Rascal Rabbit - User Manual

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Prerequisites

To use this avatar in VRChat, you need:

1. VRChat Creator Companion
   https://vrchat.com/home/download

Uploading Rascal

1. **Download, install and set up VRChat Creator Companion**, you can follow this guide in the link to do so.
   VRChat Creator Companion should also install the Unity Editor for you automatically.
   https://vcc.docs.vrchat.com/guides/getting-started

2. **Create a new project by clicking on "Projects" and then "Create New Project", and select the "Avatar" template.** Follow the on screen instruction to create a new project.

3. **Click on "Open Project"** to open your newly created project.
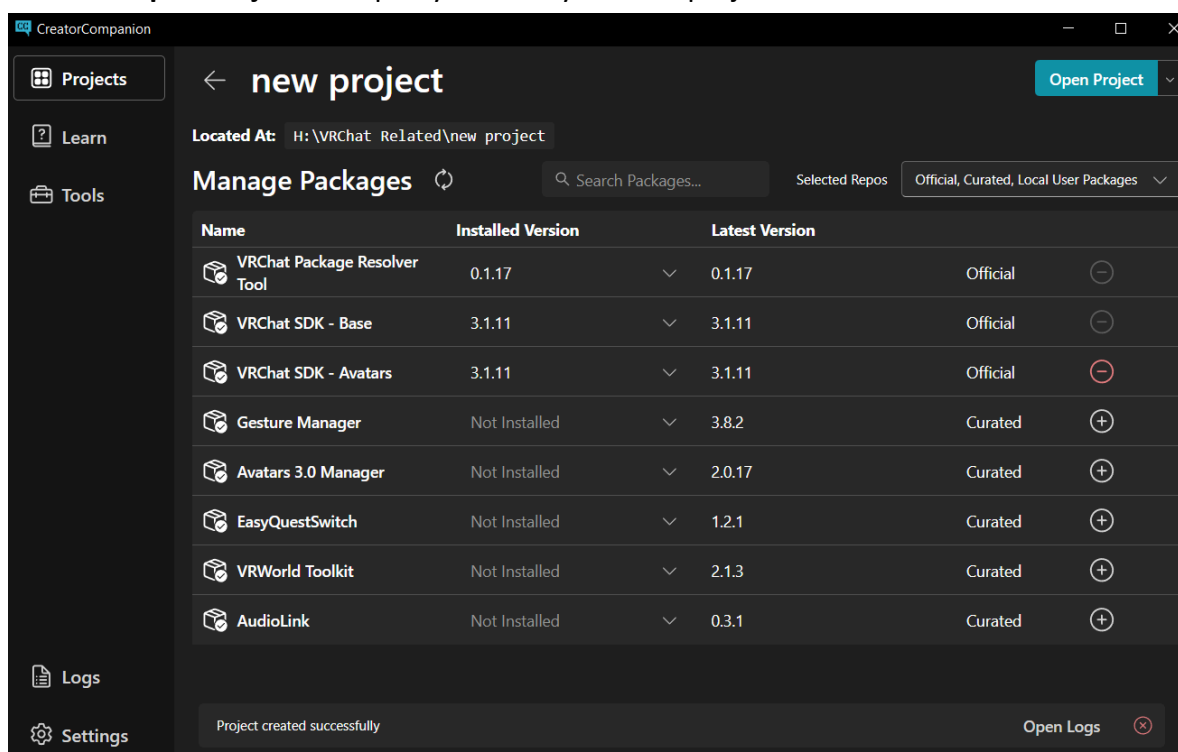
4. Drag the file **"zawoo_rascalRabbit" into the "Project"** window in unity.

If you can't find this window, you can summon it by going to the menu bar, window -> Windows -> Project.
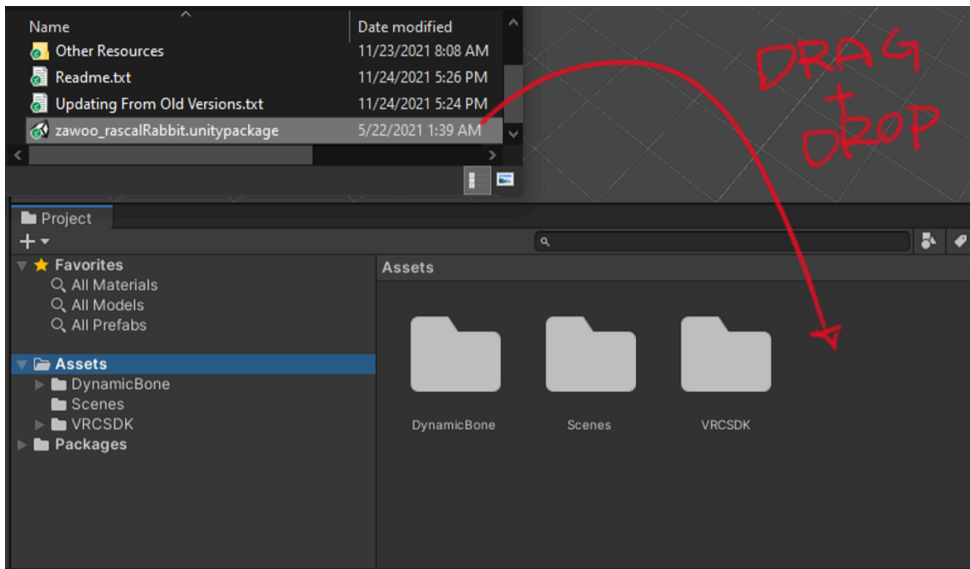
5. Within the Project window, **open the "rascalRabbit_update4" folder** and **double click on "scene_rascalRabbit"** to load the avatar's scene, and the bun will show up in the "Scene" window tab.

   If you can't find this window, you can summon it by going to the menu bar, window -> Windows -> Scene.
   You can hold down right mouse and use WASD to navigate the scene if the bun is too far away or off to the side.

6. Navigate to the menu bar, **VRChat SDK -> Show Control Panel.** The control panel will pop up. After typing in your credentials. Find the **"Builder"** tab in the control panel, pick the avatar you want to upload and click **"Build and Publish for Windows".** **You can safely ignore the yellow warning, and keep clicking ok for pop-ups for anchor override and locking material.**
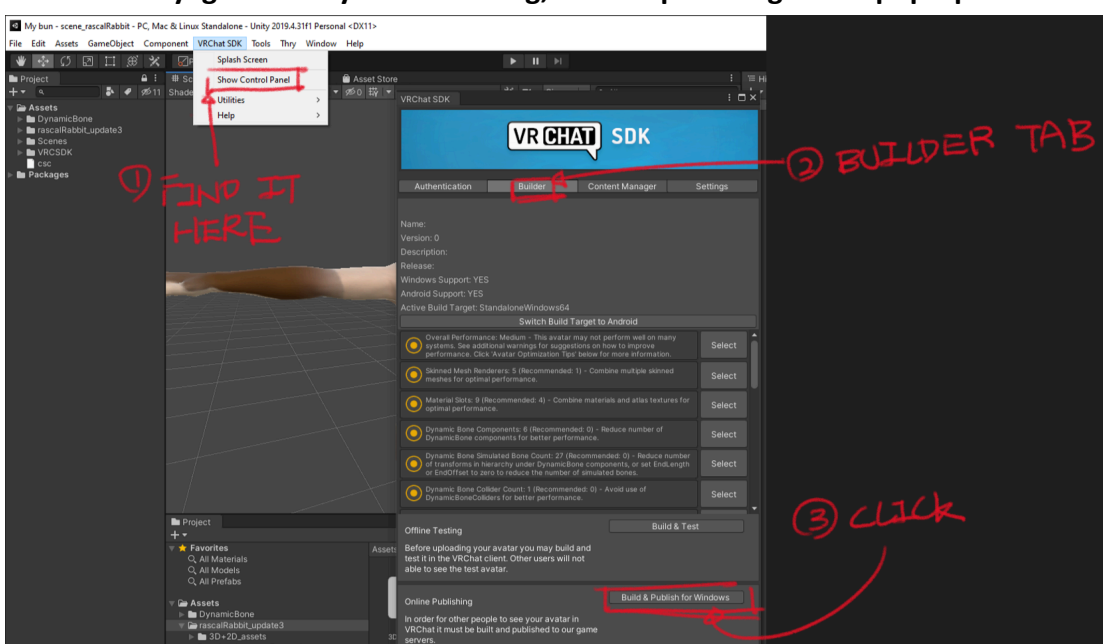
7. Follow the on screen instructions and hit **"Upload"**

That's it. Be a Rascal!

Rascal Rabbit - Quest Guide

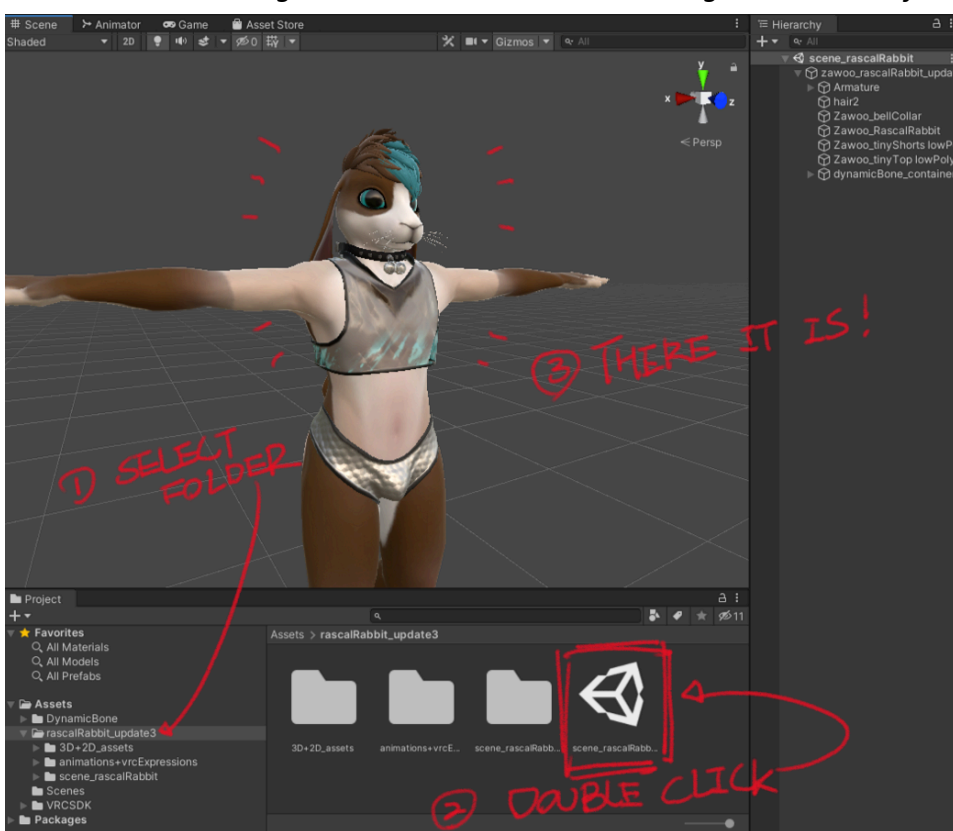## Prerequisites

To use this avatar in VRChat, you need:

1. VRChat Creator Companion
   https://vrchat.com/home/download
2. The PC version unitypackage of Rascal Rabbit.

The VRChat developers constantly change how things are done, so some details in this guide might not be up to date. If you run into any problems, you can ask in the official VRC Discord server or the Zawoo Discord Server.

