DURR DOCUMENTATION V1

Oh durr, the instructions

(For v1.2.1, made in December 2020 by HubbleWolverine, edited by Gavin Grey Howard)

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Setting up

Deprecation notice - as of June 2024, Durr v1 is no longer supported, and bugs/updates will no longer be provided.

If you want to modify either the texture or the model, installing Blender 2.8+ and the CATS plugin for VRChat is STRONGLY recommended. If you only need to upload the avatar, you don't need Blender.

Notes on migrating projects between V >1.1 and 1.2+: The scale of the avatar is now 1 instead of 0.4222. Make sure you reapply the humanoid armature from the import settings (Set it to none, apply, and then set it to humanoid).

Please set the VRChat SDK up using instructions here.

Make sure you are using Avatar SDK 3.0. You would also need to import the dynamic bones SDK (This step is not required for the Quest durr). Purchase the plugin using the asset store, and load the plugin. The avatar is included as a unitypackage. After the prerequisites are imported, import the Durr unitypackage as a custom package. Optionally, you can add Pumkin's Avatar Tools if you want to upload custom rendered thumbnails.

Note: this will irreparably replace SampleScene.unity
This guide assumes that the project has just been initialized.

Once imported, the default avatars should appear in the scene, and ready for customization.

An extra note - When you upload the Quest version, you must disable or delete the PC versions of the Durr, or the avatar will refuse to upload.

The Durr unitypackage is created in Unity 2018.4.20f1.

Materials and textures

UV

There are two material slots for each avatar, but the eye material is shared between the three versions, and the eye UV is identical between the three versions.

The main texture has two different UV configurations.

- SimpleUV (Body)
    - This is a mirrored UV, which means a texture pattern on one side would mirror over to the other side, from right to left.
    - This texture is half the size of the FullUV, since it is effectively double the resolution of the texture.
    - The **three 8x8 pixel** coloured squares on the **bottom left** sets the colour for the hair, hooves + nose, and antlers respectively from the left to right.
- FullUV (BodyFull)
    - This is the full UV, where every part of the mesh is unwrapped.
- Quest
    - This is like the SimpleUV, but arranged differently. *SimpleUV and Quest are not interchangeable.*

The eye is separated to a different image file.

Creating textures

Installation of Blender 2.8+ is strongly recommended.

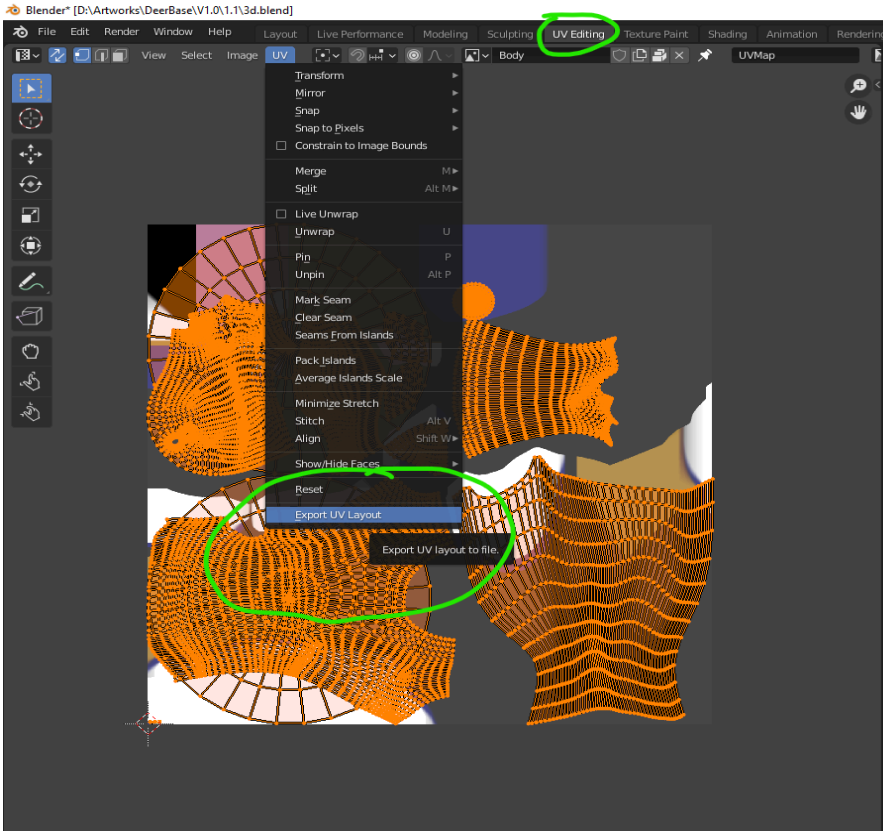
The default textures are created through Blender and inkscape. They also have been processed through the UV padder plugin in GIMP.

