

Using UDIMS

So, what are UDIMS and why are they helpful?

-They are essentially “extra” UV maps that make the resolution of an object higher. In other words, instead of having all your UVs in one tiny quadrant in the UV editor, you can use multiple squares!

-Say you’re working on a highly detailed asset, for example a character. If you tried to fit all the UVs you see in the image below into one UV block, you’d not only pull your hair out, but you’d also lose resolution. This would also make the job of the texture artist more challenging.

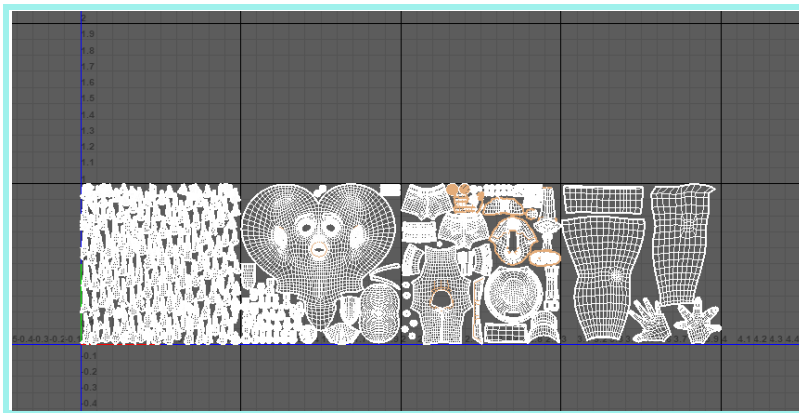


Image 1.1 Character modeled by Kenna Hornibrook and Alina Morales; UVed by Kenna Hornibrook

How to use them:

- For your UDIMS, make sure they’re positioned from left to right on the UV editor for each row (like you’re reading a book). You can have multiple rows (like the example in image 1.3) just make sure they’re going left to right.
- Another question is what needs a UDIM? As you can see in our UVs above (image 1.1), we only have 4 squares, which is appropriate for our model. We didn’t give a square to every small detail by itself, so don’t give fingernails or earrings their own UDIM.
- The most important thing about using UDIMS is maintaining a consistent naming convention
 - Say your asset is named PE for your character (ours is Percy so it’s PE).

-For each square of the UDIM, it should be labeled PE_1001 for the first square, PE_1002 for the second, etc. (see **image 1.2**)

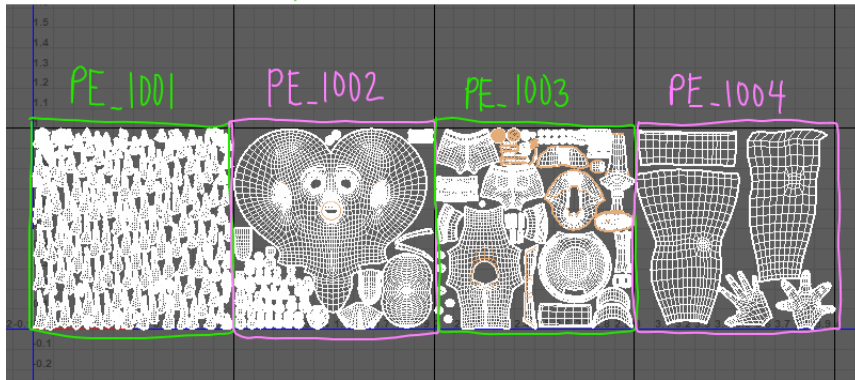


Image 1.2

- **Image 1.2** shows the way they should be positioned.
- ALWAYS put your UVs in the top-right square of the UV editor (refer to **image 1.4**). The values in the other quadrants are negative and we don't want that (even for general UVing, it is bad practice to place UVs in those quadrants).

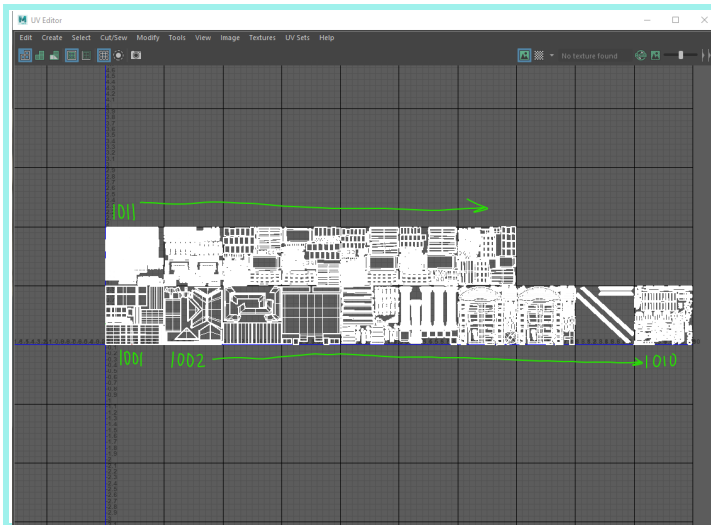


Image 1.3

ALWAYS put your UVs in the top-right quadrant as so:

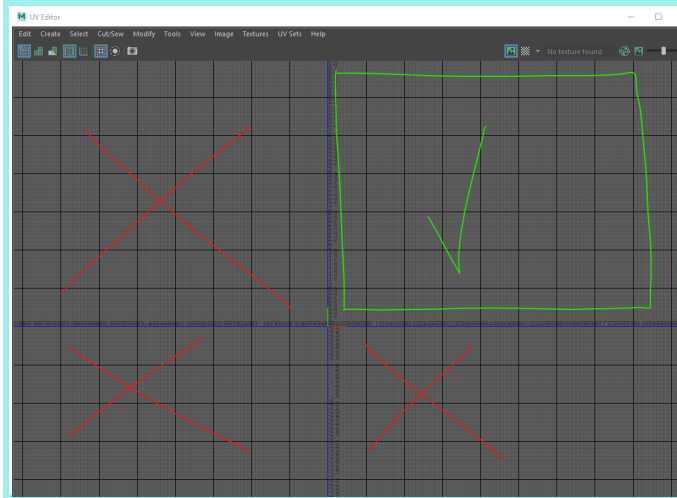


Image 1.4

Setting up your file for UDIMS:

So, the first thing you do is open Maya and set your project. If you take anything from this paper, it should be this: **YOU NEED TO SET YOUR PROJECT EVERY TIME YOU WORK IN MAYA.**

-All your textures, modeled assets, images, and scene files are tied to your project file in Maya. If you don't set your project, Maya will not connect the file you're working on to the main folder and you will cry.

