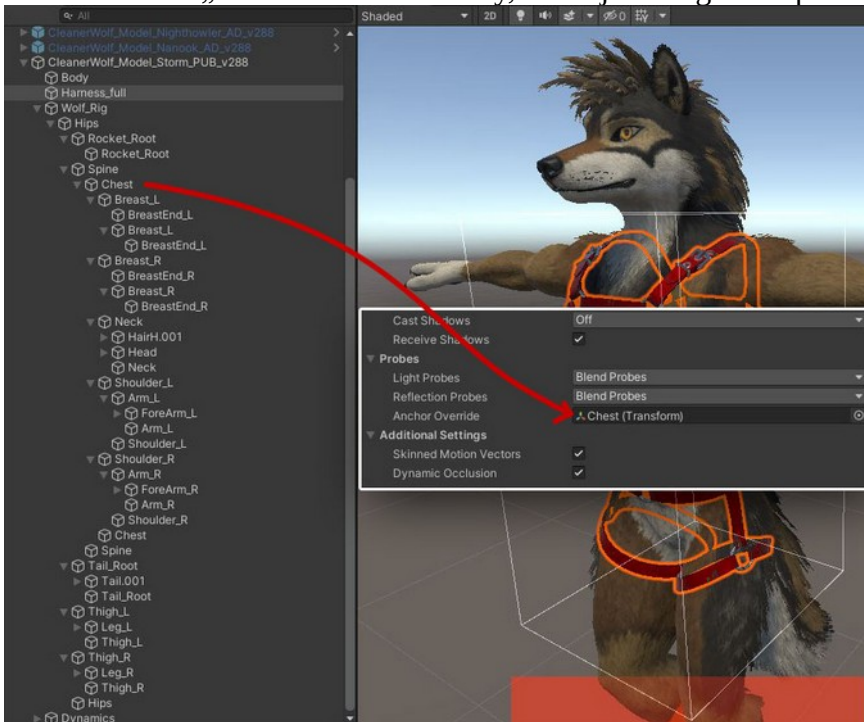


- Drag & drop the harness you want to use in the hierarchy window.

- Unpack both prefabs, the avatar you want the collar being applied to and the collar itself and open their hierarchies to see the child objects.

- Drag & Drop the bones of the harness on the bones of the avatar with the same name to make them children of those bones. Also drag the „Harness\_full/top“ mesh on the avatar.

- The result should look like this. The „Chest“ bone of the avatar should be assigned to the anchor override of the „Harness“ mesh already, if not just drag & drop it there.



- To make the harness toggable in the game, you should add a menu entry in the „Enable Advanced Settings“ section of the CCK.

- Name the new menu exactly „Harness Full“ or „Harness Top“, depending on the version you applied. The string will be used to define the parameter which should match the one in the animator controller.

- Set „Type“ to „Game Object Toggle“, set „Generate Type“ to „Generate Bool“, leave everything else untouched.

- Do NOT click the „CreateAnimator“ button, the animator already exists, creating a new one will mess up things.

Please note, that every prop you add to your avatar creates an additional „Skinned Mesh Renderer“ and also an additional material slot. To keep things optimized, only add the props you really want, also adding the same prop type multiple times doesn't work properly.

## Custom skins

Making your own textures for the CleanerWolf avatar isn't more difficult than it is for other avatars, but it is important to understand a few concepts about my approach of making the avatar looking fluffy using haircards.

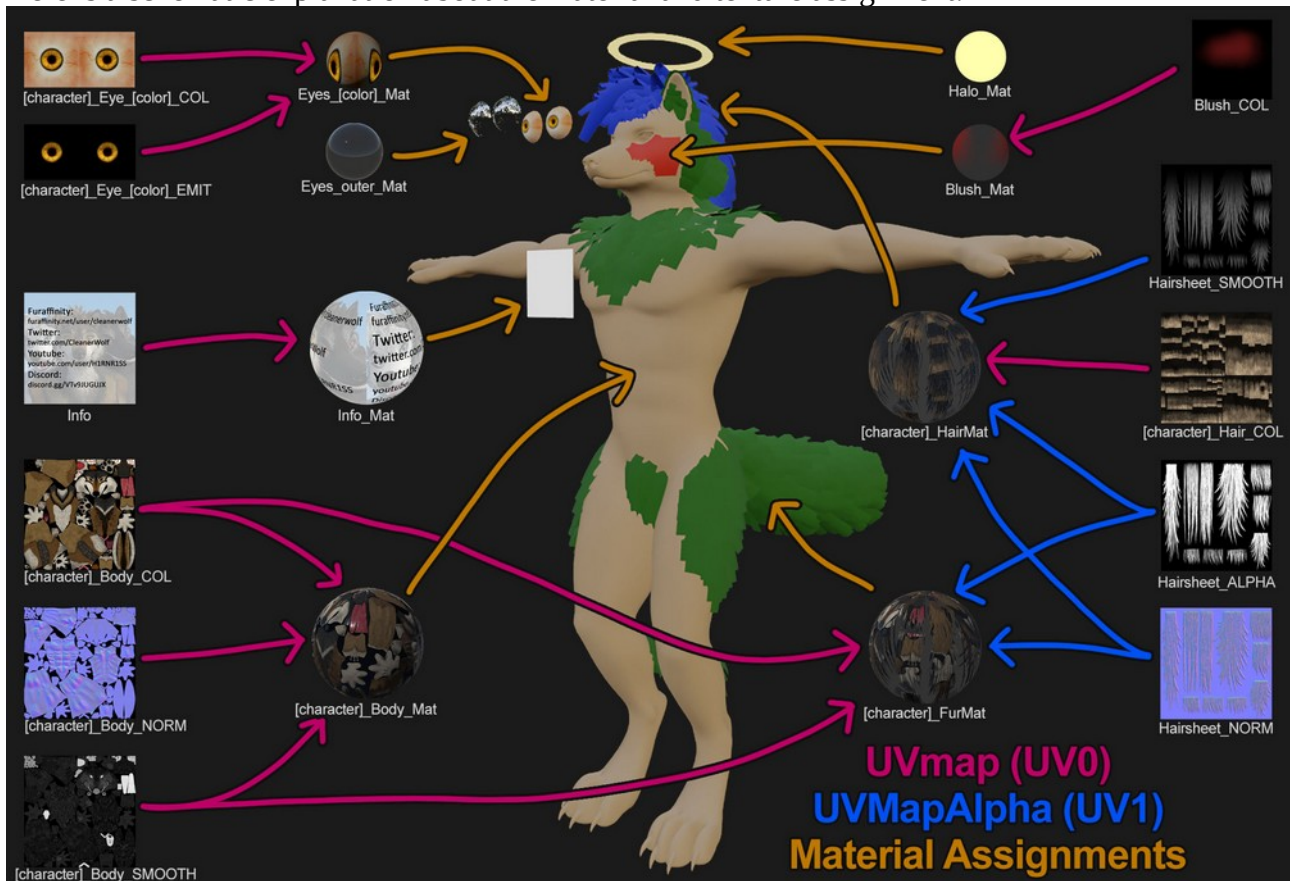
The haircards for the fur have their own material, but are using the same texture for the color (albedo) as the body. Therefore you don't have to care about texturing them separately. However, for the alpha cutout they use a different texture and a different UV set. This only works if the shader being used for the haircards supports separate textures and UV sets for color and alpha transparency. Unfortunately the Unity standard shader doesn't support this, therefore I had to look for a custom shader and decided to use the Mochies shader. This is why you have to install this shader alongside with the avatar to make it look correctly.