Uploading Rascal

1. **Download, install and set up VRChat Creator Companion**, you can follow this guide in the link to do so.
   VRChat Creator Companion should also install the Unity Editor for you automatically, .
   https://vcc.docs.vrchat.com/guides/getting-started

2. **Create a new project by clicking on "Projects" and then "Create New Project", and select the "Avatar" template.** Follow the on screen instruction to create a new project.
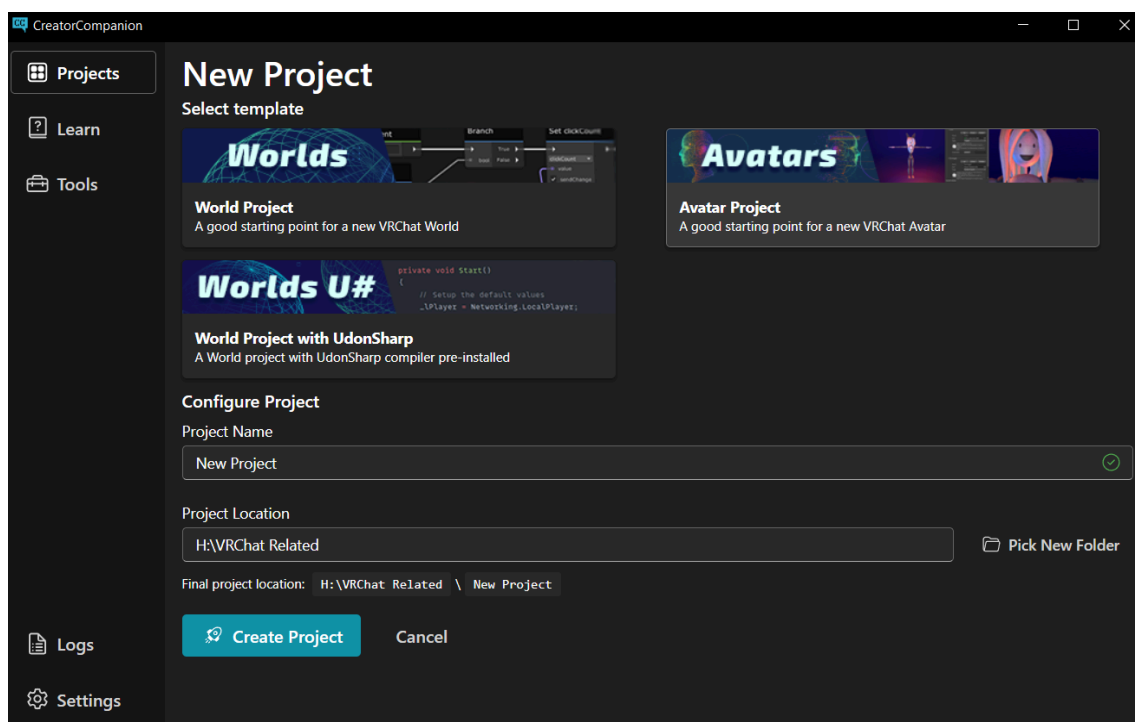
3. **Click on "Open Project"** to open your newly created project.
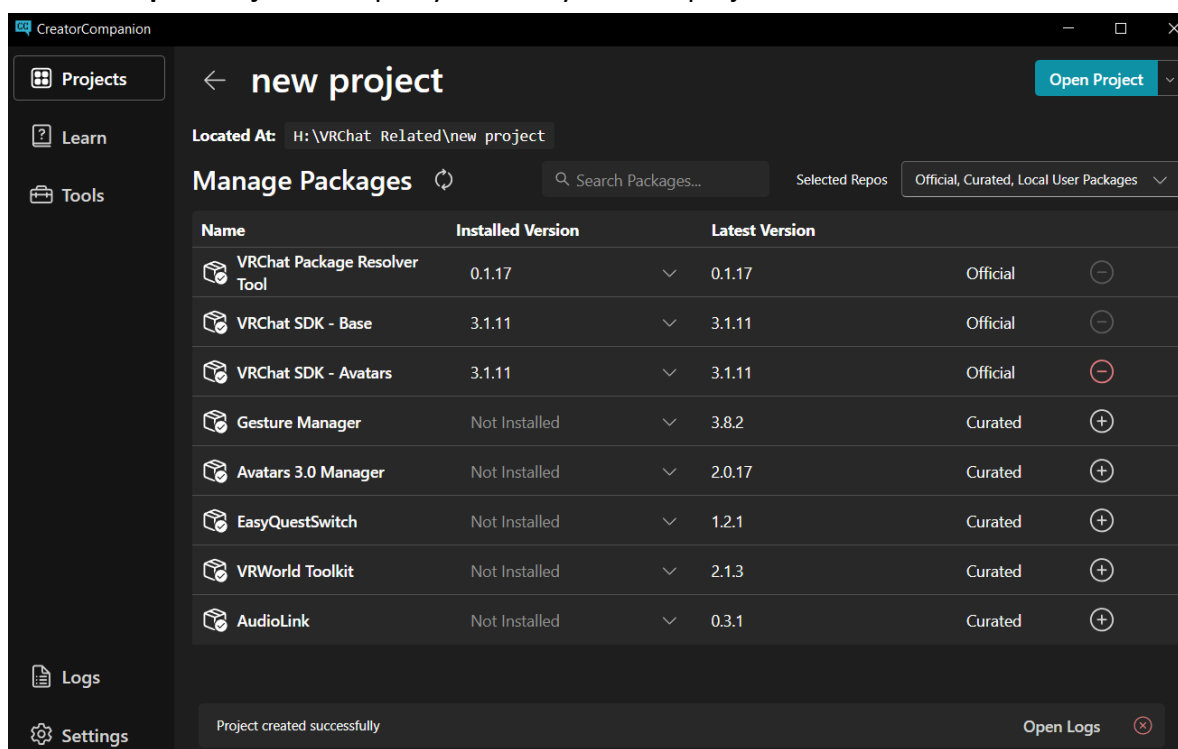
4. After Unity is opened, switch your build target to Android by pressing Ctrl+shift+B, click on "Android" and then "Switch Platform". If you're having trouble with this step, you can read the guide here: https://docs.vrchat.com/docs/cross-platform-setup
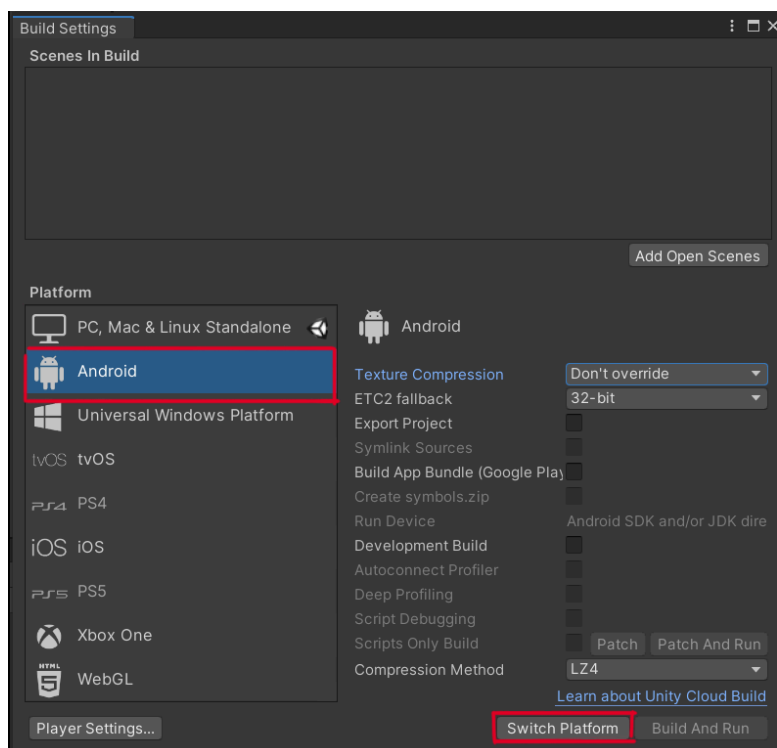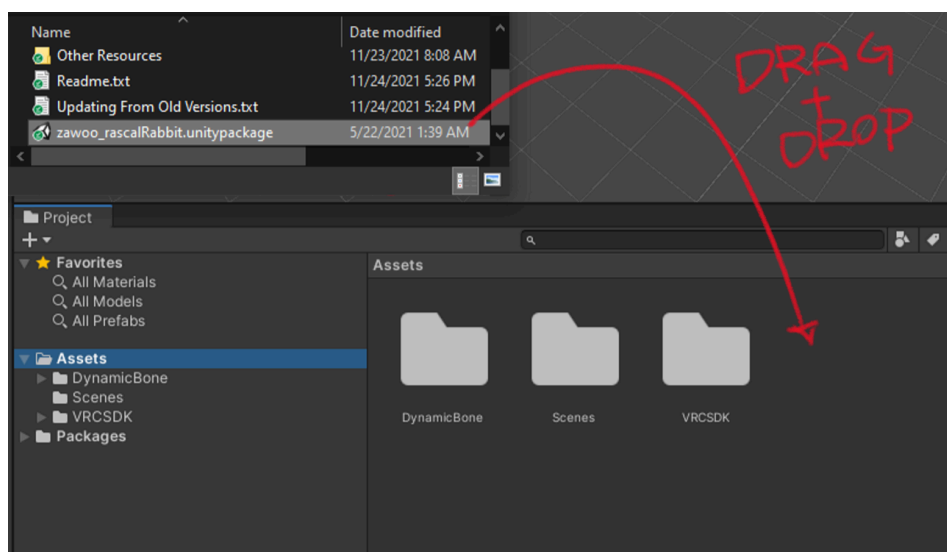

5. Drag the file **"zawoo_rascalRabbit" into the "Project"** window in unity, and click import. This is the **UNITYPACKAGE FILE FOR PC.** You need the PC version because some aspect of the quest version relies on assets from the PC unitypackage.

   If you can't find this window, you can summon it by going to the menu bar, window -> Windows -> Project.

6. Drag **"zawoo_rascalRabbit_quest+fallback"** into your project window too, and click import.

7. Within the Project window, **open the "rascalRabbit_quest" folder** and **double click on "scene_rascalRabbit_quest"** to load the avatar's scene, and the bun will show up in the "Scene" window tab.