Ok so let's start!

1. -Go to file - project window – select “new” and name your project. Select the location you want it to be set to (I usually have a folder on my desktop).

-select “Accept”

-Note that this is just setting up your project, you do only need to do this the first time you're setting up your file. **Step 2 is what you need to do every time.**

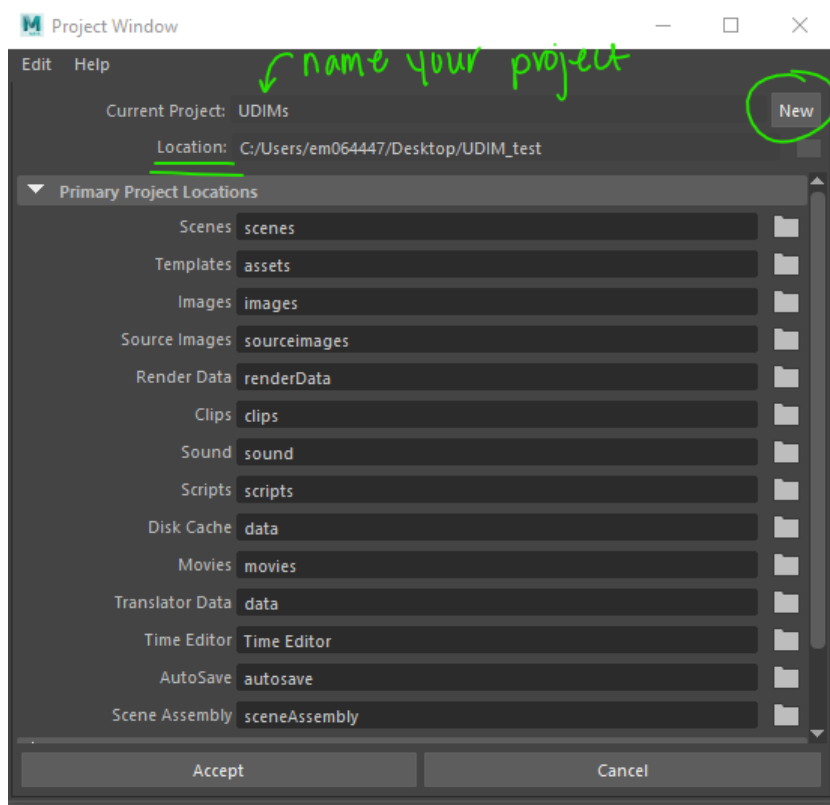


Image 1.5

2. THIS is what you need to do every time:

File-set project- select where you made your folder and select “set”.

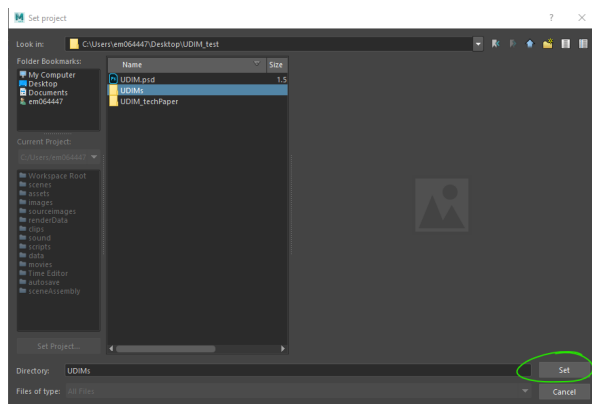


Image 1.6

Ok so now we're now ~officially~ ready to get started!

3. Model your character (wow that was easy!) Just kidding.

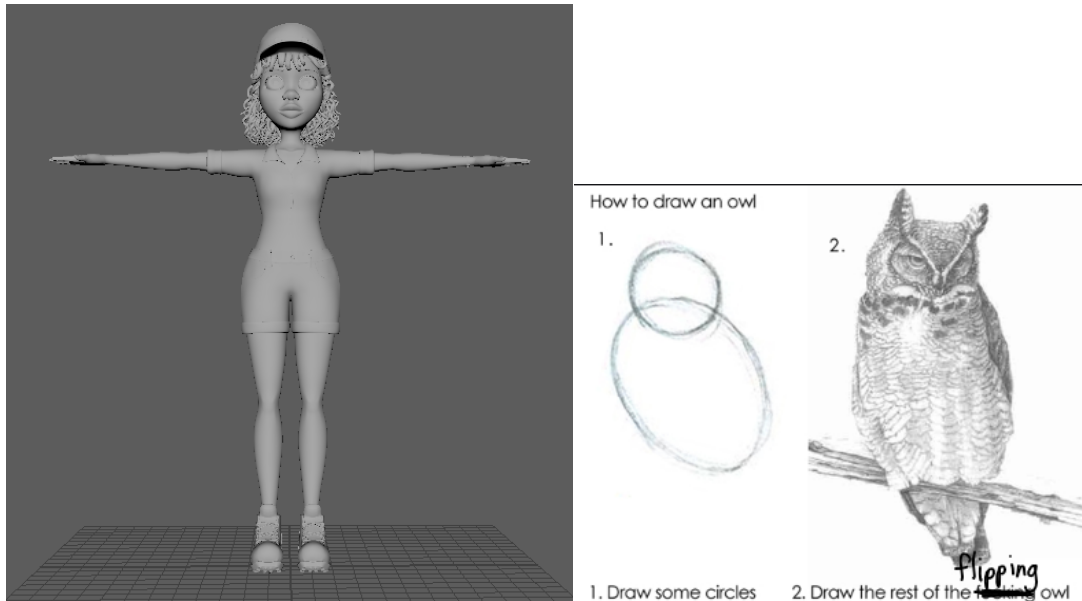
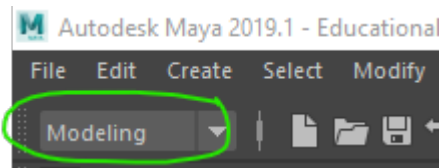