My workflow (Body)

Sketch out the general pattern in Blender, recreate the texture in Inkscape, and fix any alignment issues back in Blender. After that, open GIMP and create UV padding.

1. Drawing a pattern in Blender using texture paint. Save it to *Body.png* or *BodyFull.png* (Depending on which version of the UV you are working on). We'll call this the rough texture.
2. Export UV map in Blender by going to the "UV editing" workspace, UV dropdown menu in the image editor, "Export UV layout", and make sure the format is "Scaleable Vector Graphic (.svg)" before exporting.

3. Open the exported SVG in inkscape, and merge the individual UV islands with *Path>Union (Ctrl +)*. You should also import the rough texture to a separate layer, lock the layer, and set the opacity to preference. *(Layers can be opened using Shift Ctrl L)*
4. Draw lines to divide the islands using *Path>Division (Ctrl /)* according to the rough pattern created in Blender. Make sure the lines are aligned to the reference exactly, or else there will be alignment issues.



    a. *For SimpleUV, do not create the 8x8 pixel boxes in Inkscape.*
5. Export the image to *Body.png* or *BodyFull.png (Shift Ctrl E)* to appropriate size (FullUV 4096x4096, SimpleUV 2048x2048)
6. Double check the texture in Blender, and use texture paint to fix any issues.
7. Open the file in GIMP, and use the UV Padder plugin to generate padding.
    a. This will avoid seams in VRChat
8. (SimpleUV only) Finally, ~~GURIRU ZA FISSHU~~ Create three 8x8 Pixel squares on the bottom left for the colours of the Hair, Hoolves + Nose (Usually black), and antlers in that order.
    a. 8x8 is the minimum amount for Unity's filters.

The SVGs I created for Durr are included in the texture folder inside “Blender Files”. The textures can be replaced in the Unity project’s asset folder by replacing either *Body.png* and *BodyFull.png*.

The advantage of this workflow is that the lines are perfectly smooth, and the SVG format allows me to rescale the texture to any size I wish.

Other notes

I am most comfortable with my workflow, but I understand if the process is long and inefficient. I do not own a copy of Substance Painter or Photoshop, so I am unable to create official files in those formats.

Here are some pointers, however, if you’d like to texture your Durr your own way.

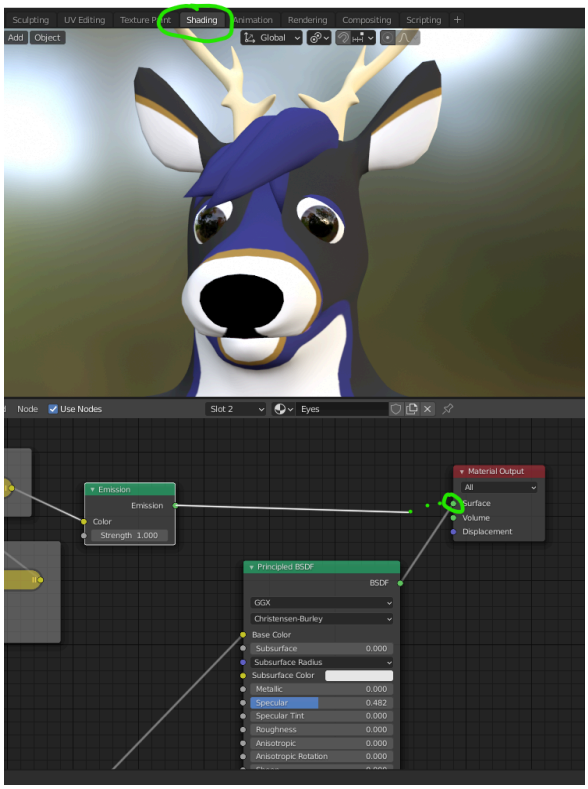
- The SimpleUV is mapped so that the three 8x8 coloured pixels on the bottom left are exactly this size.
    - They are arranged in this order, from left to right
        - Hair
        - Nose + Hooves (usually black)
        - Antlers
- You can also export a PNG version of the UV map. See above for exporting a SVG, but choosing PNG instead.
- The eye texture can be generated procedurally. Please see below.