   If you can't find this window, you can summon it by going to the menu bar, window -> Windows -> Scene.
   You can hold down right mouse and use WASD to navigate the scene if the bun is too far away or off to the side.
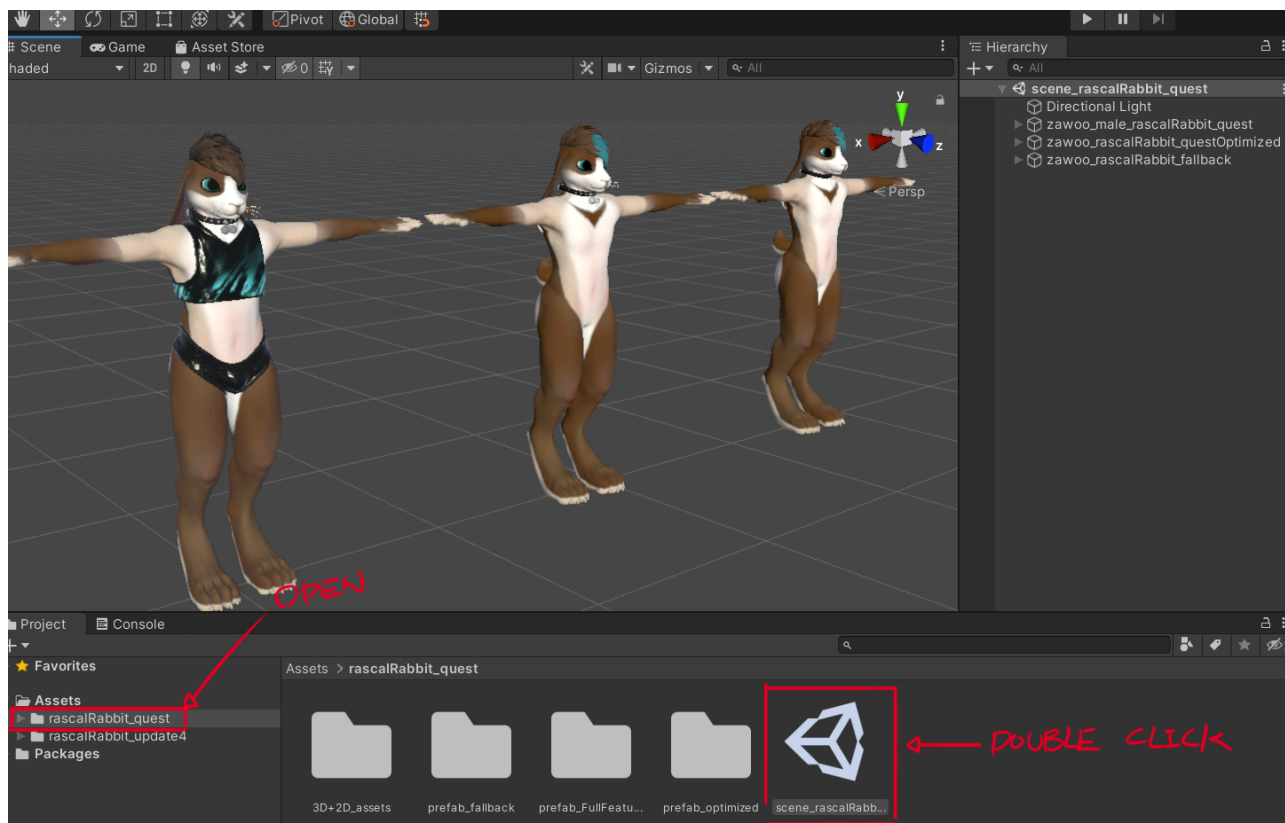
8. Navigate to the menu bar, **VRChat SDK -> Show Control Panel.** The control panel will pop up. After typing in your credentials. Find the **"Builder"** tab in the control panel, pick the avatar you want to upload and click **"Build and Publish for Android".**
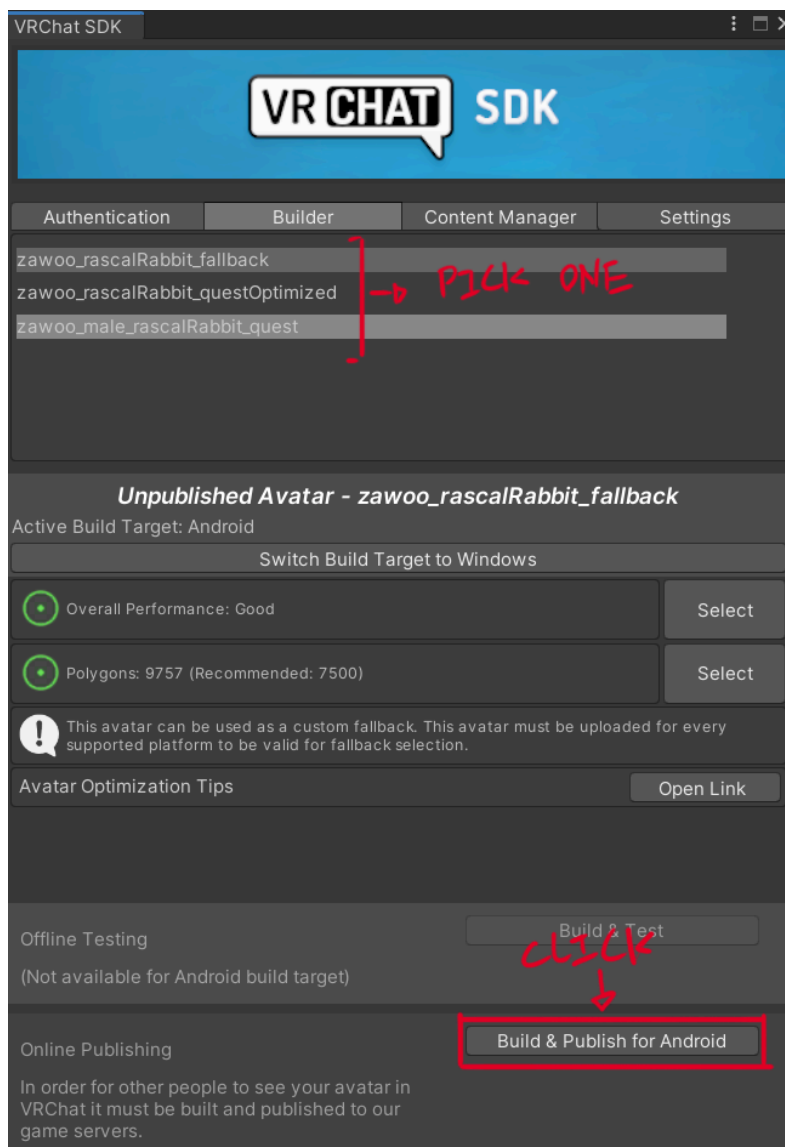
9. Follow the on screen instructions and hit **"Upload"**

That's it. Be a Rascal!

Quest Content Limitations:

3 versions of Quest compatible Rascal Rabbits are included.

Quest Full Featured:

This model is basically the same as the PC version, minus not having certain special effects not supported on quest. Similar to the PC version, it's designed to be more easy and convenient to customize. If uploaded to Quest, it'll have the "very poor" performance ranking, and other users will have to manually show your avatar to see you.

- **No transparency effects for clothing, eyelashes, hair, and standing ear (quest limitation).**
- **No twist bones, worse looking deformation when you twist your arms and legs (quest limitation).**
- **Reduced amount of physbones (quest limitation).**

Quest Optimized:

This model can be automatically shown to other quest users. It is much simplified, giving it higher performance ranking when uploaded to quest. This version has no support for female body mesh.

- **Every limitation of the full featured version, plus:**
- **No support for female body mesh.**
- **No support for asymmetrical textures.**
- **Reduced polygon count.**
- **Reduced bone count.**
- **Reduced material slot usage by texture atlasing, making it slightly more annoying to texture.**

- **Disabled specularity effects.**
- **Eyes cannot dilate.**
- **Combined skinned meshes, only the hair is a separate object.**
- **Does not have clothes, if you put more clothes on, it'll go back down to "very poor" performance ranking. Making it pointless to use this version.**

Quest + PC Fallback:

This model can be uploaded as a custom fallback! It is aggressively simplified, giving it the "good" performance ranking for Quest. You need to upload it for both Quest and PC to use it as a custom fallback.

You can read about fallback avatars here:

https://docs.vrchat.com/docs/avatar-fallback-system

- **Every limitation of the optimized version, plus:**
- **Even lower polygon count.**
- **Everything is combined into one skinned mesh.**

Customizing Rascal Quest

Full Featured:

Read the customization guide for the PC version. All materials need to use mobile shaders (VRChat/Mobile), or else they won't let you upload it.

Optimized and Fallback:

These models have very limited customization possibilities because of the Quest's limitations. If you want to swap out the hair on the optimized model, any hair with too much polycount will push the performance ranking down.

Texture Atlasing:

The optimized and fallback version uses texture atlas to reduce material slots usage, you can find mat_atlas.psd in the **Image Textures** folder.

Make your textures like you would for the PC version, then move and stretch the textures to their spots, they are all organized with different layers by default. If your image editing software supports guides, the guides will help you resize them and they'll not show up when you save the texture.

Rascal Rabbit - Customization Guide

Basic Customization

The basic customization guide is written with people unfamiliar with Unity in mind.

Using alternative versions of the bun:

There are male and female versions of the model, each with either standing ears or floppy ears. You can skip this section if you want to use the male bun with floppy ears already in the scene.