Image 1.7

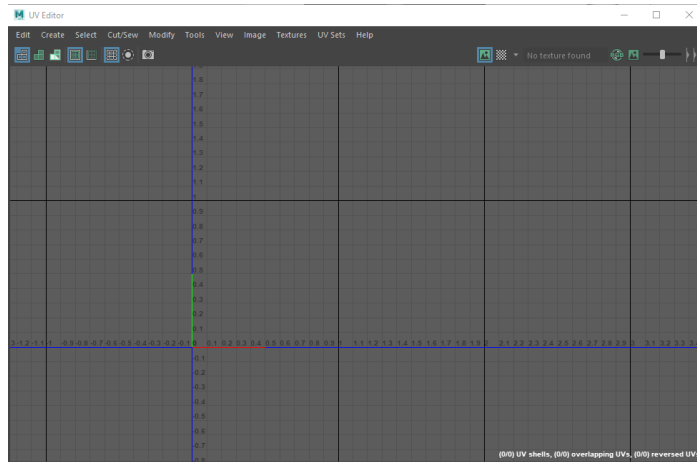
4. Ok so now we can start UVing

-I'm not going to go over every step of UVing since that could be its own tech paper BUT I will show you how to position your UVs on the grid.

-make sure you're in the modeling menu as shown below (or you won't see the UV editor).

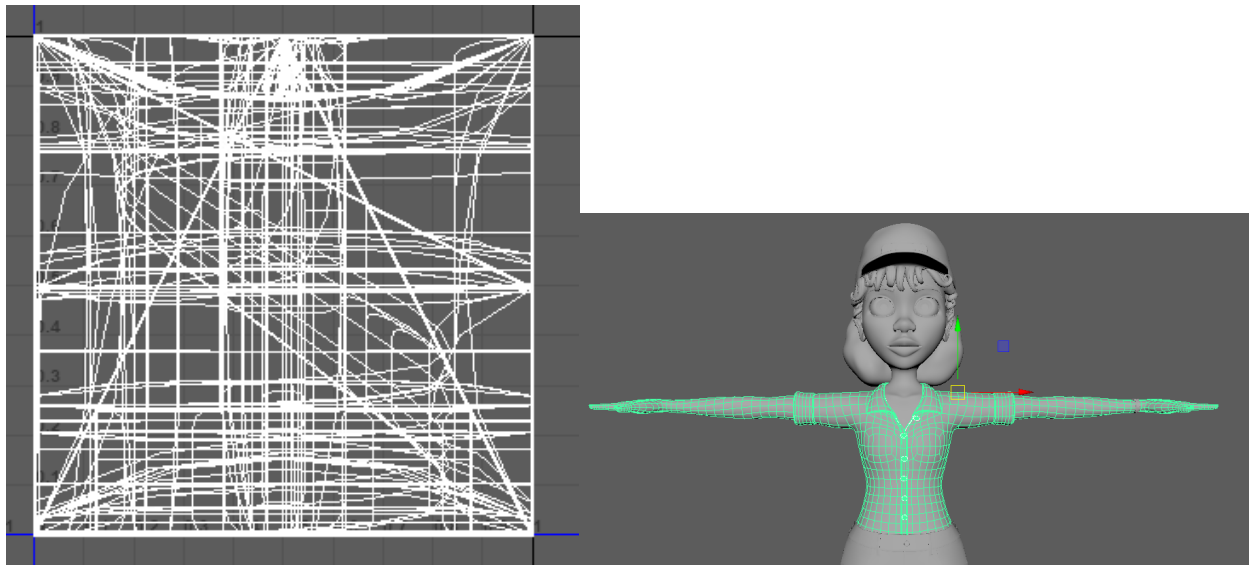


Go to UV- UV editor and you'll see this:



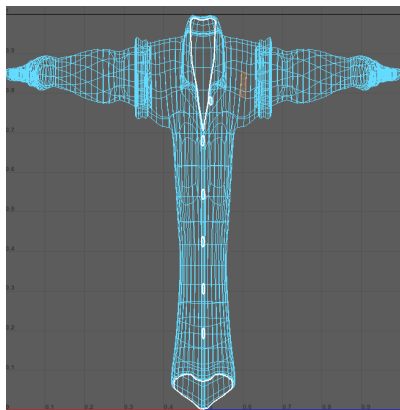
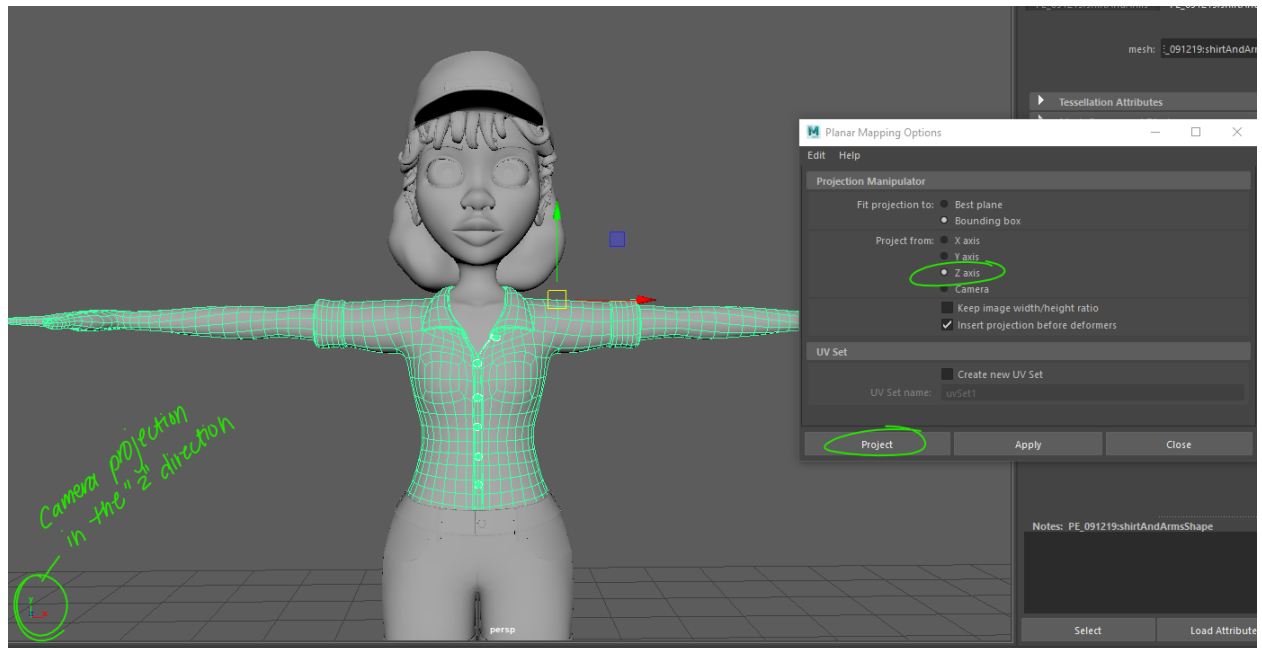
Which you've probably seen before but I'm just trying to be thorough kids ok

-Select the geometry you're going to be UVing and it will show up in the UV editor and look like a mess.



-Now go to UV-planar and select the option box next to its name.

-Look at the direction your camera is positioned (via the little x, y and z compass at the bottom), select the direction in the Planar Mapping menu, and press apply.



Wow! It's halfway recognizable now

-It automatically shows up in the first square of the UV editor.

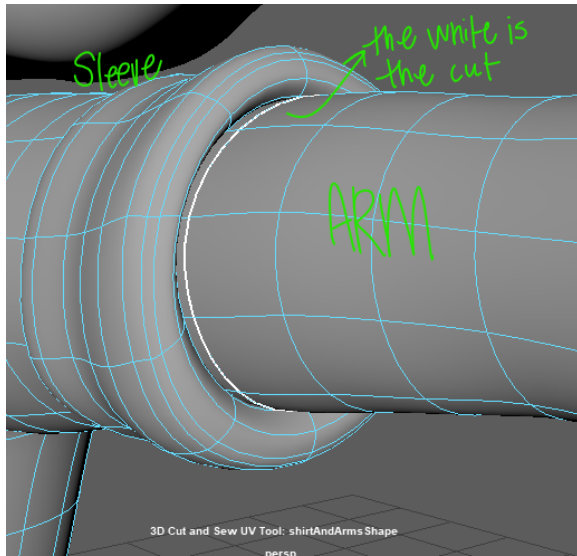
-The 3D cut and sew tool is a fantastic tool for UVing! You can find it under UV, 3D cut and sew (make sure the UV editor is up). You'll be able to physically cut on the model in Maya.

-The cut appears as a white line.

-To drag in a straight line, left-click and hold shift.

-To delete the cut you've made, ctrl +click

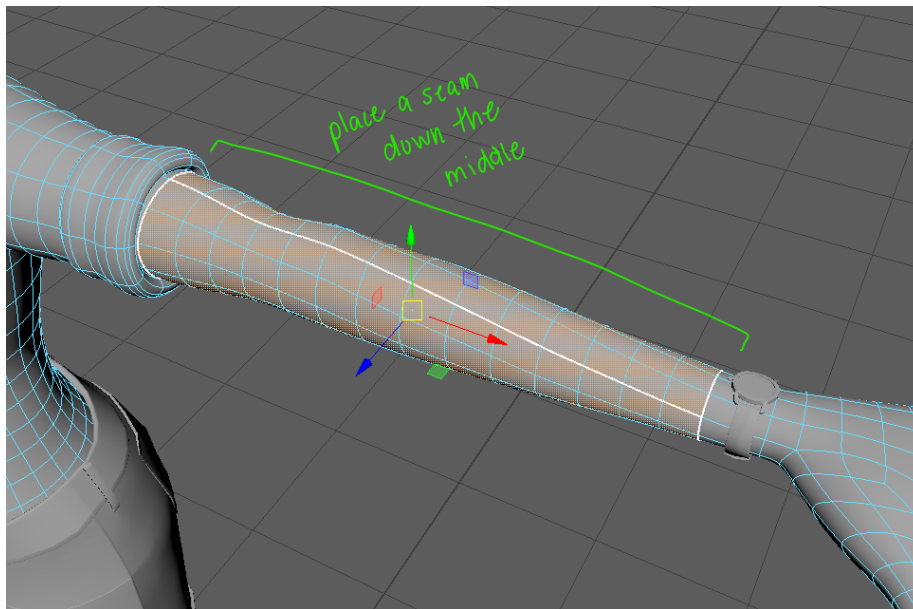
-I've cut the arm away from the sleeve as you can see in the image below.