Eye texture Generation

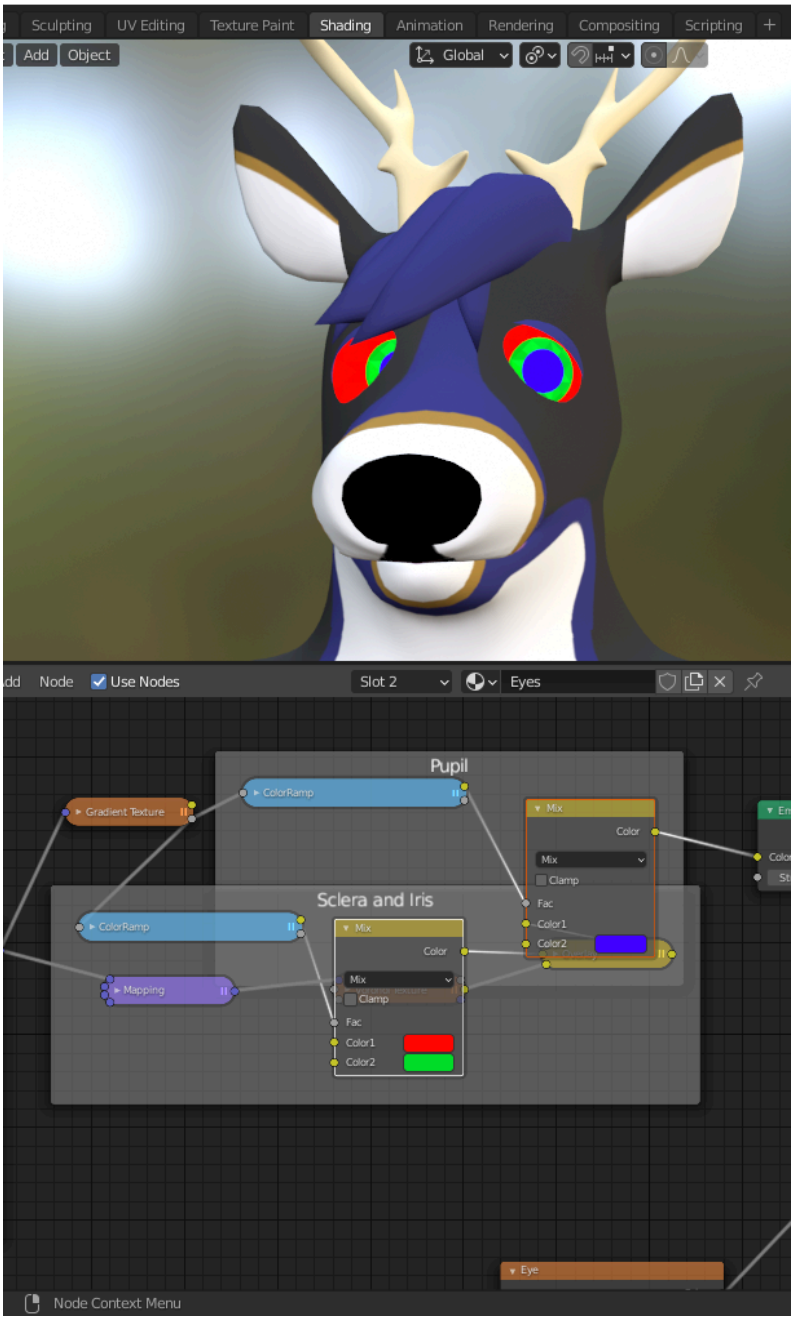
This part assumes you have basic knowledge on how to navigate Blender.