1. Delete "zawoo_male_rascalRabbit" in your hierarchy.
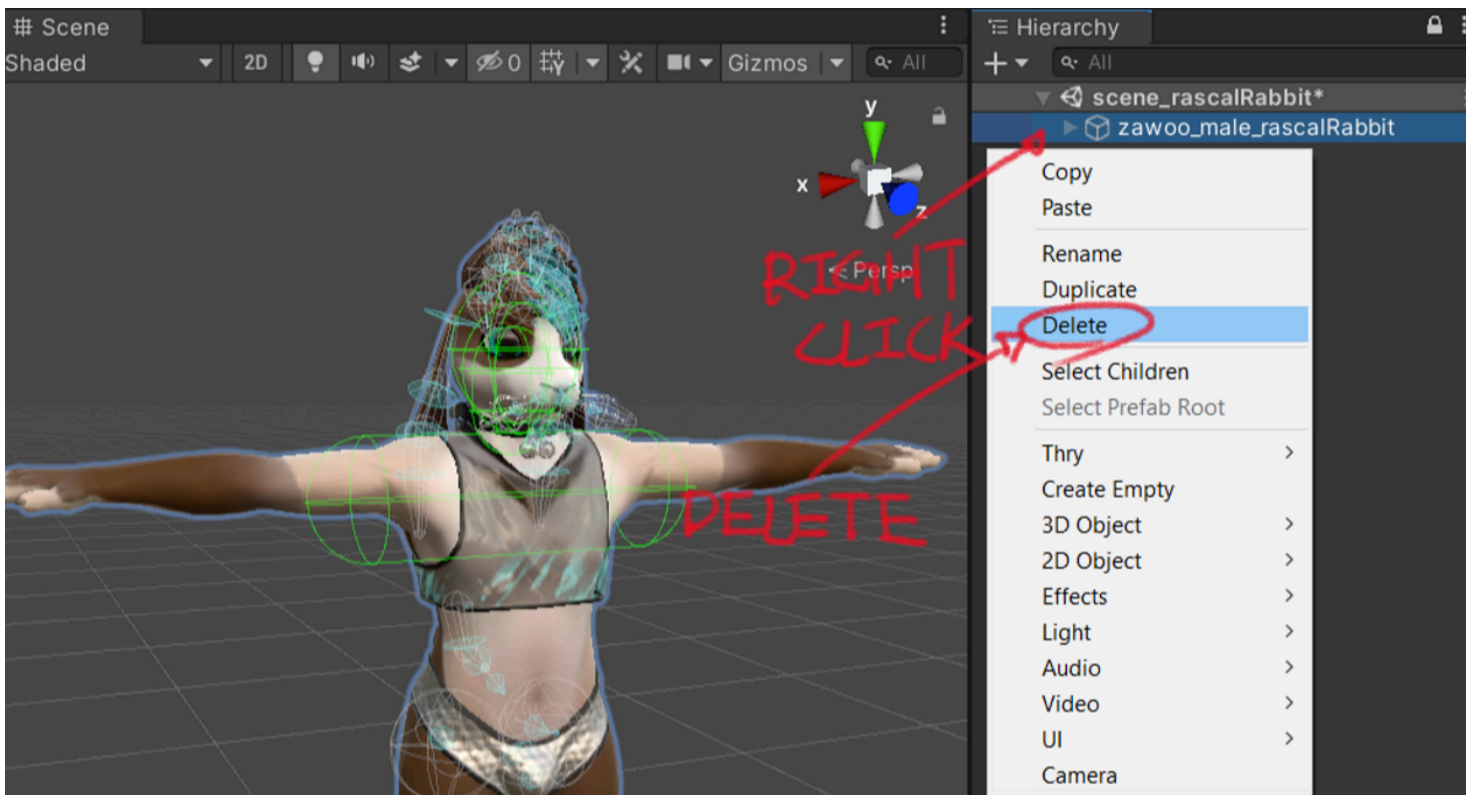
2. In the project window, navigate to the folder "rascalRabbit -> prefabs", drag and drop the version you want to use instead into the hierarchy, they are all organized by name.
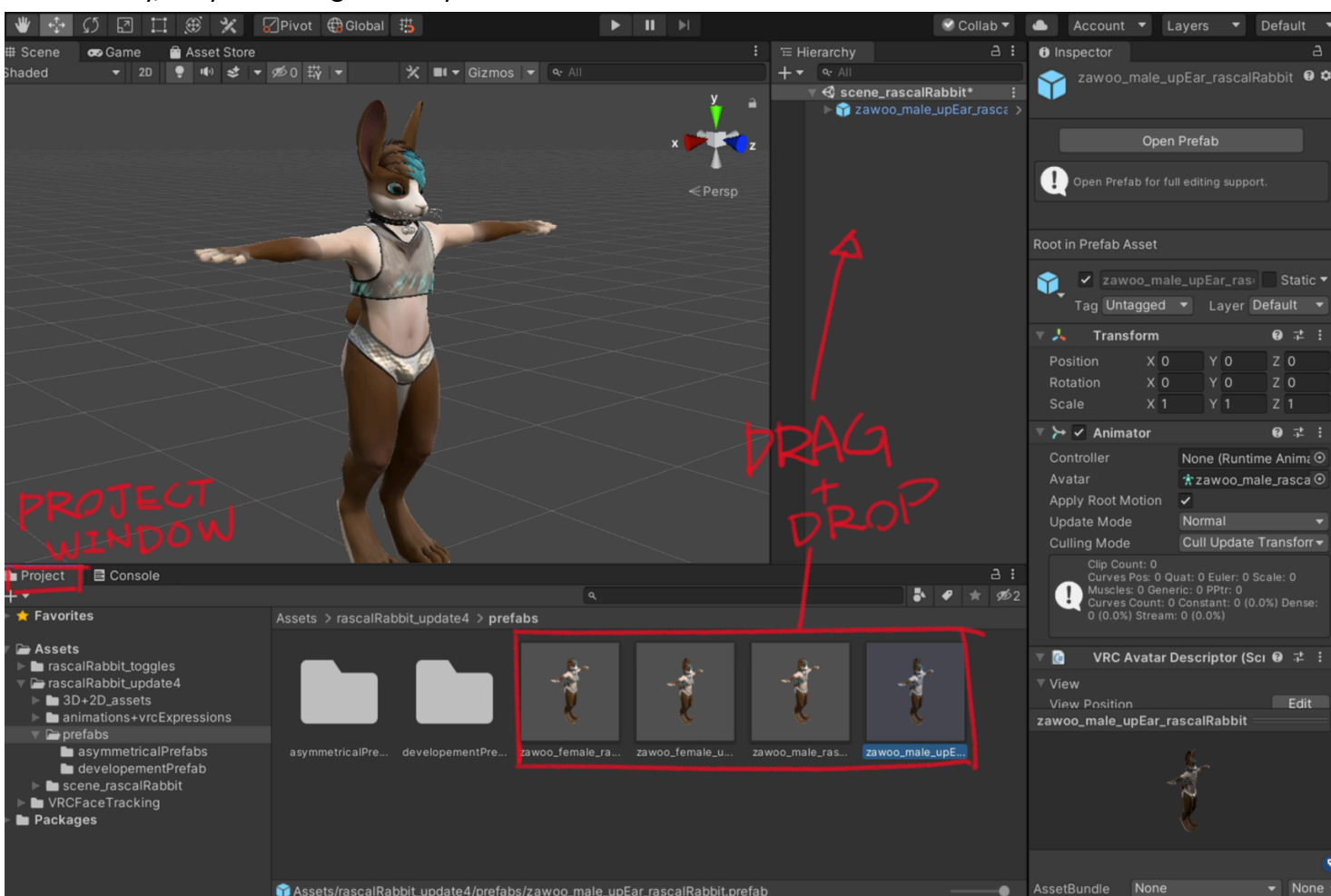
Changing body color with preset materials:

1. In the project window, navigate to the folder "rascalRabbit -> 3D+2D_assets -> materials -> bodyMaterials"

2. The preset body materials have the "mat_body" prefix, drag and drop any of them onto the avatar's body to apply them.

3. The eye color can also be changed in a similar way, those materials have "mat_extra" prefix. There's a transparent shell on the eye preventing you from dragging the materials straight onto it, you can use alt + right mouse drag to zoom in slower, or drag the materials onto the claws. If you are using the standing ears, you can drag "mat_upEar" to the ears. You can use the preset hair colors or use the tint-able hair material.
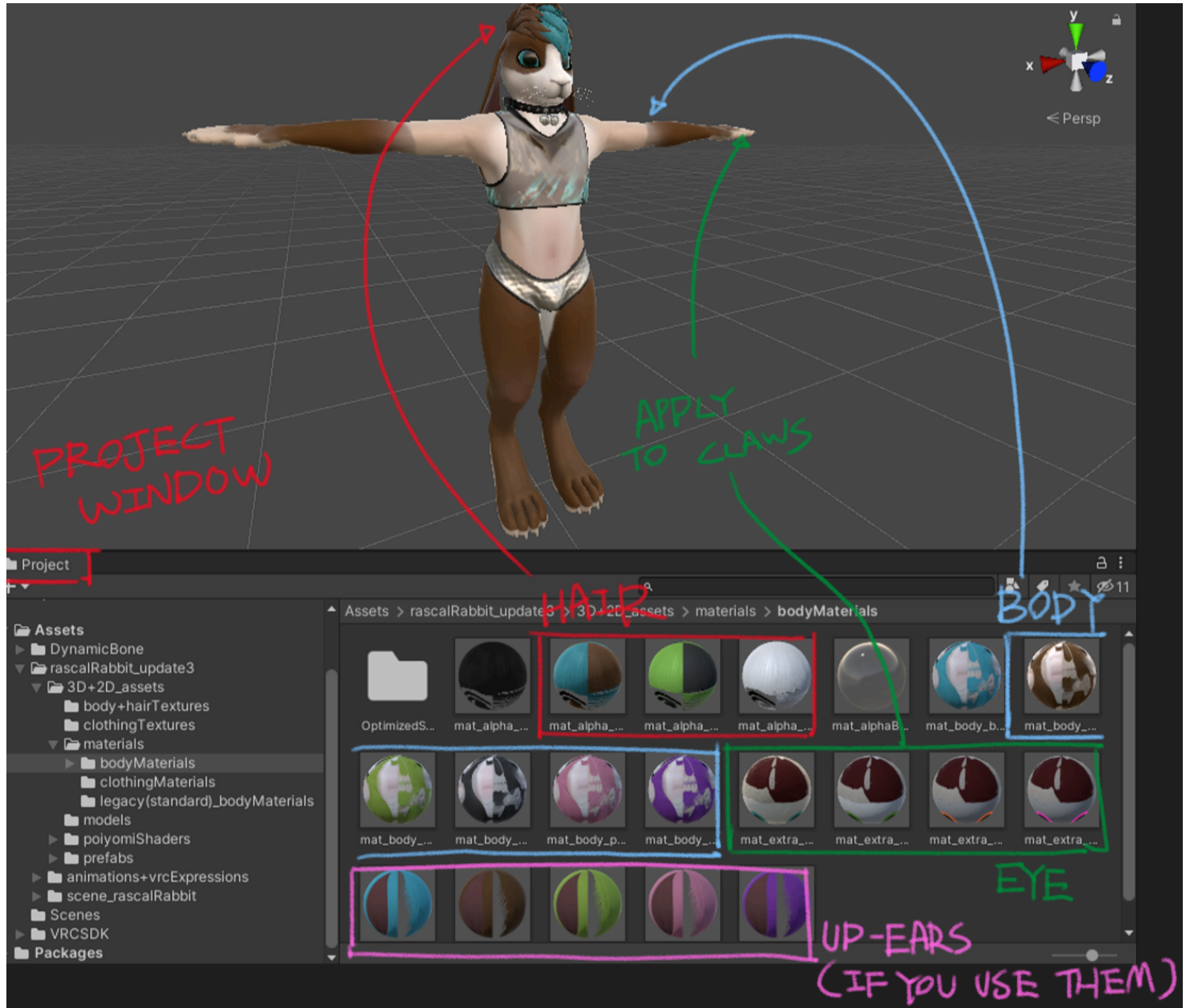

4. To change the color of the tint-able hair, click on the material "mat_alpha_hair_tintable" and look at the inspector tab. Tint the color of the color map by bringing up the color picker.
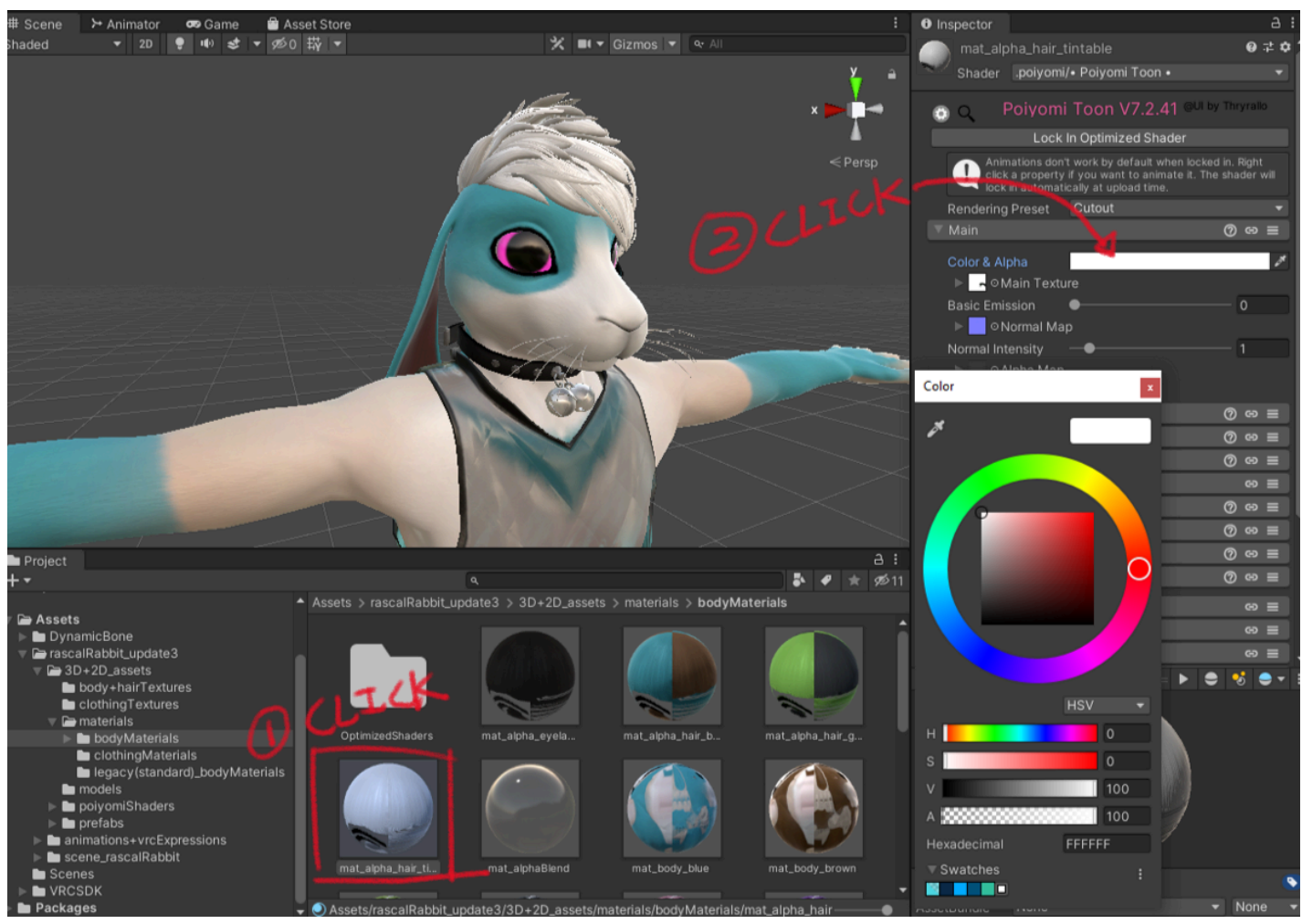
Changing Body Shape with Blendshapes