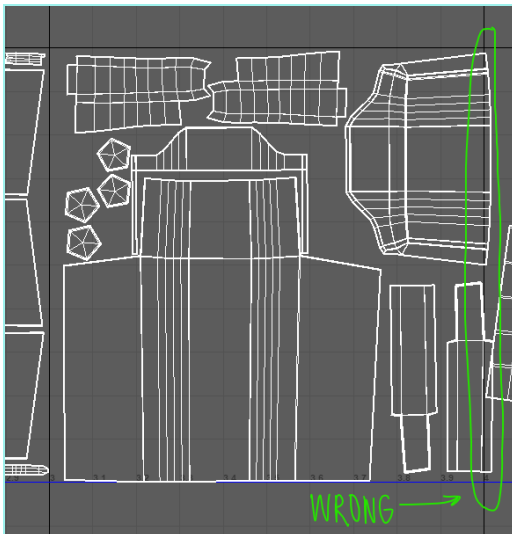
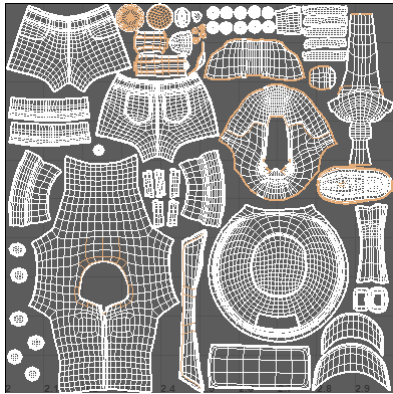
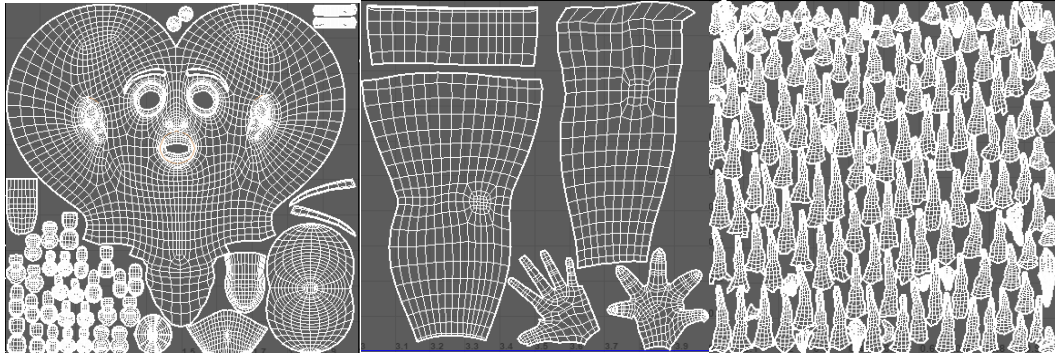
To finish the UV:

- -Right-click and select component – UV shell
- -click component
- -Press “D”
- Your UV is now in separate shells

I cut a line through the arm so it could unfold flat



Keep UVing and laying out your UVs in the editor. We grouped them by face, limbs, hair and clothing.

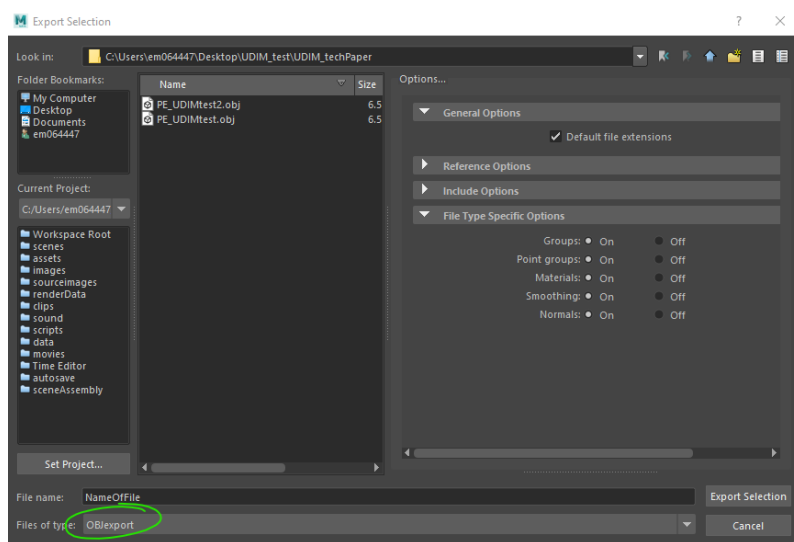


Also, make sure all your UVs are placed within the square. If it's outside the boundaries even a little bit, it will cause issues (such as not correctly loading in Substance Painter)

5. Exporting for Substance Painter

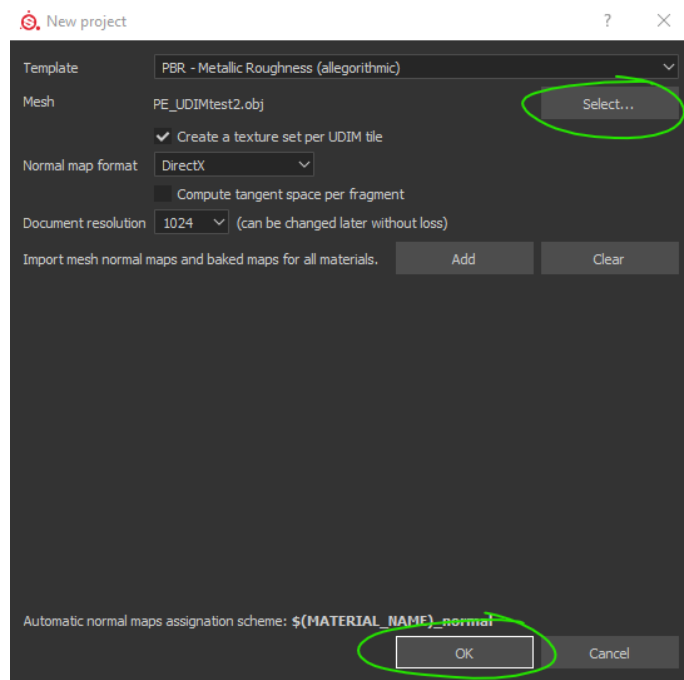
Ok so if you're texturing your model in substance here's what you need to do:

- select your entire model
- Go to file- export selection
- choose to export it as an OBJ export

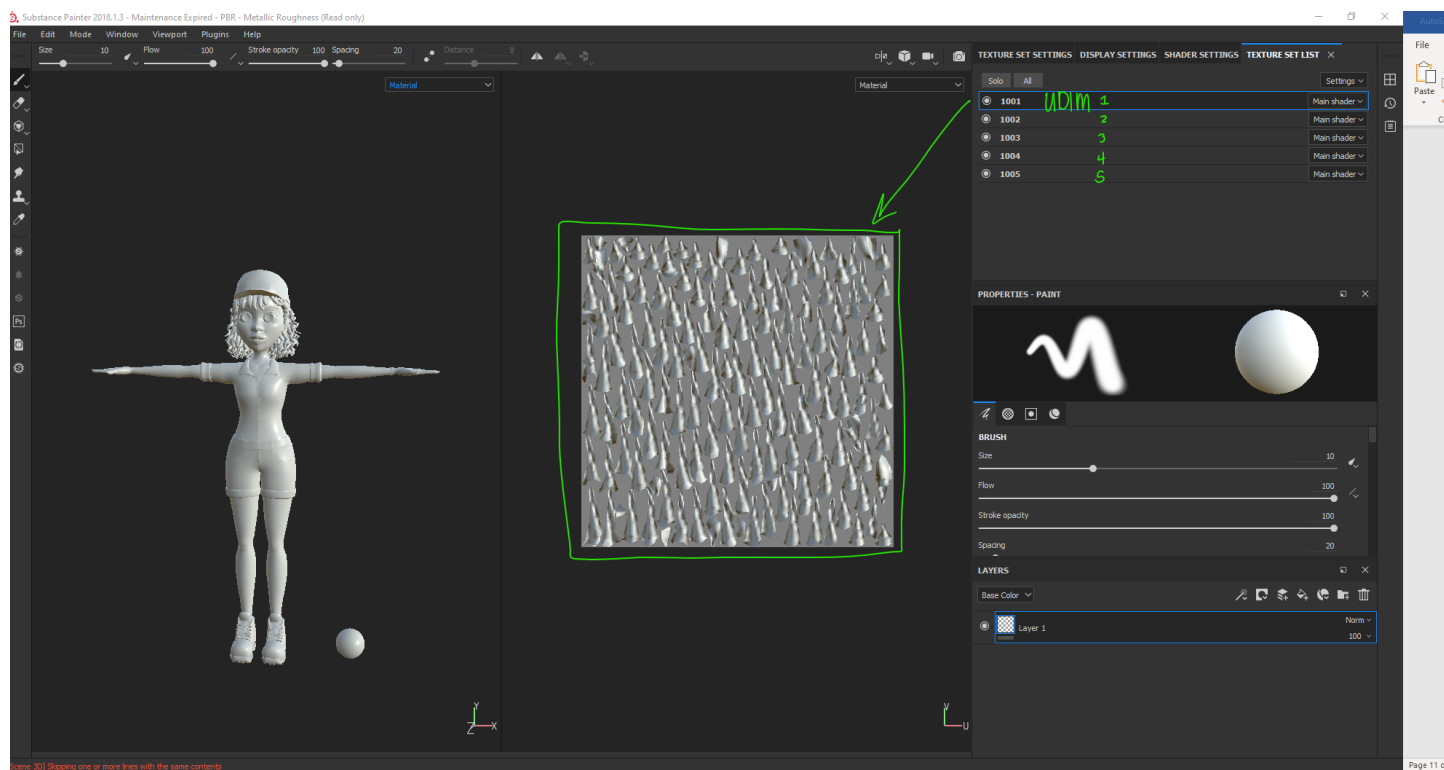


6. Importing textures into Substance:

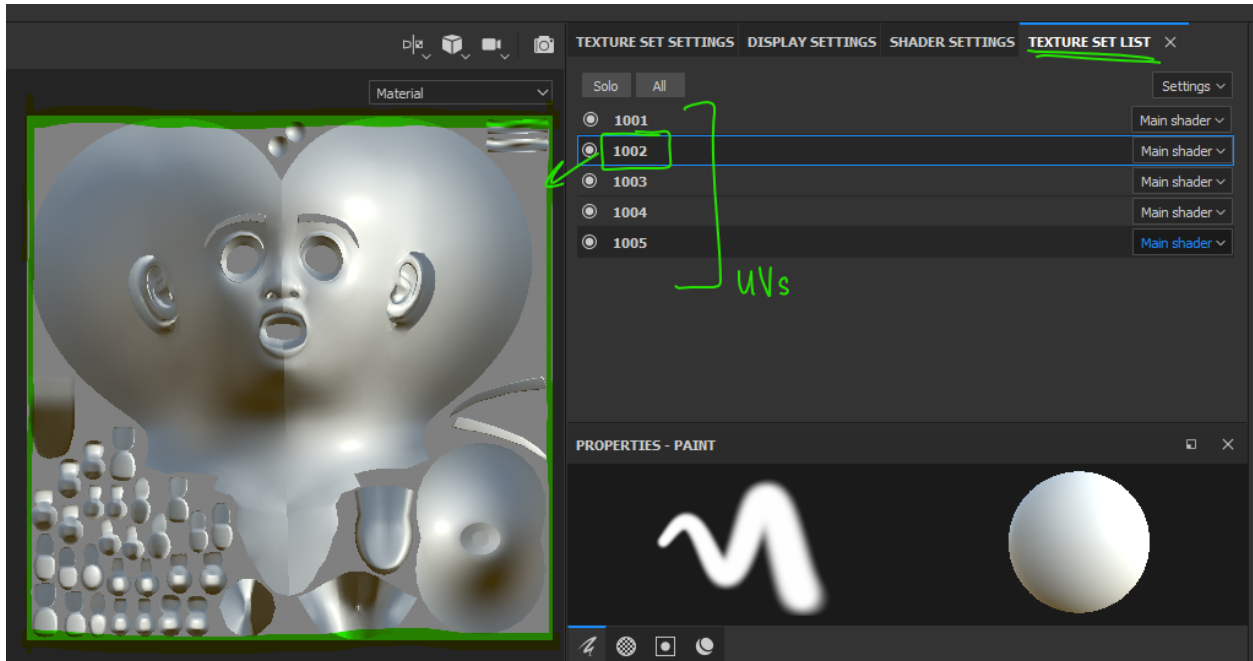
- Open substance and go to file- new or Ctrl + N



-Select your OBJ and click OK



Your models with your UVs should show up.



As terrifying as this is, the Texture Set List is where all your UVs should load. They will automatically be named “1001”, “1002”, etc.

- Once you’re done with your textures, we need to export them
- Go to file-export textures
- Choose your location
- You’re now good to import them into Maya!

7. Applying UDIMs in RenderMan (keep in mind that this is for RenderMan 22.6 and updates might change things)

First let's set up the nodes

- Make sure you’re in object mode.
- Assign a pxr shader by right-clicking (and hold down) the object you’re applying the texture to and select “assign new material.”
- In this case we will select all our Character like we did for the export.

-Open the hypershade editor by going to windows- rendering editors- hypershade. In the toolbar in this window press the button highlighted in green to see your newly created node.



