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PROJECT OUTLINE



This project will revolve around creating a 3d character model inspired by existing concept art.

The
end product will be a
portfolio piece to showcase
on Art Station for potential
employers to see.

The project will be inspired by an existing concept art adapted to be fit for a 3d model and the time frame.

















3

CONCEPT BREAKDOWN

The Art Station project describes the world they are living in. 'The Magic City of Charlia is the largest surviving magic city. The ancient magic academy is located here, gathering many magicians.'

The concept induces a fantasy aesthetic with the imagery of a witch on a broom.



The other pieces of concept art in the project show characters in similar style with a combination and magic and technology with mechanical limbs and potions.



Abigail is naturally forgetful, but very sensitive to steam and magic. He is a special student at the School of Witchcraft and Wizardry.



The mechanical elements on the broom and the googles both characters are wearing lean into a steam punk style.



Having to eat her food on the go and the paper falling from the bag makes Abigail look a disorganised and always in a rush.

There is also a historical style to the character with the frilled shirt and long coat. The steam-punk aesthetic is largely based off Victorian England and explores a world powered by steam energy, mixing historical and sci-fi

CONCEPT EXPLORATION



Colour pallet:
-Desaturated colours
-Majority of colours have darker
values.

-Highest areas of contrast is around the face. Strong contrast between skin and clothing.

-Brightest areas around the face and shoulders drawing your attention there.

-Blue of the coat and orange of the metals are complementary colours.

-The purple/red provides some accents.



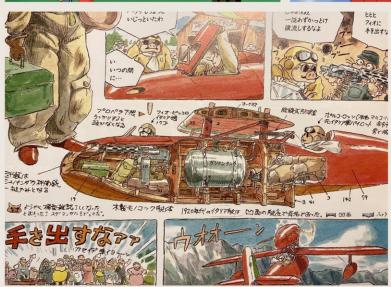


Exploring Studio Ghibli as a franchise that includes complicated technology without the intricacies of lots of steam-punk designs.

















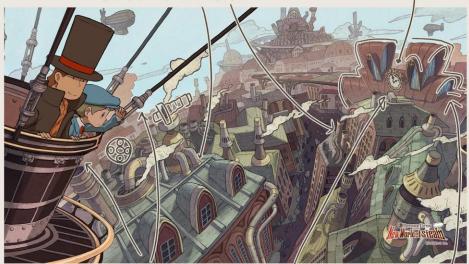
These Professor Layton games have a stronger steam-punk aesthetic than Studio Ghibli but they follow a similar technique of using basic shapes to fill in the details especially in the large environments. The areas with most importance in the image have more detail.

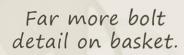












More detail, different shape, maybe the



Basic shapes to create details.

Arcane is an animated show based off the League of Legends game. This will be useful reference for both body type and textures. The style is more realistic than Sea of Thieves with things like creases on clothing being less exaggerated and faces more realistic in shape.























Full body turn around could be used as stylised anatomy ref.

Braid reference.

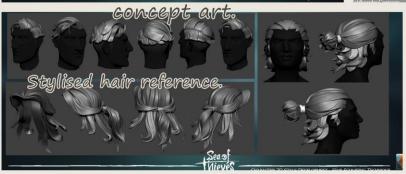
Metal textures much messier and then Sea of Thieves.

Sea of thieves is a stylised game with hand painted textures which this project will also include.



















Tutorial by Matt Wilkins on Art Station https://www.artstation.com/artwork/Ka6R8G

Visible brush strokes.

TURN AROUND SKETCHES

Some turn around sketches exploring the character's outfit in a less dynamic pose. Parts like the design on the back of the coat have been directly inspired by clothing mood board.



boots

and hat

EXPLORATION SKETCHES

Breaking down the goggles into their main pieces.





Some sketches of the head and the shapes of the hair.



outside



Call out sketch of the boots.





Some initial outfit exploration.



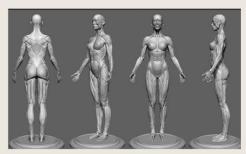
BLOCK OUT





Blockout and anatomy refernces















art Abigail is slim and appears to













head.

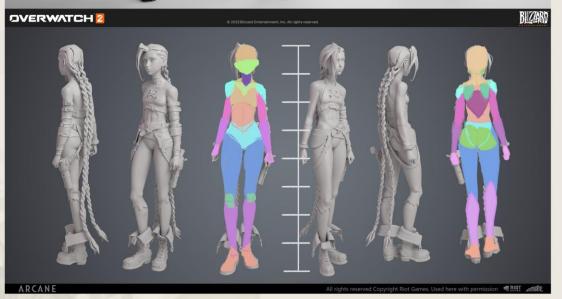
BLOCK OUT



Painting over the blockouts to establish the shapes of the body.

Both Dva and Jinx are about 8 heads tall with Dva being curvier than Jinx and having legs that are longer.

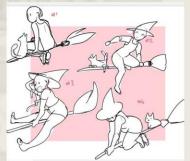
Jinx is also leaner than Dva with narower shoulders and skinnier limbs in general.