1. In the hierarchy, select "Zawoo_RascalRabbit" (this is the body mesh of the avatar) and modify the blendshapes under "skinned mesh renderer" component, the body shapes have the "shape_" prefix. You can enter a value over 100 if you want too.
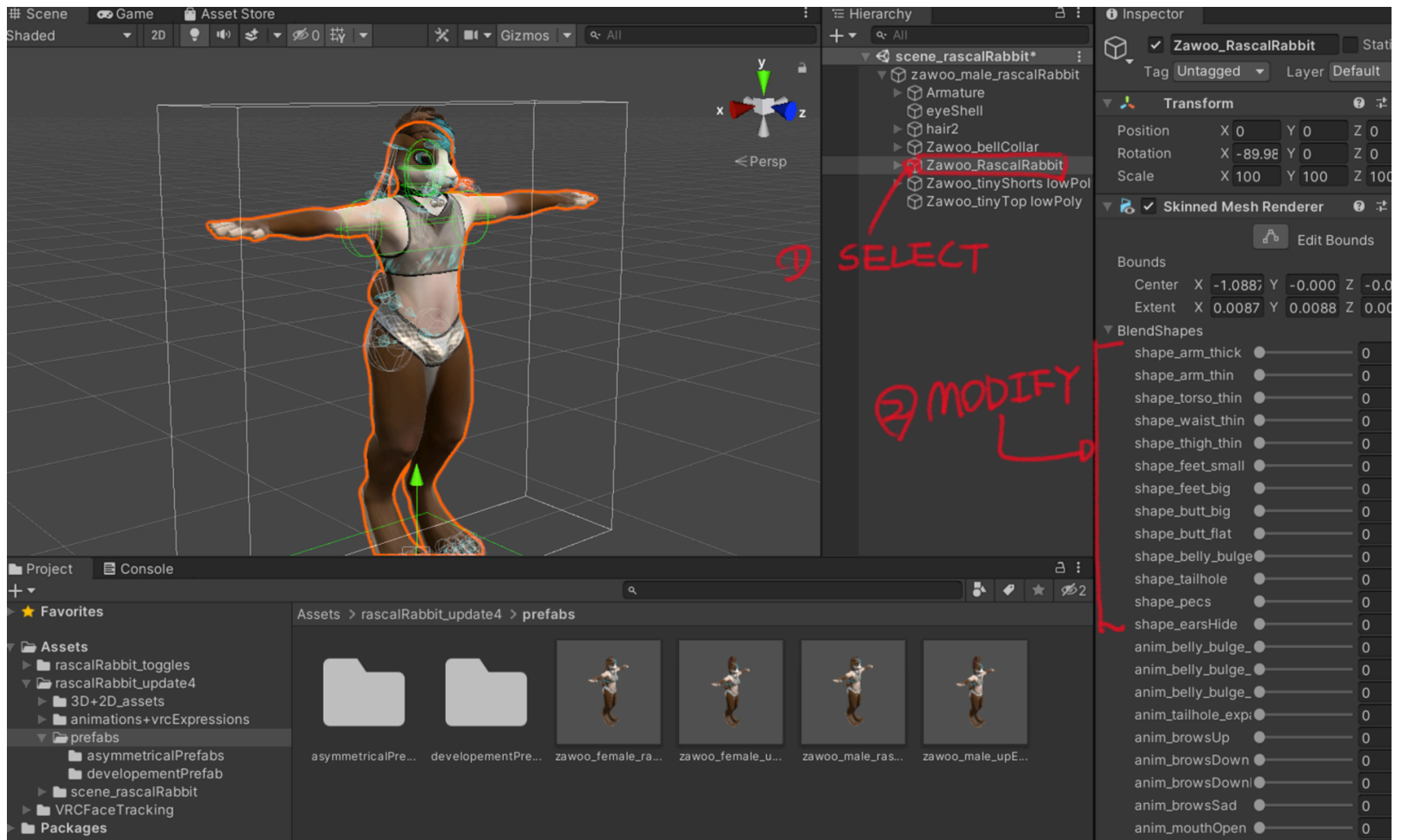

2. Remember to apply the same blendshape setting to the clothing meshes as well, after you're happy with your body shape. If you don't do this, your clothes might not fit correctly and clip through your body!
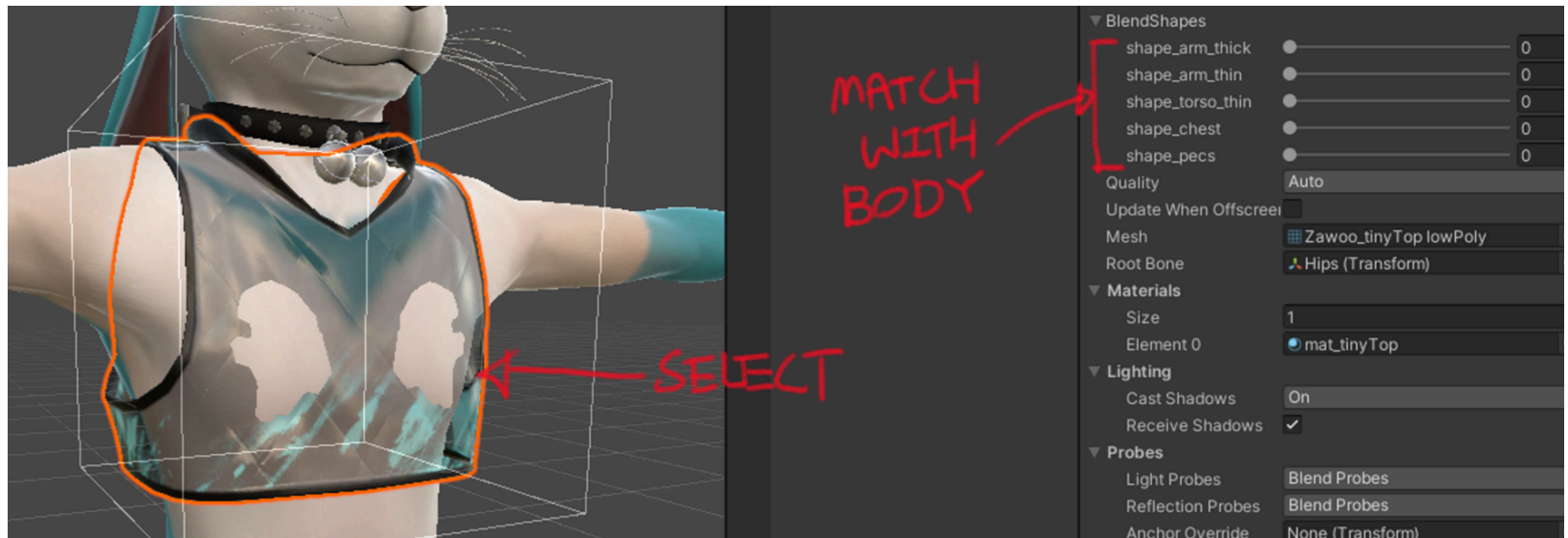
Asymmetrical Body Textures.

The UV of the body is split down the middle, and either side of the body uses the same UV space. If you need asymmetrical body textures, use the prefab located in **"rascalRabbit -> prefabs -> asymmetricalPrefabs"** in the unitypackage. Drag and drop it into the hierarchy to use it.
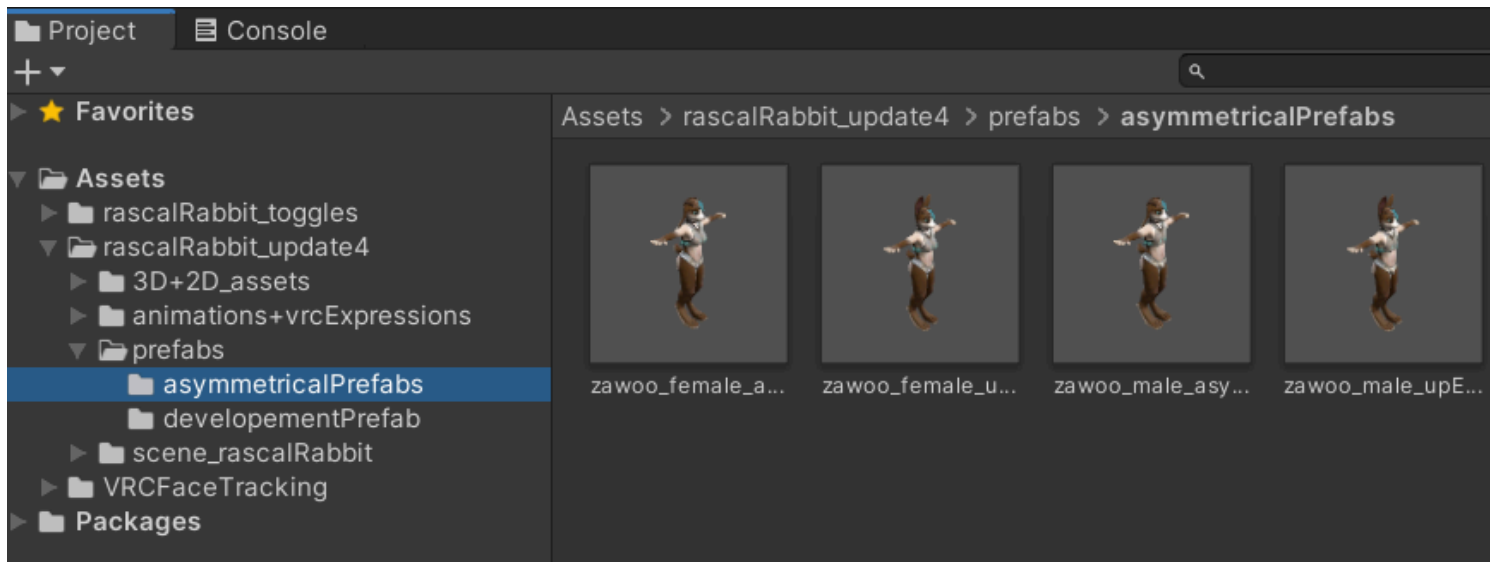
Advanced Customization

The advanced customization guide assumes that you are at least adept at image manipulation and understand the basic principles of how 3D models work.