Okay so now we're going to add our textures with a pxr texture node. Here's how to create them:

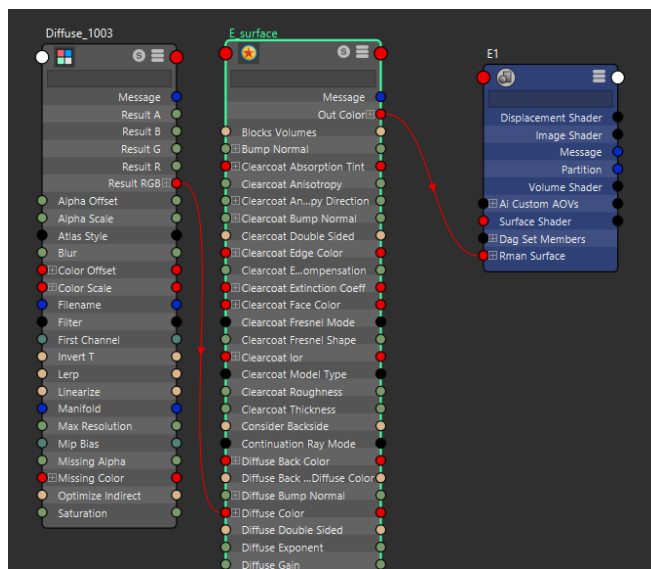
-press "tab" in the window and type pxrTexture.

-Once it appears, select it and press "3" to open the node.

-Connect the result RGB (of the texture node) to the diffuse color (on the pxr surface node)

-You can minimize the size of the texture node by pressing 2 or 1. This will not affect the use of the node, only make it look less cluttered and it is optional.

-For models without UDIMs, you would have to create multiple texture nodes, BUT for UDIMs you only have to attach one node. Once you apply one texture, all of them should apply.



Now to convert your texture files!

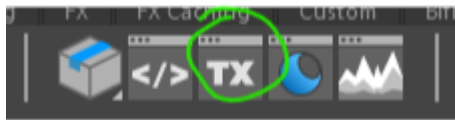
-Whatever files you bring in will have to be converted to tex. for them to be seen in RenderMan.

-To convert your saved .png textures to tex. files, go to the TX icon at the top of the RenderMan toolbar.

-Select “pick images” and select your .pngs

-Once uploaded they will automatically convert! They’ll have a green checkmark once they’re done.

-The converted images will show up where you have the original image saved (which should be in the source image folder in your project file)