Looking at the concept art Abigail has long slim limbs. She also has quite a large head and is in total about 7 heads in total.

POSING













Other potential poses with a similar witch vibe.

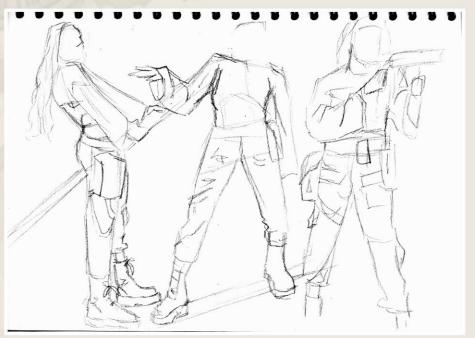


Limbs on the reference are generally skinnier. The feet on the model are much noticeably bigger as with the neck and arms. The silhouette of the coat looks good but the hair is needed to complete the silhouette.

Using Tpose Mesh to reposition the blockout clothing into the pose in the concept art.

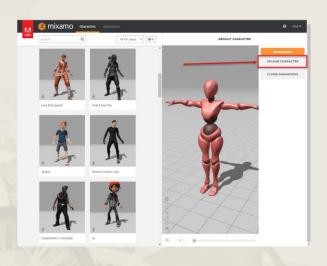
The coat sleeves needed to be exaggerated and the collar pulled more off the shoulders. The proportions of the model could be exaggerated more for a more cartoon look.

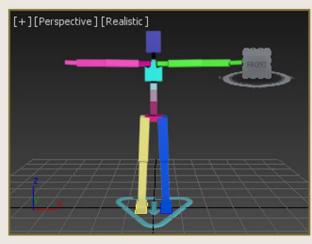




Some additional poses explored at life drawing. In the first two poses the model was given a stick to act as a broom and told to pose like she was sitting on it and then to pose as if she was balancing on the broom like in some of the previous pose reference. This was helpful to explore the way a real body would move in these situations and where they would be putting their weight.

Options for posing include posing the low poly model in zbrush like previously tested as well as creating a Cat Rig in 3ds Max. Options like mixamo that rig for you could also be explored but its unlikely this would work well due to the layers of clothing and accessories on the character.







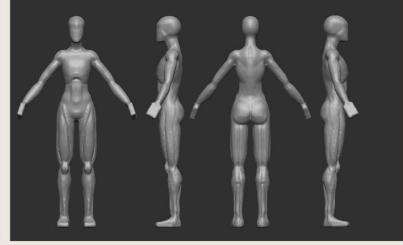
BODY

Blockout





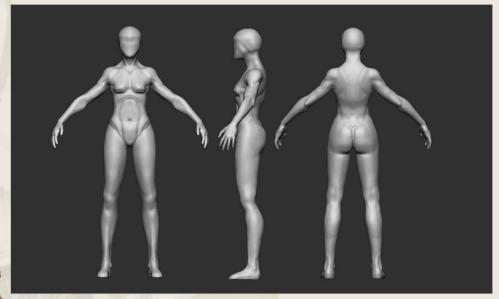
Primary forms



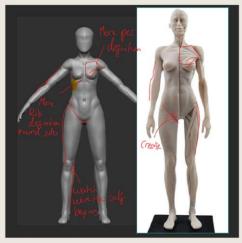




Stylised Knee comparisons from League of Legends and Sea of Thieves.



Secondary from development





Paint overs and comparisons to develop the anatomy of the sculpt.



Final Body Sculpt

CLOTHING SIMULATION





ZBRUSH TUTORIAL HOW TO SIMULATE CLOTH IN ZBRUSH (IN DETAILS

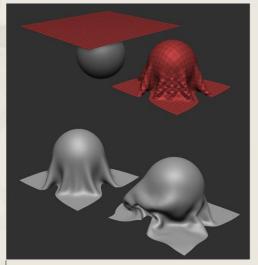
CG3DANK - CG and 3D tutorials - more!!!! • 8.5K views • 6 months ago

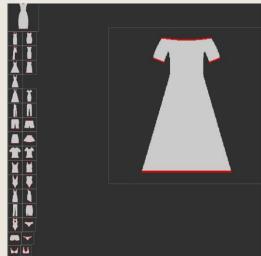
Using these tutorials to research cloth simulation in ZBrush.



Custom Fold and Wrinkle Alphas to Detail Simulated Cloth - ZBrush Top Tips - Pablo Munoz Gomez

Pixologic ZBrush • 41K views • 2 years ago





-Spotlight and the snapshot tool to create a blockout of a similar shape to the coat.

-Dynamics tools in Zbrush to simulat over the body.

-ZModeller used to add the selves and increase the length.

-Poly paint was used to paint in some seams and to set up poly groups. Z remesher and the crease tool were used to tidy the polygons and reinforce the silhouette.

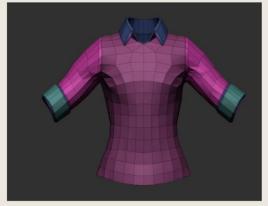






SHIRT







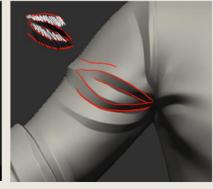






Using the same ccloth simulation metod to create a shirt base and using dynamic subdiv to add thickness.