So, as a result, this workflow makes retexturing quite easy, but it restricts the user to shaders that support this special feature.

The hairstrands on the head are using separate textures as well, but they are not taking their color from the body, instead they have their own color texture with non-overlapping UVs.

Following the standard PBR workflow, many parts of the body not only have color maps but also normal and smoothness maps.

Here is a schematic explanation about the material and texture assignment:



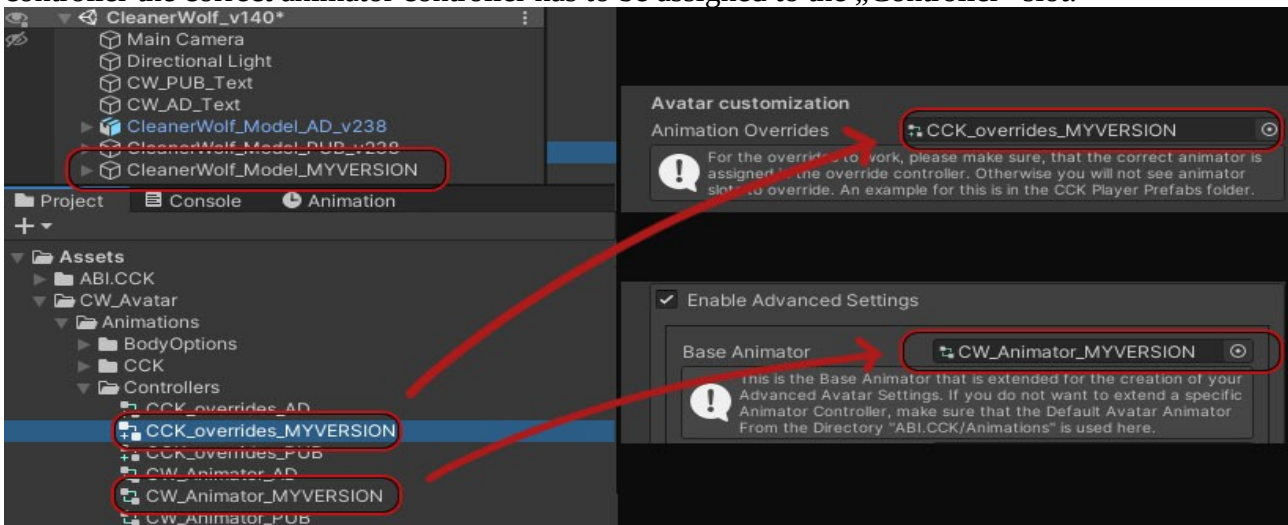
Depending on what you want to achieve and what software you use there are many different ways to make your own textures. The easiest way to make a custom skin would be to just create a new or modified color texture for the body and hair, but to re-use the existing normal- and smoothness maps.



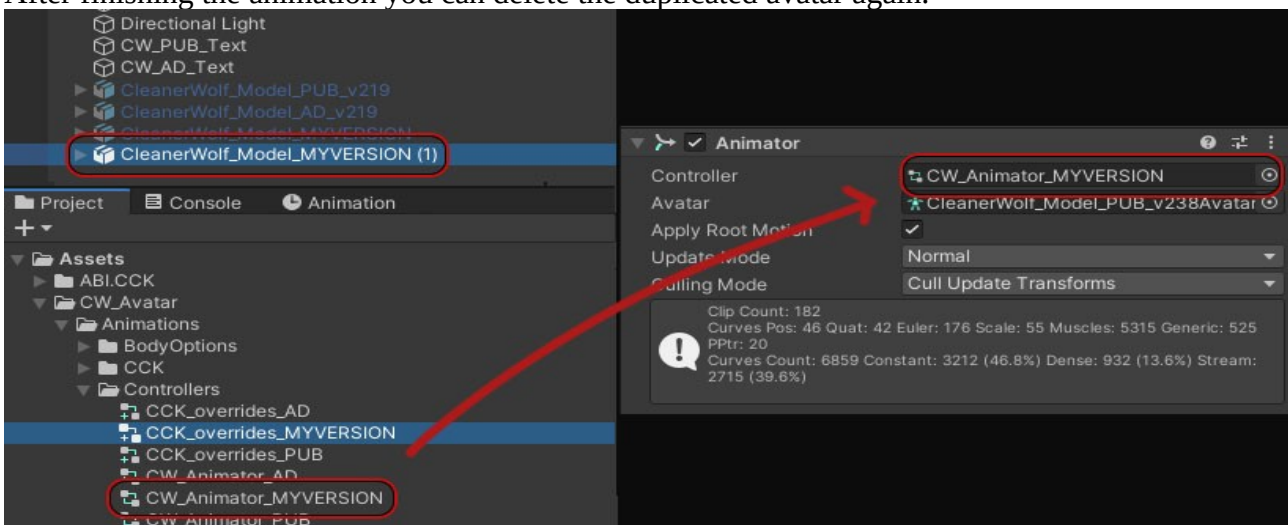
In any case you should create your own material(s) by duplicating the existing one(s). For example, if you want to make a customized version of the „Storm\_body\_Mat“, just duplicate it with CTRL+D and rename it. Now there are two ways to assign that material properly. The first way would be to add it to the skin select menu of the avatar, but if you are absolutely sure that you don't want to switch textures in CVR and only use that one texture, the second way would be to assign the material directly and disable/remove the skin select mechanism.

**Here are the step-by-step instructions how to assign your custom material to the skin select menu:**

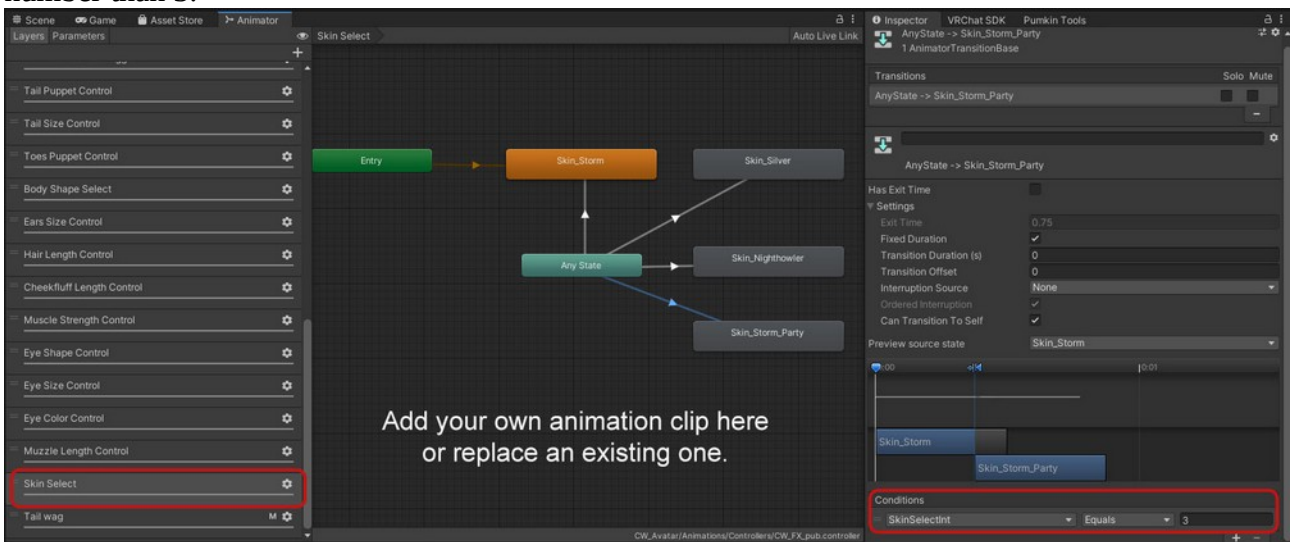
- Under „Assets/CW\_Avatar/Animations/Controllers“ duplicate either CW\_Animator\_PUB or CW\_Animator\_AD, depending on which avatar your are working on, rename it properly and assign the correct animator controller to the „Base Animator“ slot of the avatar descriptor. Also make sure to assign the correct overrides controller to the „Animation Overrides“ slot. In the overrides controller the correct animator controller has to be assigned to the „Controller“ slot.