I have created a node setup for creating the eye texture. This allows the procedural generation of the eyes without having to paint them yourself. You can adjust the pupil size, sclera size, the pupil colour, the sclera colour, and the randomness/pattern for the pupil.

To use the node setup, plug the emission shader node of the eye shader into the material output. Select “RightEye (texture render)” in the outliner.

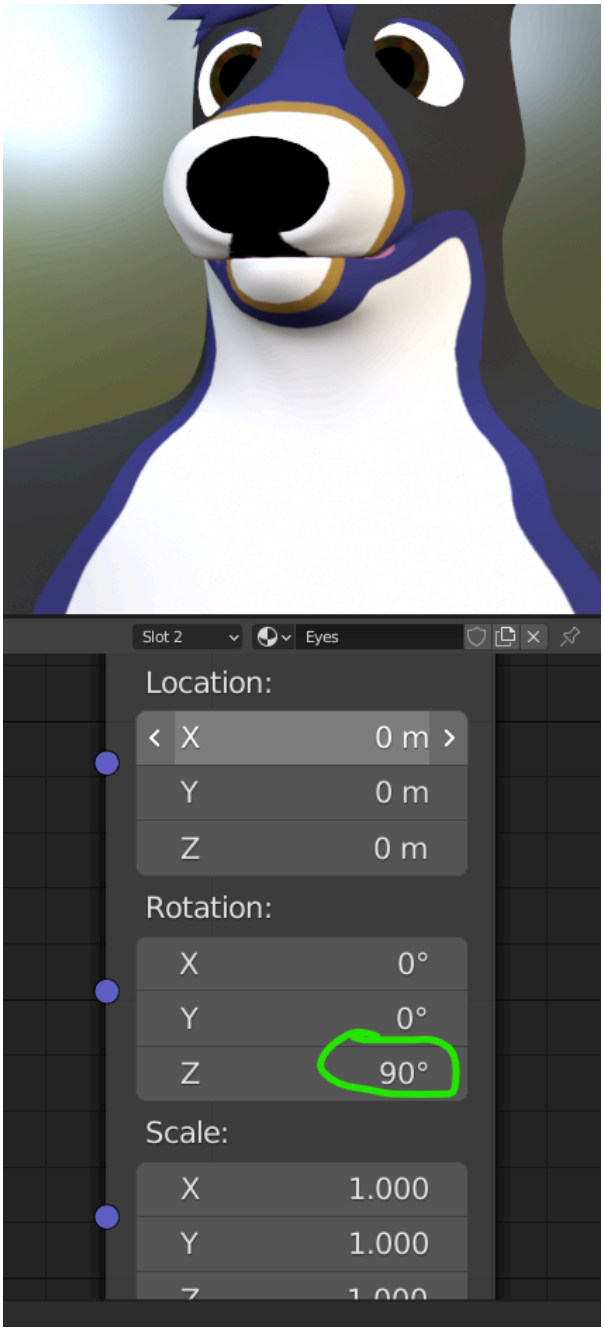


We can easily tweak the colours with the node group.



The two mix nodes are for the colour generation. You could also play around with the colour ramps to adjust the size. *DO NOT CHANGE THE BLACK AND WHITE IN THE COLOUR RAMP. This will probably not do what you are looking for.* You can also play around with the voronoi texture node to adjust how random the iris looks.

The mapping node on the left after the texture coordinate node controls the rotation of the eye. The default texture has the eyes spread out 25° from the front. The exact front for the eyes is 90°.
You would not want to set it as 90° as it will look very cross eyed.