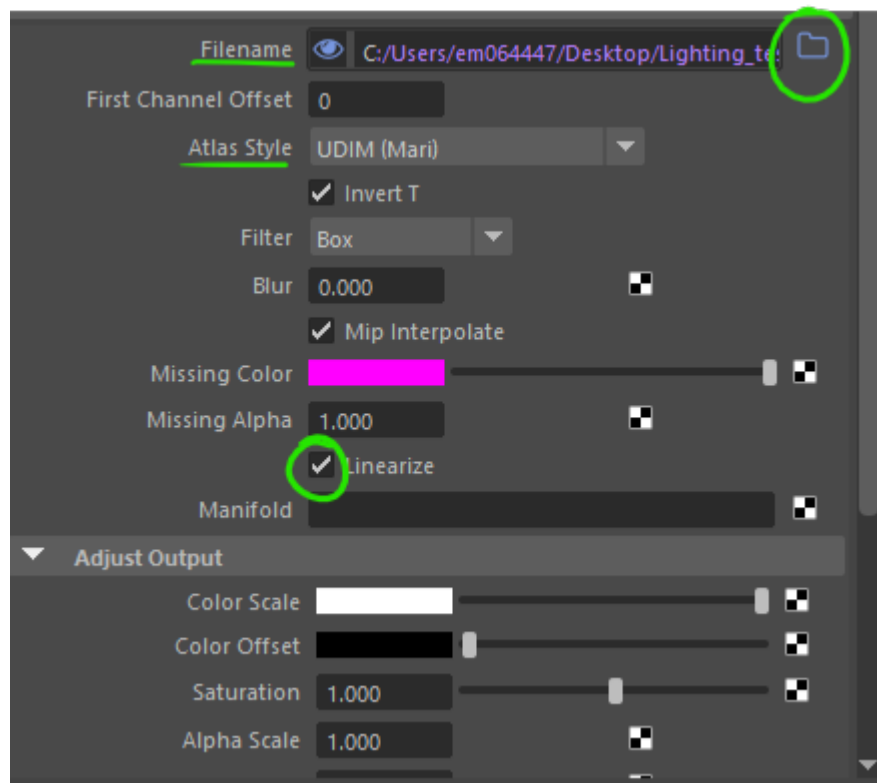
So now you have the textures converted, we need to add them

-In the hypershade editor with the texture node selected, select “pick images” and choose your converted file (it should look something like filename 1001.png.tex)

Make sure to change the following attributes:

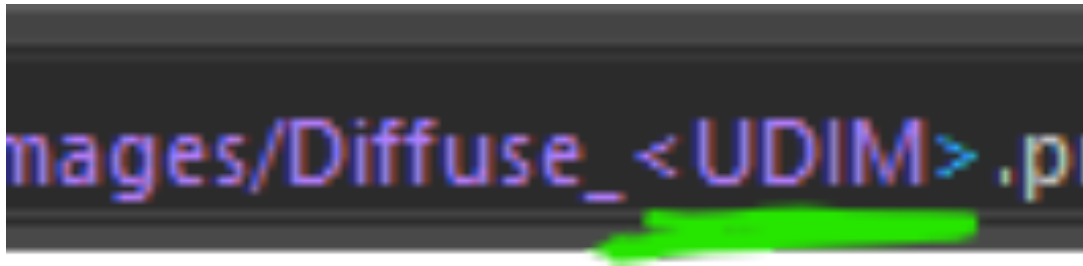
-Change atlas style to UDIM (Mari)

-Make sure “linearize” is checked



OK so try this without first because sometimes it works, but if it doesn't and you need to trouble-shoot do this:

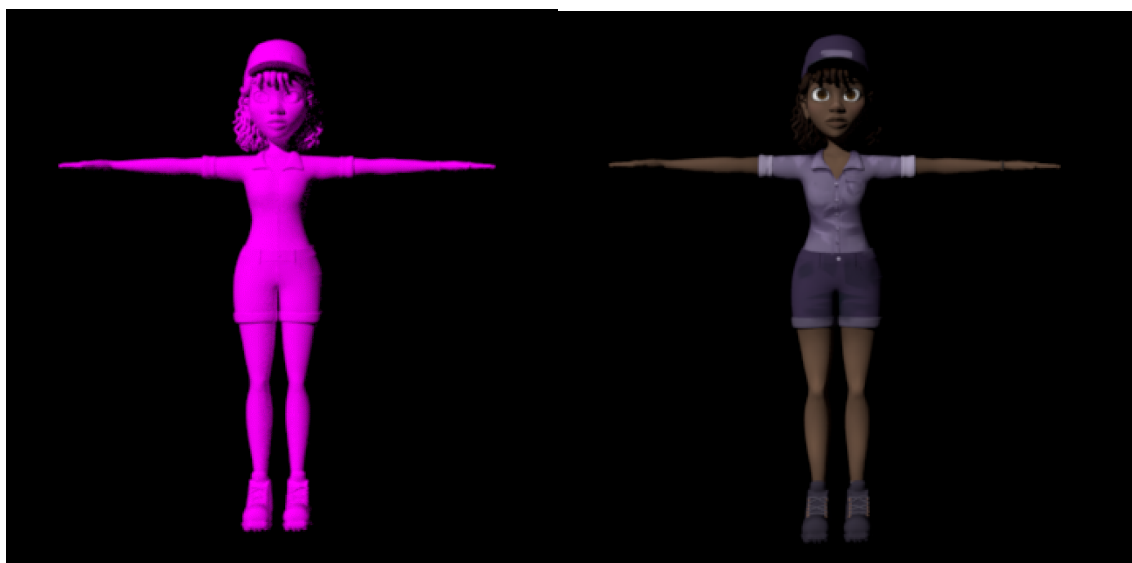
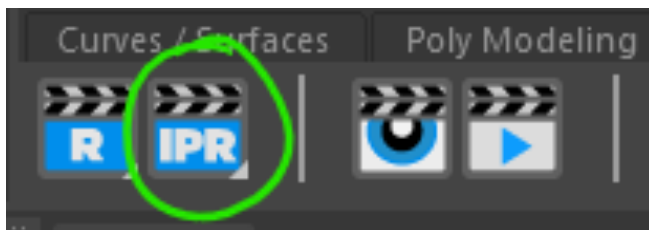
-Once you have the file imported, go to the filename pathway and change the name of your texture to SS_<UDIM>.png.tex (mine says Diffuse but pay no attention to that)



After you do this, check your textures and go to IPR (in the RenderMan toolbar) to toggle around the scene for render updates in real-time

-to speed up the render for a faster update, right-click the IPR symbol, select resolution, and check 50%.

This is not permanent, you can always change it later.



If your character shows up as this horrid color, your textures didn't apply correct