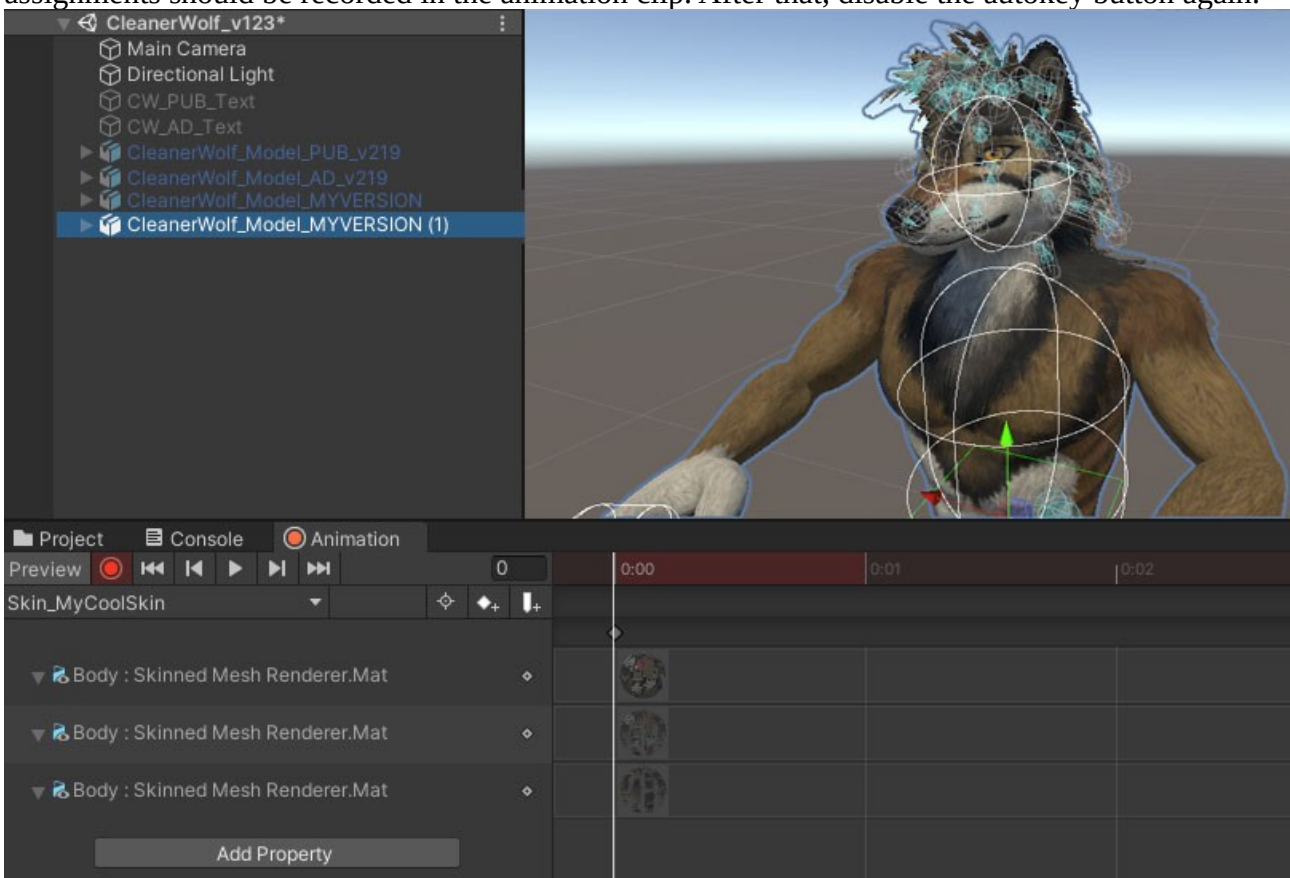
- Duplicate the avatar in the hierarchy view with CTRL+D, then hide the original. This should always be done when working with animations on an avatar. Assign the animator controller you just created in the „Controller“ slot of the „Animator“ section of that duplicated avatar. Please note: *Never* assign your animator controller to the „Controller“ slot of the avatar you want to upload, this is why you should make a duplicate first and do the animations on the duplicate. After finishing the animation you can delete the duplicated avatar again.



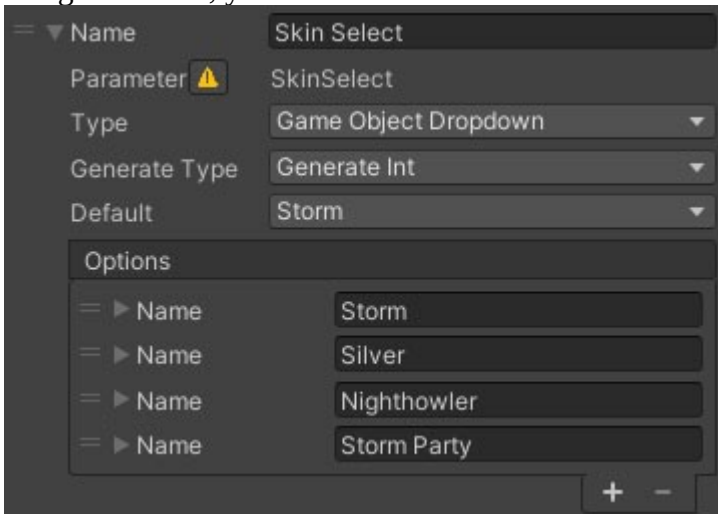
- Duplicate one of the existing skin select animation clips under „Assets/CW\_Avatar/Animations/Body\_Options/Skin“ and drag&drop that clip in the „Skin Select“ layer of the animator controller. Create a transition from the „Any State“ node to the new node, setting it up like the other transitions but giving the condition „SkinSelectInt... Equals...“ a higher number than 3.



- Make sure that your avatar is selected in the hierarchy view, open an animation editor and select your skin select animation clip from the list menu in the animation editor. Also make sure, that your play cursor is on the first frame of the timeline. Enable the red „autokey“ button, then drag&drop your custom material(s) from the project view onto your avatar in the 3D scene view. Your material assignments should be recorded in the animation clip. After that, disable the autokey button again.



- Now the last step is to create a new menu entry for your custom skin. Find the „Skin Select“ entry under the „Inputs“ section of the „Enable Advanced Settings“, create a new entry under „Options“ by clicking on the + button and name it accordingly.  
Congratulations, you did it!