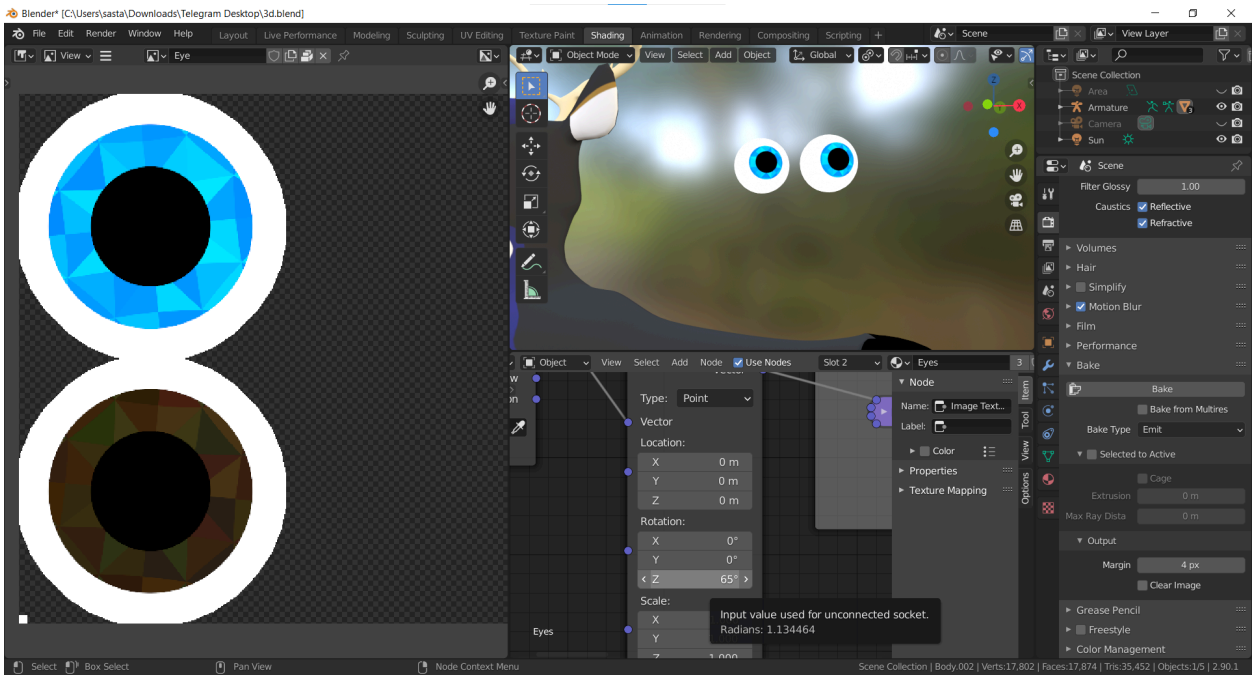
After changes to the node group is set, it's time to bake the eye to the texture. Go to the properties panel and goto render properties (the one with the render engine selection). Then select the image node that is connected to the principled BSDF below the node group.

Once that is done, go down to the bake subpanel in the render properties and expand it. Blender does not have a proper way of baking node setups into textures properly, so we have to choose the Bake Type “Emit” since we are not looking for anything other than the albedo to be baked. The node group has the Emit shader already set up, so you don’t have to touch it.

To give that 25° of separation, you would have to adjust the eye from the front, which is 90°. Select the ***right* eye** (the duplicated copy and not the one attached on the Durr) and adjust the rotation of the **Z axis** in the mapping node and put **90-25**. This will tilt the eye 25° to the right.

Now you must bake the right eye by itself. This means that you **must uncheck “Clear Image” from the bake panel**. This will prevent the bake from applying both eyes to the same angle, which is incorrect.

Repeat the separation steps but with this time, select the ***left* eye**, and add 25° instead of subtracting, so put **90+25** in the **Z axis** of the mapping node, then bake.



Extra note on the sclera, if you change the colour from white, you MUST also change the colour of the 8x8 pixel square on the bottom left of the texture to change the colour for the back of the eye.

Good job if you could understand my terribly explained instructions ;w;

Modeling and exporting

Having the CATS plugin for Blender is strongly recommended.

Since this model does not use any visemes, you do not have to worry about ruining the blendshapes :D

When exporting, select the Armature and the body, then check “Limit to selected objects”. This way you won’t have a floating eye.

Use the CATS plugin to export the model to FBX, and then replace the FBX under the Assets folder in your Durr unity project. This way it can keep all the settings and you don’t have to start from scratch.

Use the “3DMirror.blend” file for ease of editing, this version has the mirror modifier applied already. Note that his file also uses SimpleUV. If you want to use FullUV, You would have to edit it from “3DFull.blend”. “3D.Blend” is the SimpleUV version, but with the mirror modifier already applied.