UV Sets

The clothing uses 1 UV set each.

The body uses 4 UV sets, the version with floppy ears uses 1 less UV set. They correspond to the following material slots:
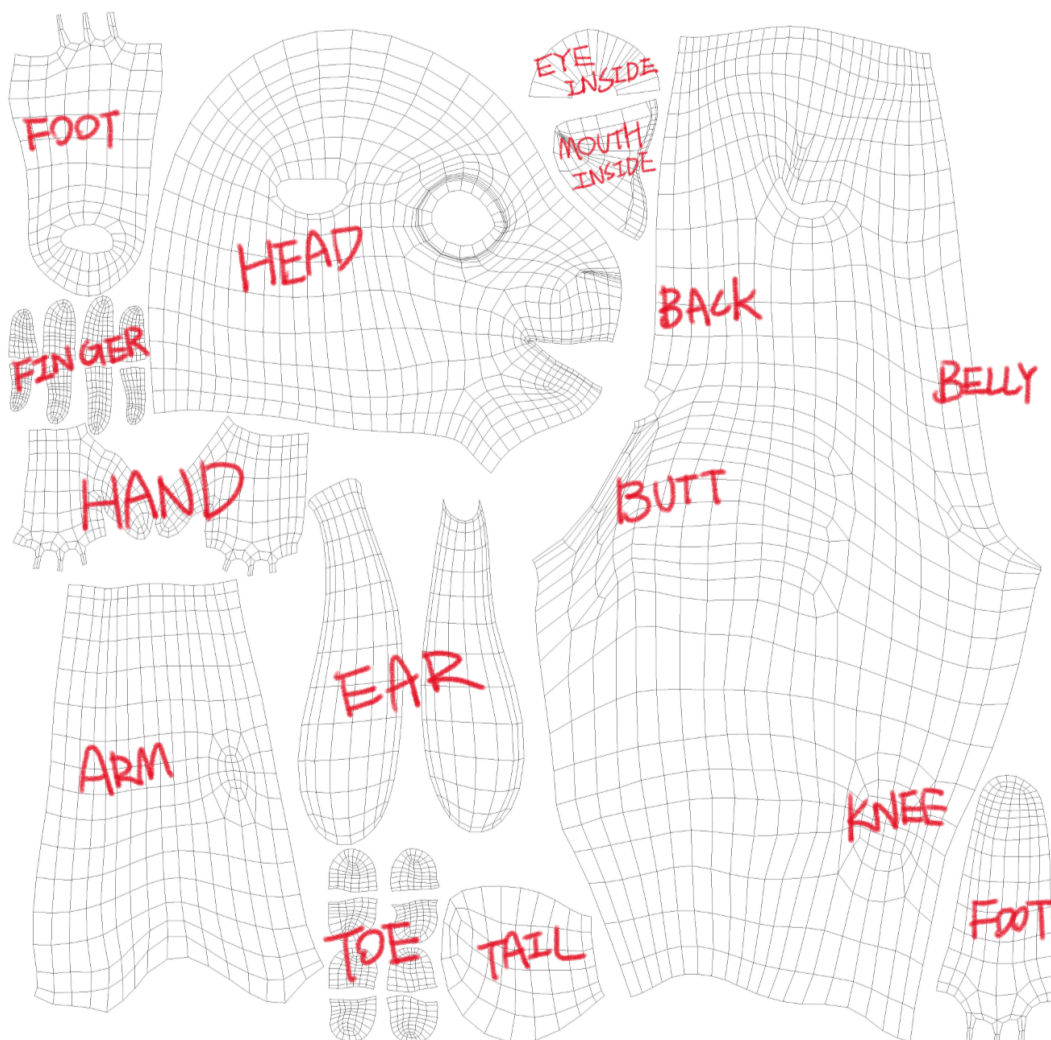
UV1: mat_body
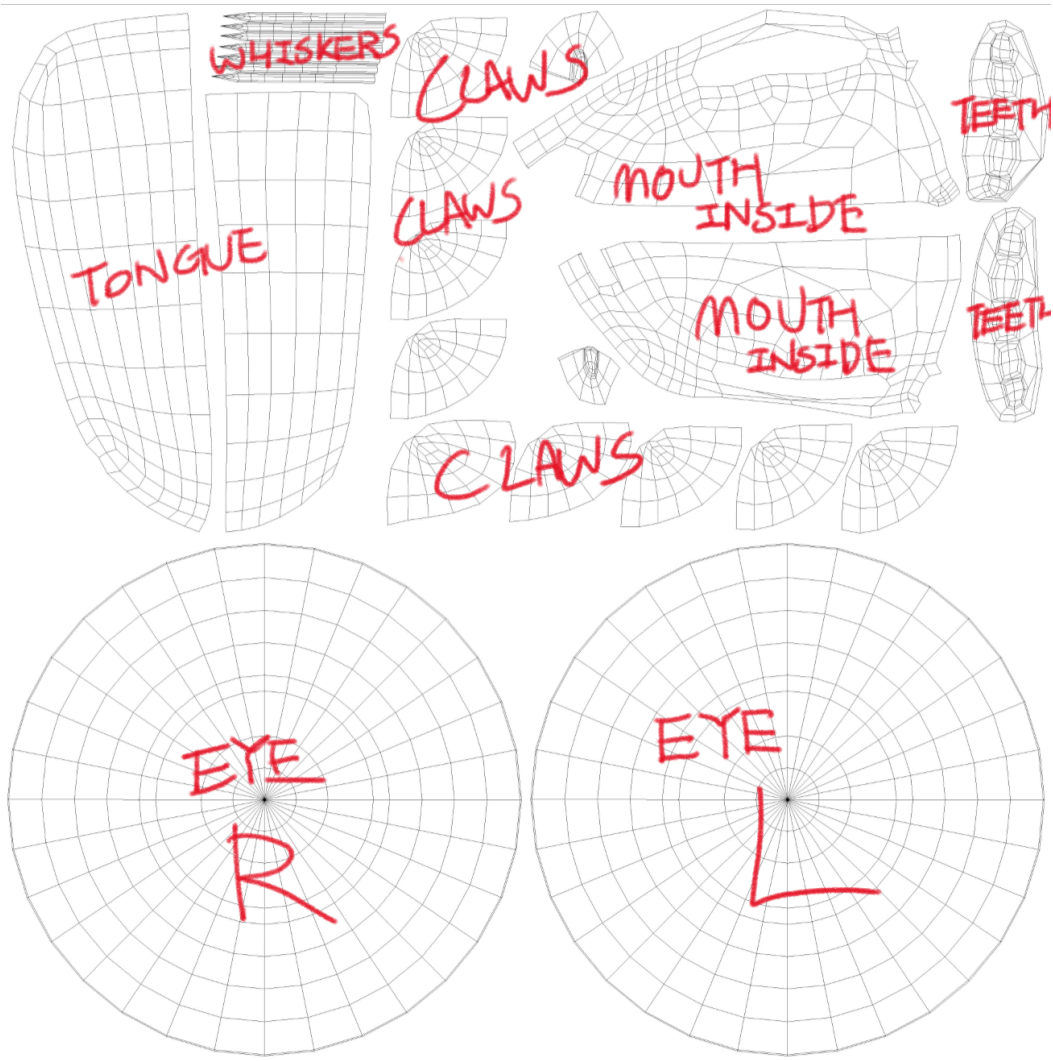UV2: mat_extra,
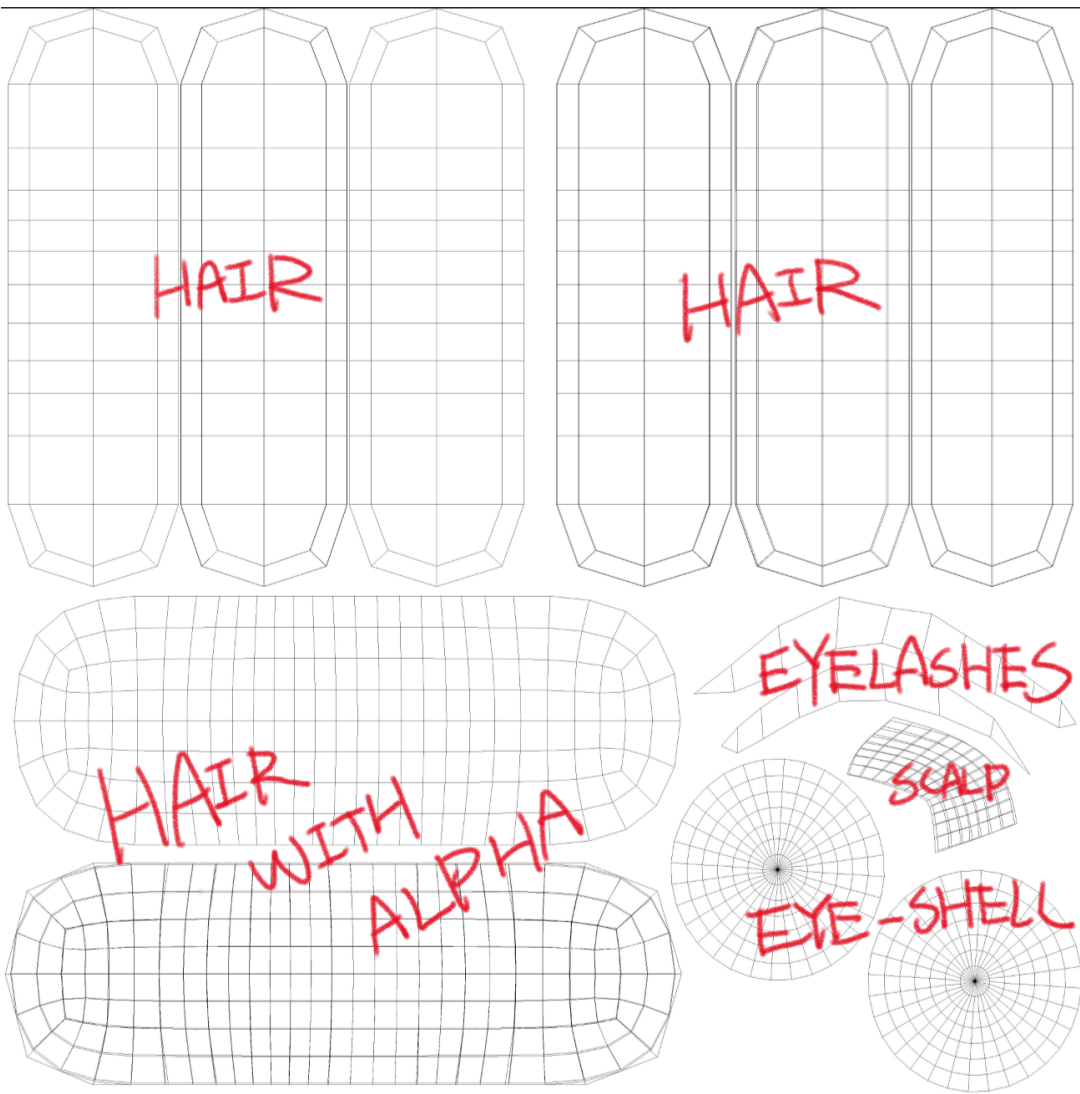UV3: mat_alpha_hair, mat_alpha_eyelashes, mat_alphaBlend
UV4: mat_upEar

UV1:

UV2:

WHISKERS
CLAWS
TEETH
CLAWS
MOUTH INSIDE
TONGUE
MOUTH INSIDE
TEETH
CLAWS
EYE R
EYE L

UV3:

HAIR
HAIR
EYELASHES
SCALP
HAIR WITH ALPHA
EYE-SHELL
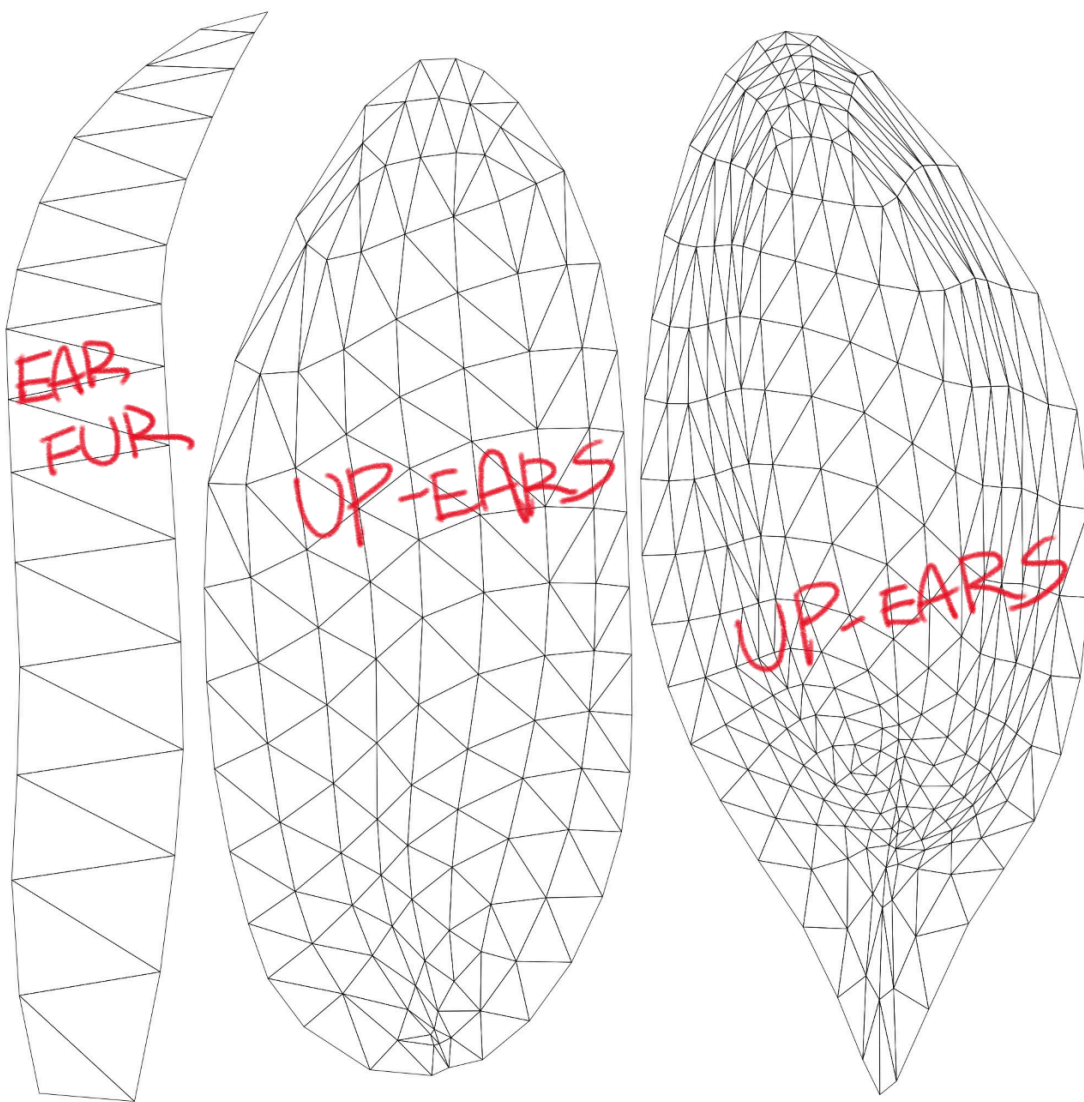
UV4:

Transparent images of these UV layouts can be found in the imageTextures folder.

UV1: mat_body
UV2: mat_eye_L and R
UV3: mat_eyelashes, mat_alphas_hair
UV4: mat_upEar

Shaders for Materials

This section pertains to shaders used and what they are used on.

The body model uses 4 different shaders for the body :
PBR Metallic - Opaque rendering mode:
mat_body, mat_extra
PBR Metallic - Cutout rendering mode:
mat_alpha_eyelashes, mat_upEar
PBR Metallic - Transparent rendering mode:
mat_alphaBlend (for the eye-shell)
PBR Specular - Cutout rendering mode:
mat_alpha_hair

Only one shader is used for all of the clothes:
PBR Metallic - Opaque rendering mode

The "PBR shader" mentioned above don't refer to one particular shader, but a type of shader often included in 3D programs. Common PBR shaders include Standard(Unity), PBS(Neos), Principled BSDF(Blender), Standard Surface (Arnold).

The preset body/hair shader for VRChat is Poiyomi, customized to look mostly PBR in well-lit environments, only with minimum brightness set to 0.05 to compensate for worlds that lack baked global illumination, getting around the issue where shaded parts appears completely back in some worlds.

There is a set of alternative materials in "Assets\rascalRabbit\3D+2D_assets\materials\legacy(standard)_bodyMaterials" which uses the Standard shader, you can use these if Poiyomi doesn't work for you.

Further Optimization

This model comes with a lot of materials, made with facilitating customization in mind. If you are interested in further improving performance and optimization, you can use tools such as CATS blender plugin to create a texture atlas. Please keep in mind that if you want to preserve the original look, at least 4 materials need to be present for the different shaders mentioned above

Included SPP and PSD

The included SPP for the body is organized in a similar manner to the PSD, it's only meant for exporting albedo. It is saved with Substance Painter 7.3 Steam Edition.

Technical Info

Normal map orientation:

Y+ (OpenGL)

Tangent Space:

MikkTSpace

Rascal Rabbit - Face Tracking Guide

Face Tracking in VRChat

To use face tracking, you need the [VRCFaceTracking](#) OSC app. You can get the app on Benaclejames' GitHub page.
https://github.com/benaclejames/VRCFaceTracking

As the app author frequently makes improvements and changes to their app, please read their tutorial on how to set things up.

Since I am not involved in the development and distribution of 3rd party apps or scripts, I can not provide technical support or instructions for them. I also can not guarantee that they will work well, nor can I guarantee the integrity of your Unity project or the safety of your computer and personal information if you decide to use them.

Supported Hardware and Unity Setup

SRanipal

SRanipal is the original face tracking setup for this avatar. It is only designed to work well with HTC's hardware. This setup is still usable with the VRC Face Tracking app, but it is considered legacy. **Only use SRanipal if you use HTC hardware.**

Unified Face Tracking Parameters

The unified parameter standard is supposed to be **compatible with most common face tracking hardwares, such as HTC, Meta, Pico and Varjo.** I have only tested this setup with Meta Movement and Apple ARKit, so I can't guarantee that it won't be wonky on other hardwares. If you find any bugs, please report them to the ZaWoo Discord server.

Installing the Face Tracking Module for Rascal

Method 1: VRCFury Prefab (Easy and Quick)

The Unity plugin VRCFury is required if you want to use this installation method.

As the author frequently makes improvements and changes to their script, please read their tutorial on how to install the plugin.
https://vrcfury.com
In the event that the hyperlink becomes broken in the future, please look up VRCFury on your search engine of choice.

Since I am not involved in the development and distribution of 3rd party apps or scripts, I can not provide technical support or instructions for them. I also can not guarantee that they will work well, nor can I guarantee the integrity of your Unity project or the safety of your computer and personal information if you decide to use them.

1. 1. After you've installed VRCFury in your Unity project, find the prefabs in **"rascalRabbit_updateX/faceTrackingPrefabs/"**. Choose either SRanipal or unified.
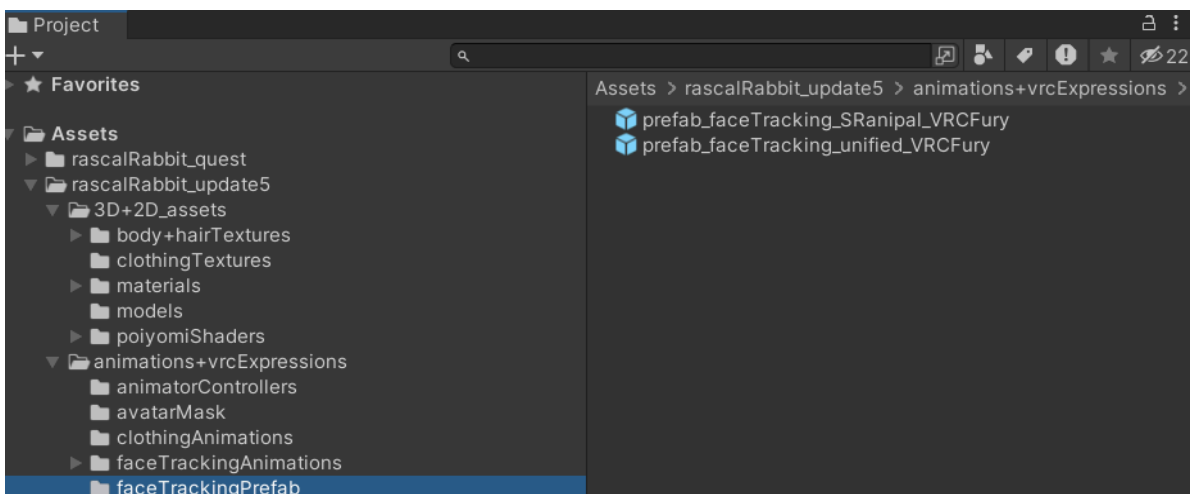
2. Drag and drop the prefab into the root gameobject of your avatar.
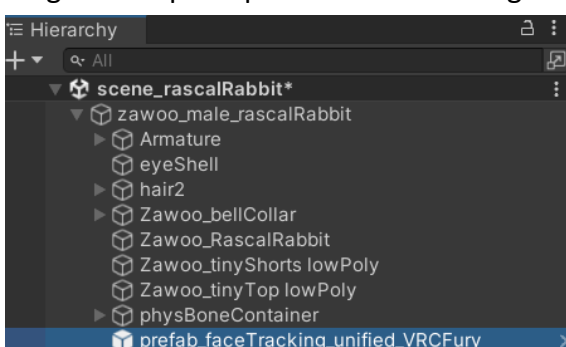
## Method 2: Merging FX Controllers and VRC Avatar Parameters

This method is slightly complex, and it's only recommended if you have a specific need for doing so.

Find the animator controllers and VRC Expression related files in **"rascalRabbit_updateX / animations+vrcExpressions / animatorControllers".**
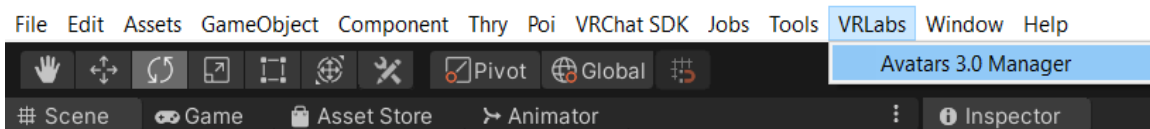
You can use Avatars 3.0 Manager to merge the face tracking functions into your existing setup.