**Here are the step-by-step instructions how to assign your custom material directly and removing the skin select menu:**

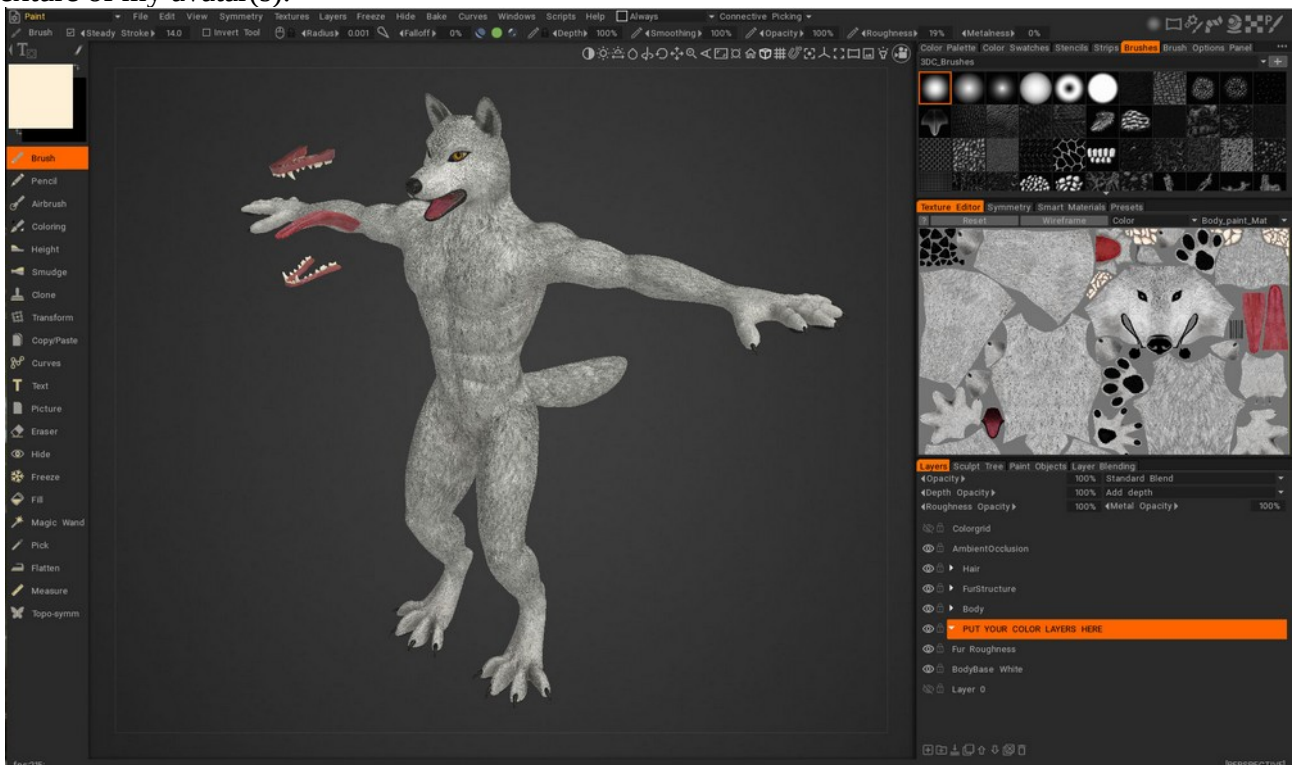
- Under „Assets/CW\_Avatar/Animations/Controllers“ duplicate either CW\_Animator\_PUB or CW\_Animator\_AD, depending on which avatar you are working on, rename it properly and assign the correct animator controller to the „Base Animator“ slot of the avatar descriptor. Also make sure to assign the correct overrides controller to the „Animation Overrides“ slot. In the overrides controller the correct animator controller has to be assigned to the „Controller“ slot.
- Open the „Animator“ view of the controller you just created, find the „Skin Select“ layer and either set the weight to 0 or delete the layer (Right-click → Delete).
- To clean up your menu you could also remove the „Skin Select“ entry from it under the „Enable Advanced Avatar“ section.
- Assign your material(s) by drag&drop them to the avatar in the 3D view.

## Creating or modifying textures

The easiest way to customize textures is to modify the existing ones that I provide with the avatar. No matter which software you use, the idea is to use one of the layered base textures as a starting point. You would just create or modify the color of the texture, but re-using the fur structure and body parts (nose, mouth, tongue, teeth...).

### 3DCoat

I use 3DCoat for almost all of my texturing work, therefore I provide 3DCoat files for the body texture of my avatar(s).



The 3DCoat file contains a special version of the model and the base layers of the texture in 8k resolution. Create your own color layers *below* the „FurStructure“ and „Body“ layers. The fur pattern will be multiplied with the color and this way you get all the fur detail on your texture.

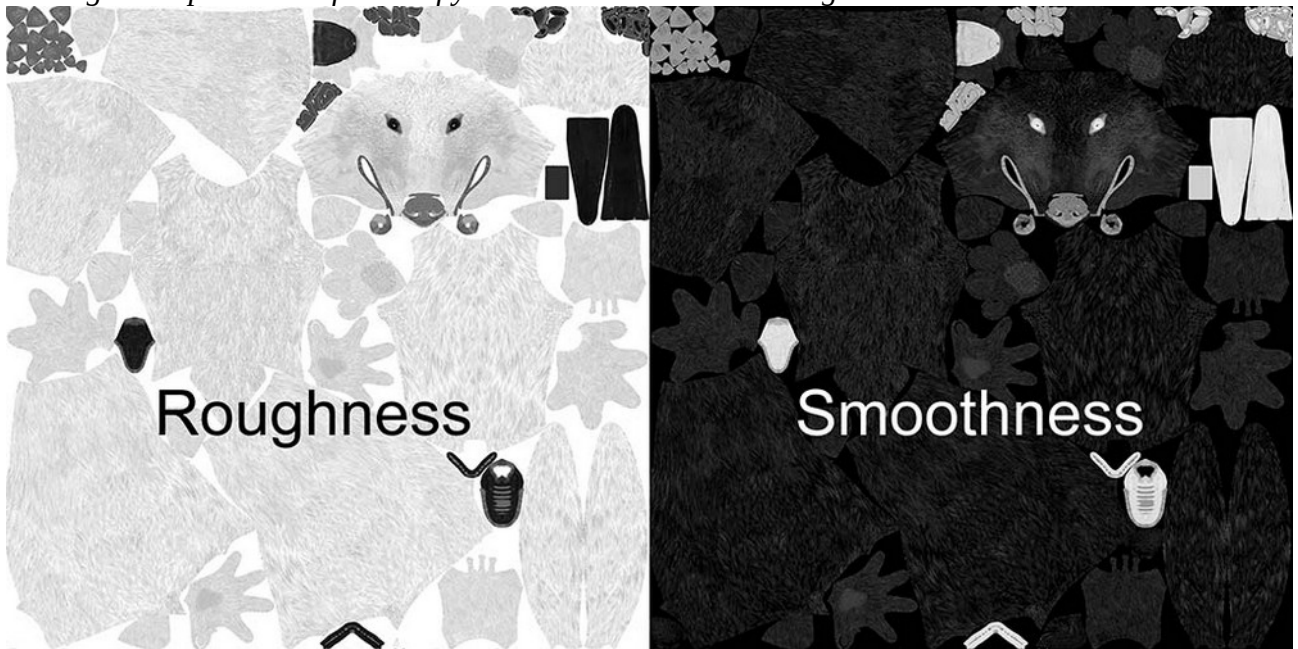
Layers	Sculpt	Tree	Paint Objects	Layer Blending
<input type="checkbox"/>	X		RedRocket_paint	
<input type="checkbox"/>	X		Tongue_paint	
<input type="checkbox"/>	X		LegFur_paint	
<input type="checkbox"/>	X		Earfluff_paint	
<input type="checkbox"/>	X		TailFur_paint	
<input type="checkbox"/>	X		Hair_neck_paint	
<input type="checkbox"/>	X		Hair_short_paint	
<input type="checkbox"/>	X		HeadHairCurl_paint	
<input type="checkbox"/>	X		HeadHairFront_paint	
<input type="checkbox"/>	X		CheekFur_paint	
<input type="checkbox"/>	X		ShoulderFur_paint	
<input type="checkbox"/>	X		Whiskers_paint	
<input checked="" type="checkbox"/>	X		Eyes_paint	
<input checked="" type="checkbox"/>	X		Body_paint	
<input checked="" type="checkbox"/>	X		Teeth_paint	

You can toggle parts of the model, most of them are hidden by default. Open a „Paint Objects“ panel to see the full list.