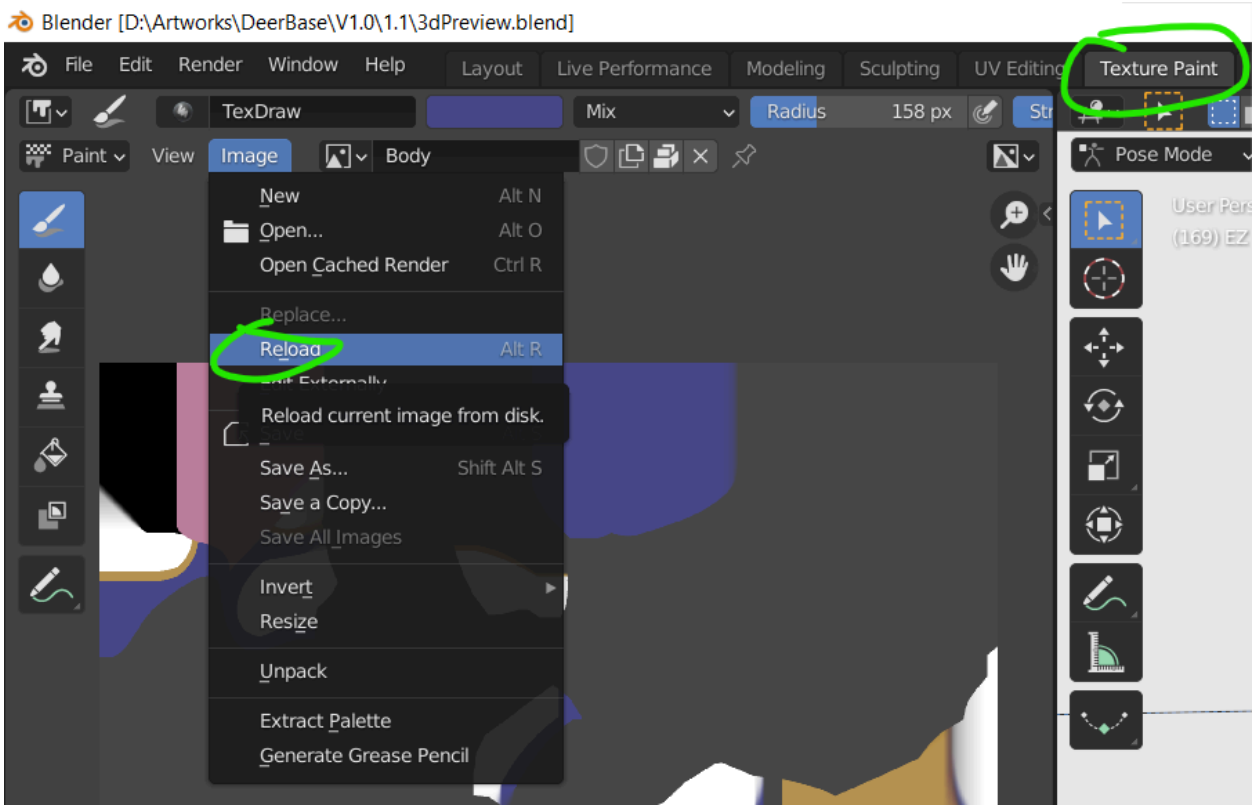
Make sure to check **“Swap UVs”** for the **FullUV** while importing to Unity.

Avatar Preview upload

In order to upload the avatar preview, please get Pumkin's Avatar Tools for Unity.

The “3DPreview.blend” and “3DPreviewFull.blend” are included in the “Blender Files” folder for this specific step. *Replace the texture with your new one by replacing the default texture in the “texture” folder.*

Then in Blender, go to “Texture Paint” tab on the top, the “Image” menu on the top, and click “Reload”.



You can then render it from there. Make sure you are on frame 1 when rendering, other frames move the camera. Press F12 to render. Remember to save the rendered results.

After that, open Unity, goto the top bar, Pumkin > Tools > Avatar Tools, and check “Use camera overlay”. Select your render and the tool will take over the camera as you upload the avatar.

Acknowledgements

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