1. In VRC Creator Companion, add **Avatars 3.0 Manager** into your project.
You will be using it to merge the "no face tracking" versions of the FX animator controller and VRC AV3 parameters.
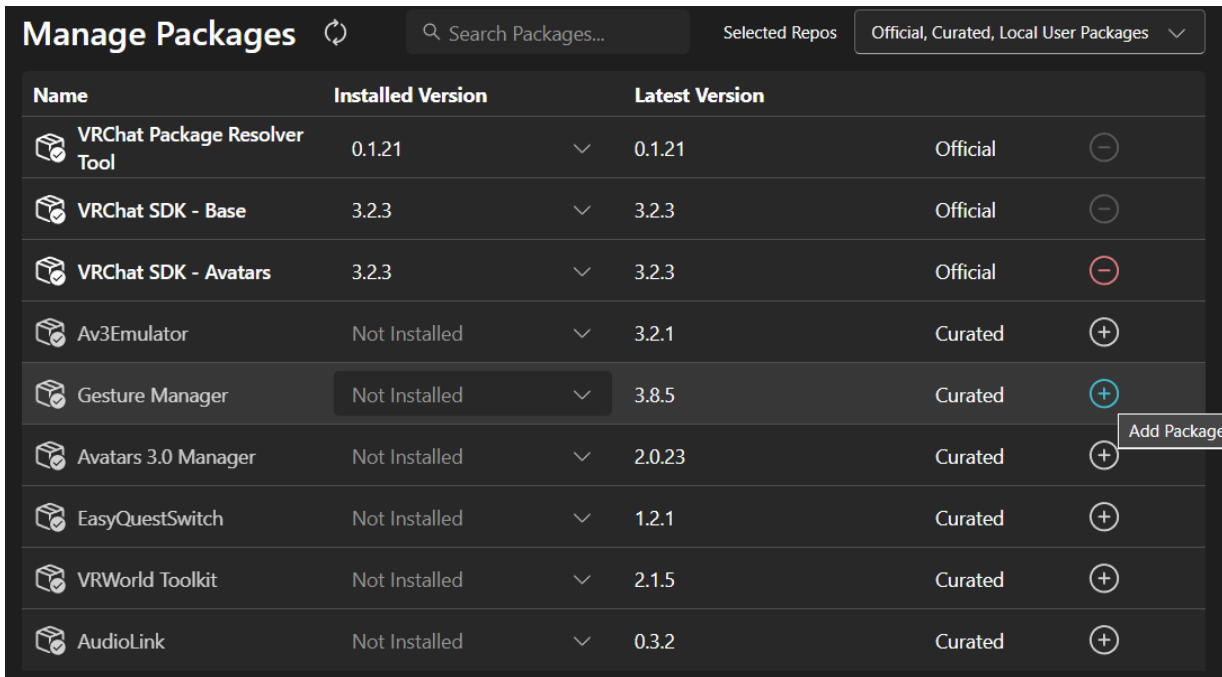

2. The plugin will be found in unity, "VRLabs -> Avatars 3.0 Manager"

As third party Unity Scripts constantly update, I will not provide overly detailed instructions to avoid confusion in case they change the UI in the future.

3. Using Avatars 3.0 Manager, merge your FX animator controller with "**rascalRabbit_updateX / animations+vrcExpressions / animatorControllers/FX_rascalRabbit_unified_faceTracking**", click "Merge on Current"
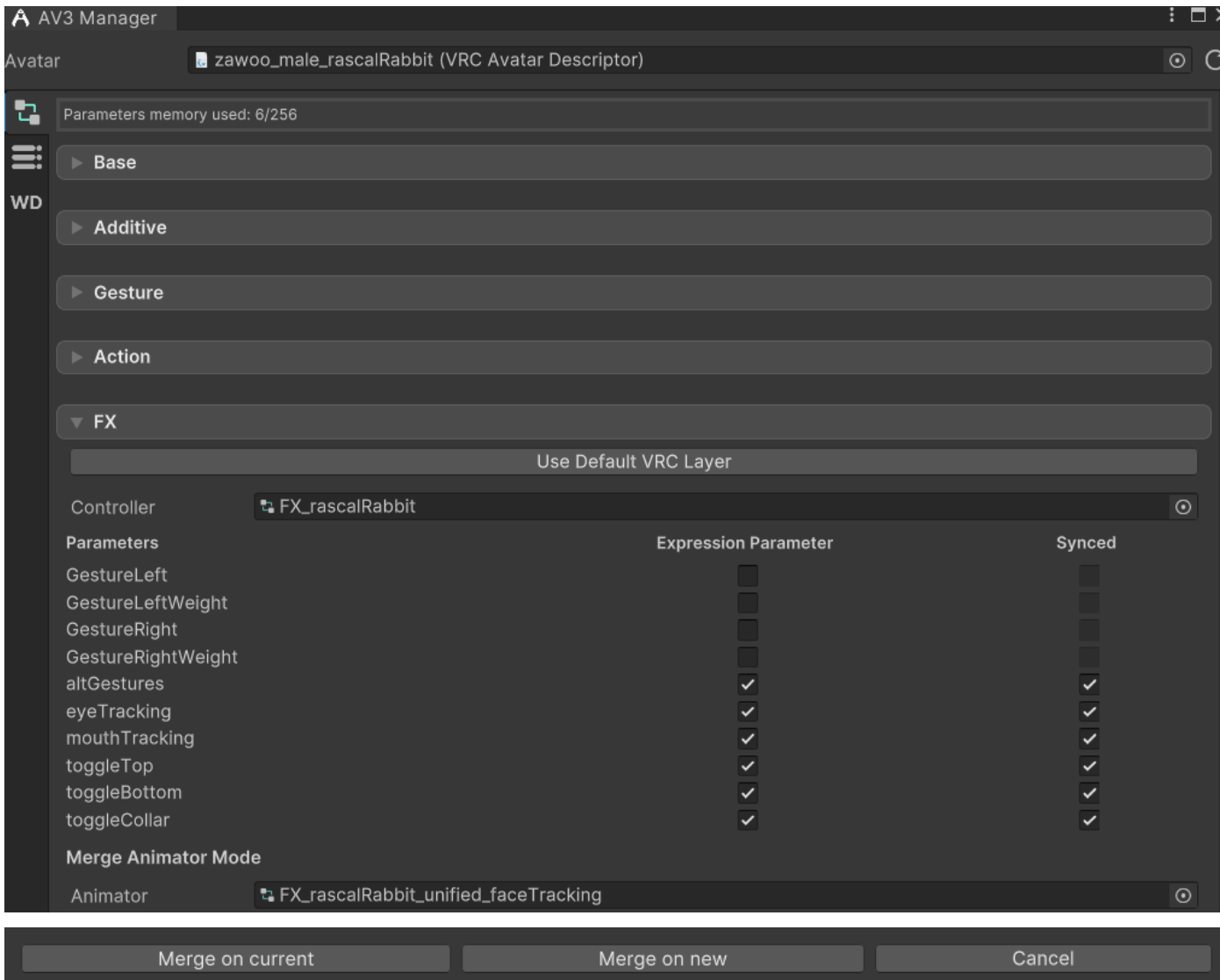
4. Merge your VRC AV3 Parameters with
"rascalRabbit_updateX/animations+vrcExpressions/SDK3ExpressionMenu/param_rascalRabbit_unified_faceTracking", click "Copy Parameters"
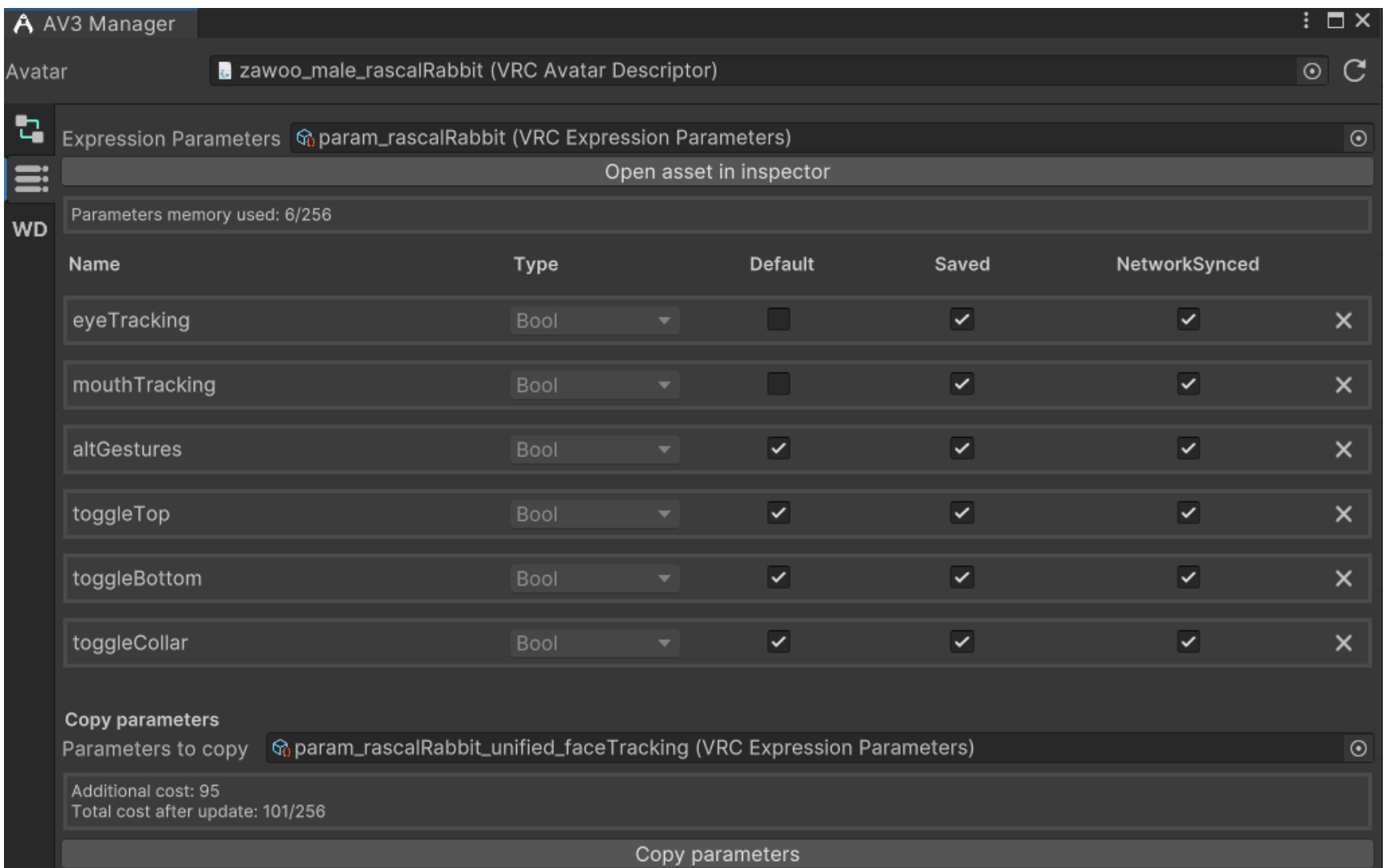
In Game Setup

After opening the OSC app you need to reset the OSC config so the face tracking variables can be exposed to OSC.
Radial Menu > Options > OSC > Reset Config

And then, turn on face tracking in
Radial Menu > Expressions > Face tracking

You can have either mouth, eye, or both being tracked. The part toggled off will revert back to hand gesture animations and use automatic eye movement where applicable.