As explained above, the color from the body will be used on the fur and hair parts automatically. You can check this by enabling those objects in the „Paint Objects“ panel. The alpha transparency of the fur will not be shown, this is a technical limitation of 3DCoat.

To export your color texture go to the „Textures“ menu, then „Export → Color/albedo Map“ and choose „Body\_paint\_Mat“ as the UV set.

*Important: If you export your own roughness texture, you can not use it in Unity directly, because Unity uses smoothness maps instead of roughness. Fortunately the conversion is really easy. Just use the image manipulation software of your choice to invert the image.*



*Please note: To open the 3DCoat files you will need at least 32GB of RAM, more is better. The loading process can take several minutes, please be patient.*

## Substance Painter

I am offering a Substance Painter file of my avatar, with a painting-friendly version of the mesh and some base textures (color, roughness and normals). There is also a geometry mask to hide the fur elements and other parts of the mesh for easier painting on the body.



The provided texture layers are just a starting point for your own creations, but you could also just delete them and start from scratch. In Substance Painter the maximum texture resolution is 4K, therefore I cannot provide an 8K base texture in this case.

There is also a geometry mask to hide the fur elements and other parts of the mesh for easier painting on the body.

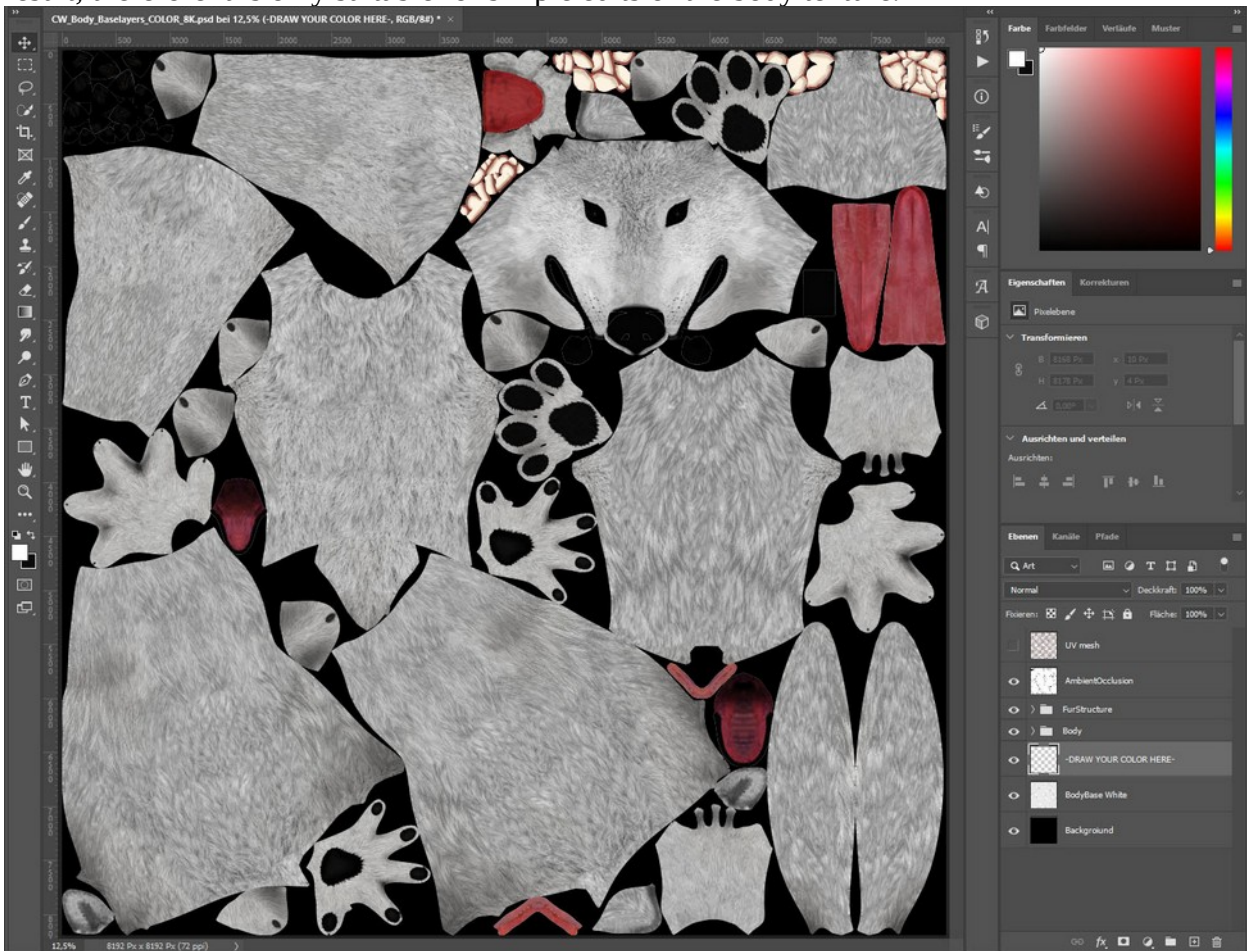
## Other 3D painting software

Of course you can use any software to paint your textures on the model, but I don't provide project setups for them, so you have to do a little more manual work. You can download the necessary source files from my Gumroad site.

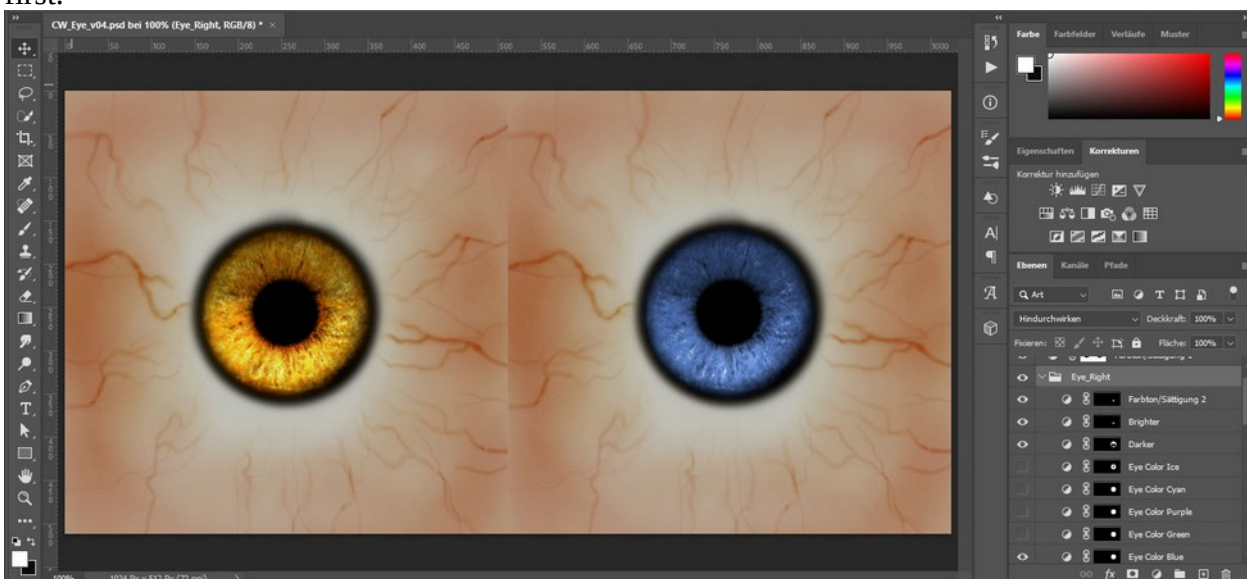
First of all you will need the „CleanerWolf\_Model\_for\_texpaint\_FBX\_OBJ“ file which contains a special version of the model in FBX and OBJ format, optimized for texture painting. As a starting point for the texture you could use the „CW\_Body\_Baselayers\_COLOR\_8K\_PSD“ and if you need to modify the normals and smoothness maps, you will find them in the „CleanerWolf\_Avatar\_Textures“ archive under „Exported Textures“.

## Photoshop

In Photoshop you can not paint on the model directly which makes it very hard to achieve the desired result, therefore it is only suitable for simple edits of the body texture.



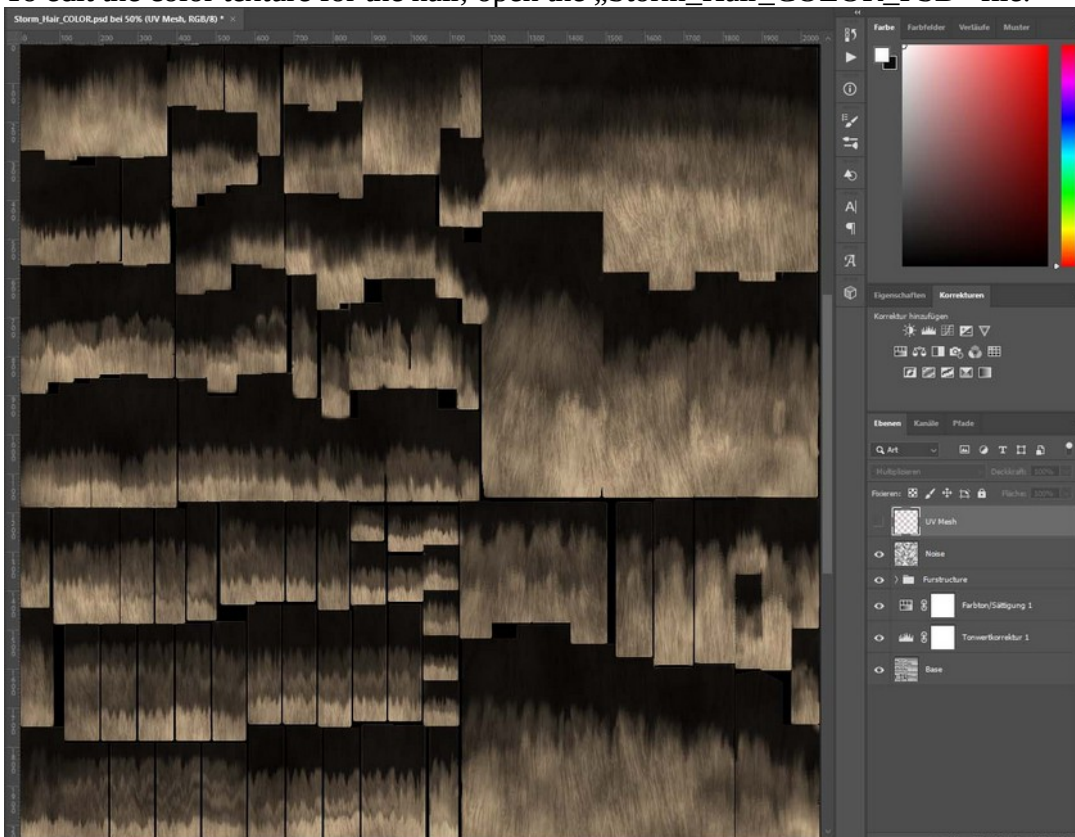
However, editing the eye texture is easier in Photoshop, just open the „CW\_eye\_v04\_PSD“, it has groups for left and right eye separately, the color can be easily adjusted through the adjustment layers. If you want to generate the emissive version of the eye texture, make sure to hide the „Eyeball“ layers first.



Also editing the Alpha/Depth/Smoothness texture for the hair/fur is easier in Photoshop or any other 2D image editing software, it's the „Hairsheet\_v07\_PSD“ file.



To edit the color texture for the hair, open the „Storm\_Hair\_COLOR\_PSD“ file.





## Working with the Blender scene

I assume that you know how to work with Blender, please understand that I cannot provide an exhaustive tutorial about how to edit models.

Open the provided „CleanerWolf\_Model\_vXXX“ file. It was made with Blender version 2.93, but should also work fine with any newer version of Blender.



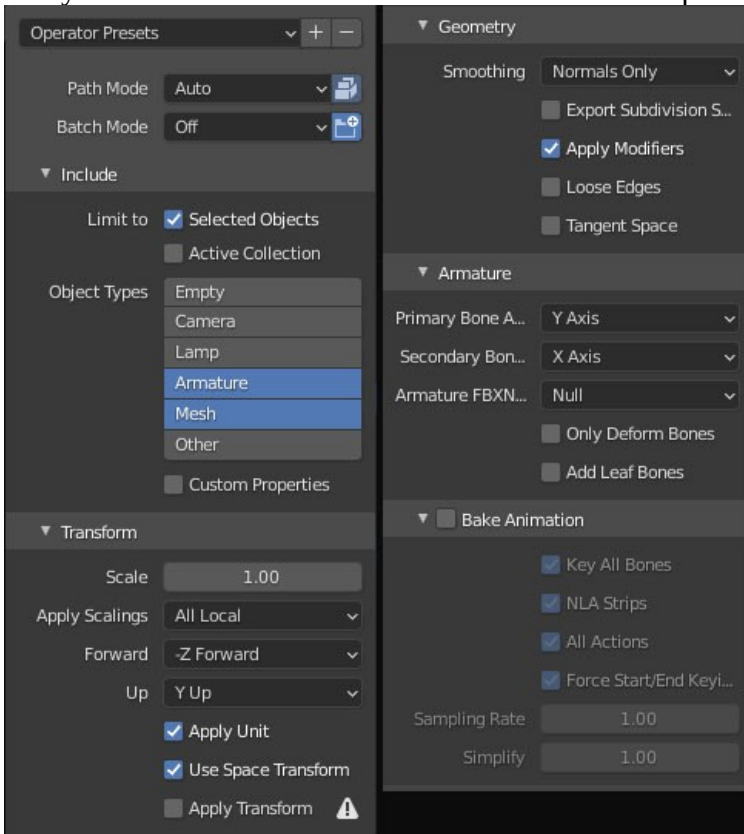
The model consists of multiple parts, with the hair/fur parts being organized in their own collection (HairGeo\_final), but all the parts are assigned to the „Wolf\_Rig“ armature. I made this „construction kit“ system to make it easier to edit the different parts and to make it possible to just export the parts you want to use for your customized version.

*Please note: Most of the meshes have blendshapes which causes some limitations. Removing or adding geometry can mess up the blendshapes and also applying modifiers is not possible.*

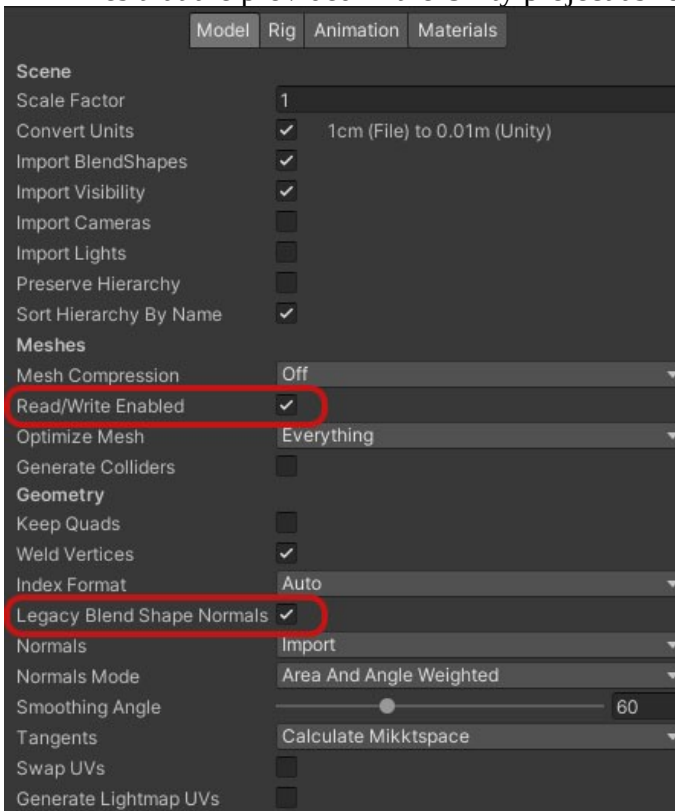
*Important: Before you export the model all the mesh parts you want to export must be joined to a single mesh! Select all those parts, with the „Body“ mesh being the last one, then press CTRL+J. Export only the Body mesh and the Wolf\_Rig armature.*

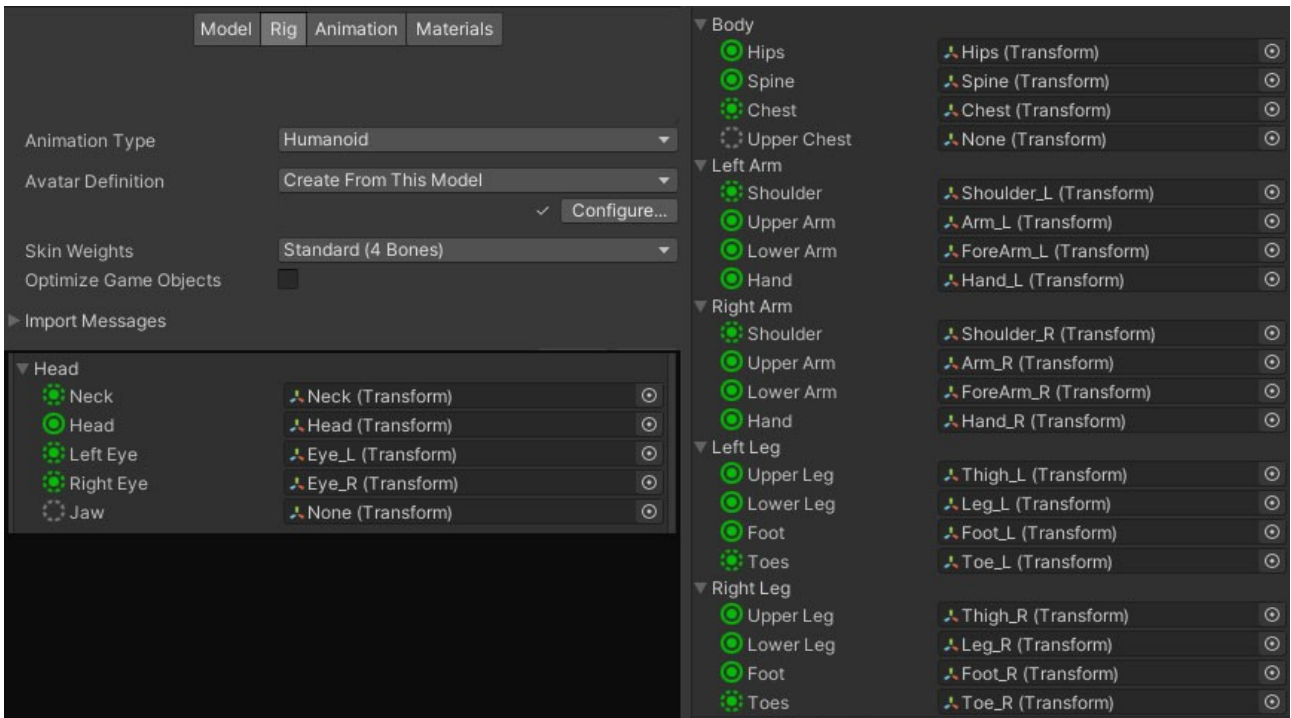
## Exporting the FBX

Unity needs the model as a FBX file. Here are the export settings I use for my avatar:

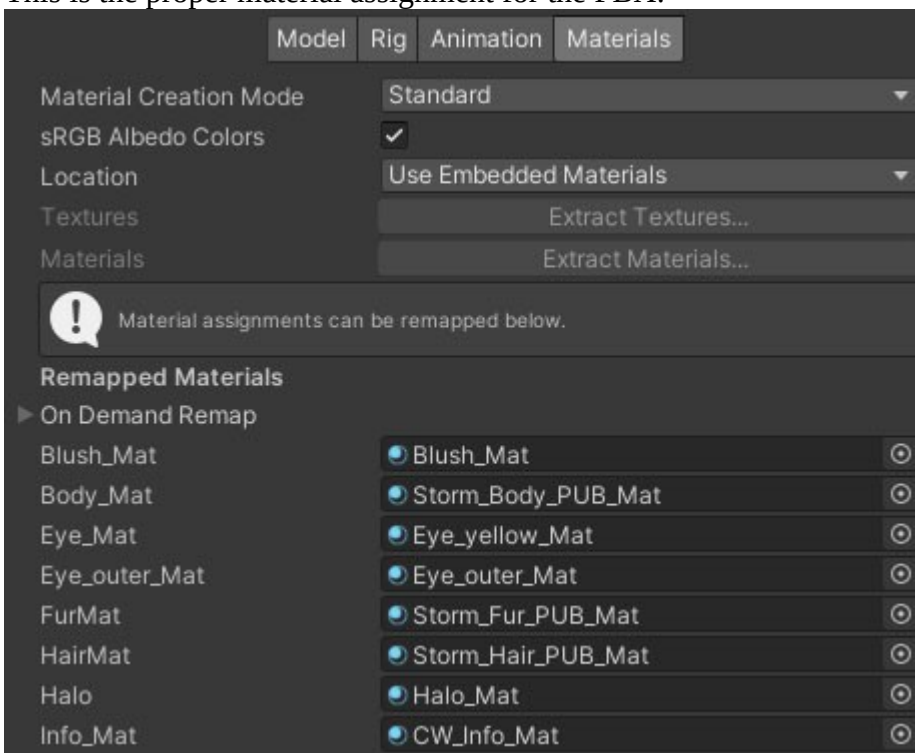


When importing the FBX in Unity, drag&drop it in the „Assets/CW\_Avatar/FBX“ folder. Use my FBX files that are provided in the Unity project as reference for the import settings.





This is the proper material assignment for the FBX:

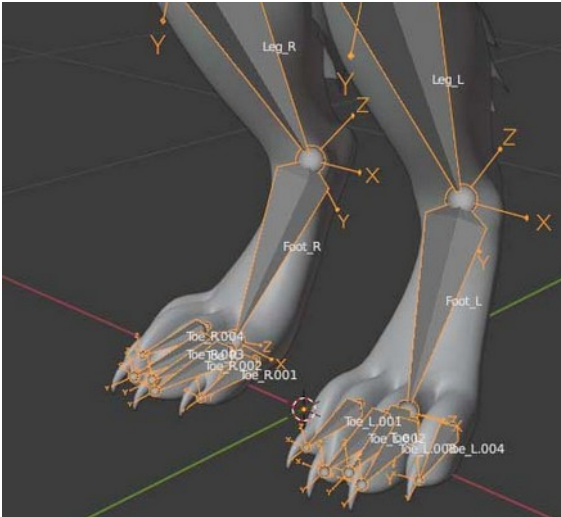


I strongly recommend *not* to overwrite existing FBX files in the project with new ones, because Unity doesn't like that, especially if the rig was changed. Instead, import the new FBX with a new name. Unfortunately something like „Pumkin Avatar Tools“ doesn't seem to exist for CVR, therefore transferring the settings from an older avatar to the new one requires more manual work.

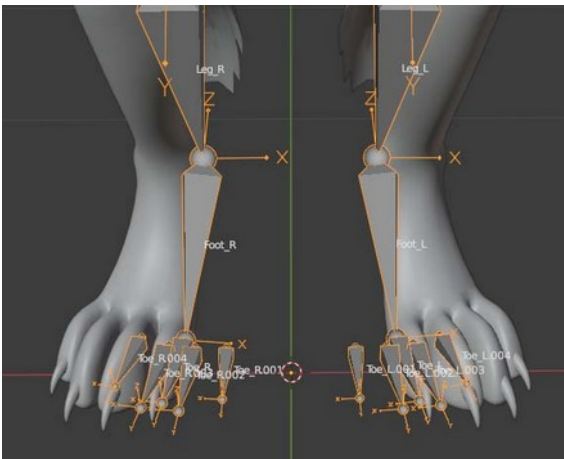
## Plantigrade legs vs digitigrade legs

Many anthro characters have digitigrade legs, like most animals they walk on their toes, not the entire foot. However, the leg IK of CVR expects a humanoid leg and foot for full body tracking to work correctly.

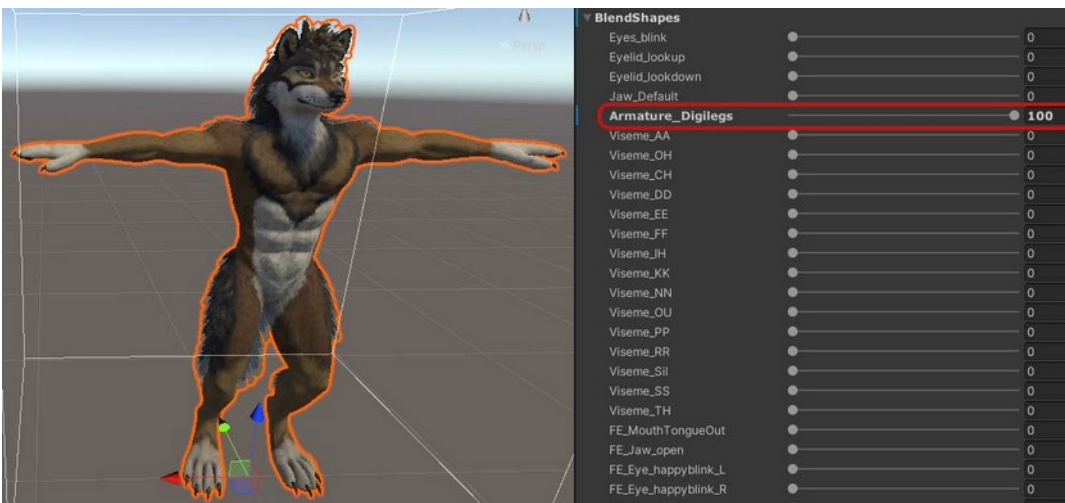
If you look at the model in Blender, you will notice, that the legs are indeed rigged as digitigrade legs, with correct bones for foot and toe.



CVR's IK seems to handle this setup quite well, but if you experience problems with FBT, you could try to remap the bones like in the VRC version (See VRC documentation).



In addition to that I also made a blendshape „Armature\_Digilegs“ that pushes the geometry of the legs a little bit outside to make them look more „animalistic“, compensating the straightened rig. This works, because the blendshape deformation happens after the bone deformation.



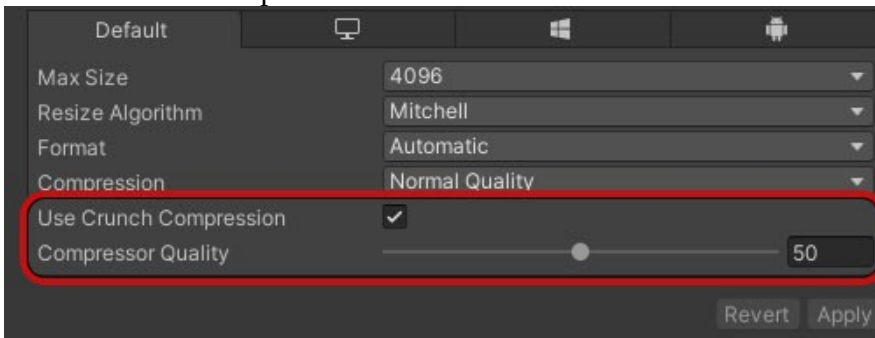
## Optimizing textures

While it makes sense to work on the textures in 8k resolution, usually the target resolution that will be used in any game engine should not be higher than 4k (4096x4096). That's also why only the AD version of the CleanerWolf avatar uses 8k textures for the body, it's supposed to be used in small groups anyways.

If a texture is just a grayscale image, convert it to 8 bit grayscale.

The preferred file format for textures should be TIF with LZW (lossless) compression.

All textures you import in Unity will be converted and compressed in a special format. In addition to that you can enable „Crunch Compression“. It's lossy, however you will not notice any visual difference in most cases, but will notice a huge difference in file size. I highly recommend to always enable Crunch Compression!



**Product support:**

I am just a one-man-army so please understand that I am not able to provide individual product support. However, I highly recommend to join my Discord server to get help and report problems.

→ <https://discord.gg/VTv9JUGUJX>

**License:**

- You can upload and use customized versions of this avatar in VRChat as a „private“ avatar.
- You can upload and use customized versions of this avatar in VRChat as a clonable „public“ avatar only if you include my creator info.
- Commissioning custom skins or modifications for this product is allowed only if both, the customer and the commissioned person own it.
- You can NOT use this product for commercial projects. If you want to do so, contact me for making a deal. However, using the product for Youtube or Twitch content is allowed.
- You can NOT redistribute or sell any parts of this product.

**Terms and conditions:**

- This product is not refundable. By purchasing this product you are buying a digital copy and because of this there is no fair way to give it back.
- I am not responsible for any violation of the VRChat community guidelines or platform rules being caused by misuse of my product.
- This product is provided „as is“ without any warranty of any kind.
- You are not allowed to make any hateful, discriminating, racist or offensive content with this product.

**Thanks to (in alphabetical order):**

- Alex Lotor
- Emperor of Mars
- GreyOOOGrey
- Magnus Husky
- Reimajo