Using Michael
Vicente's Orb
brushes. Orb
cracks was used
to block out the
folds on the shirt
and then cleaned
up with clay
polish.

Fold references form Hero Forge and Arcane, looking at the shapes the folds make as well as the way they are represented in the art style of Arcane.

JACKET





The initial pass of the first creases didn't look like they belonged on the jacket. They didn't make sense in relation to one another and didn't add to the silhouette.



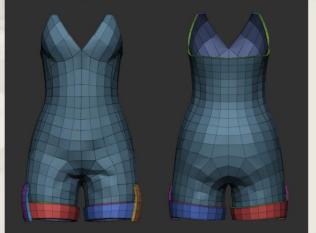
The silhouette of the jacket is now more effected by the folds but there could still be some better cross shapes to the folds as they come together on the sleeves.



Looking at a similar stylised coat from Sea of Thieves. Looking at the shape of the folds and where they are on the garment.



JUMPSUIT & HAT



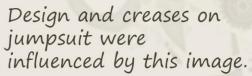


The shape of the hat was created using zspheres.

Following feedback the hat was

made larger and thicker to better represent the concept and give it more presence.

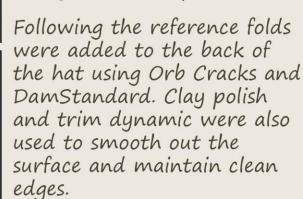


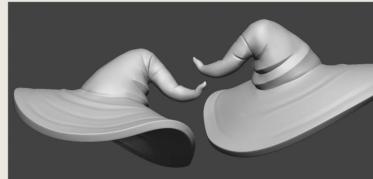




Fastenings made in 3ds Max.







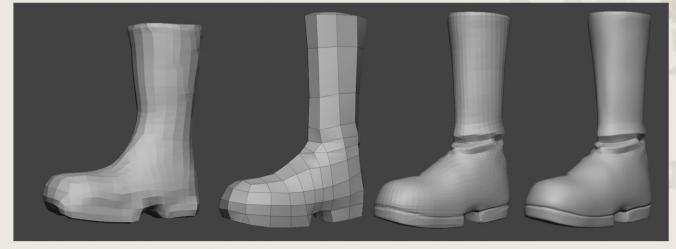




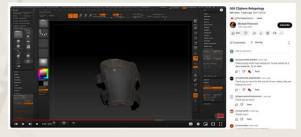






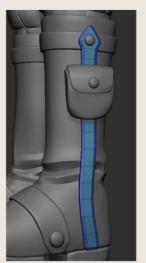


Starting off with a rough block out of the shoe shape based on the drawing and using zspheres to retop into a cleaner mesh to block folds into.

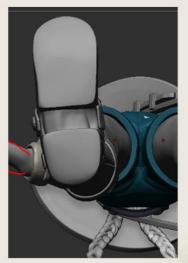


Zsphere retop tutorial by Michael Pavlovich

Straps were blocked in by editing a plane with Z modeller.

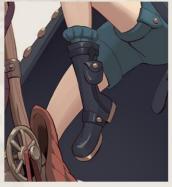


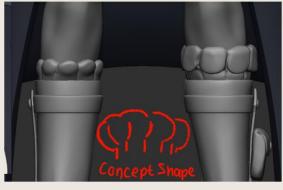






Changes needed to be made to the shape of the shoe to correct the shape of the foot.





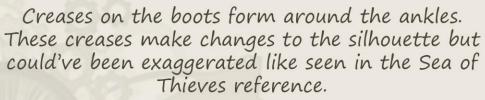




Testing iterations of sock shape, the end result drew inspiration from the flatter shape of the thick ribbed socks.









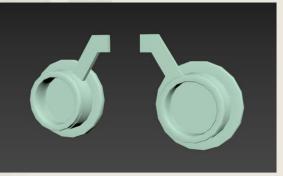


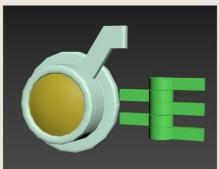
Lorenzo Melizza: Jack Sparrow for Sea of Thieves on Artstation.

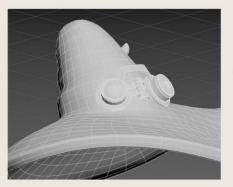




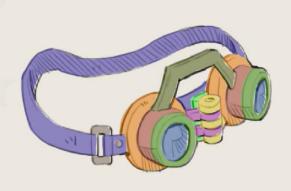


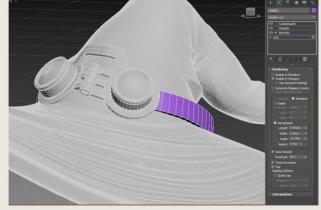






Blocking out the shape of the googles in 3ds Max and adding the hat to test the placement and scale.







Using a spline to create a path for the strap, render in view port was used to test the width and thickness of the band before importing into Zbrush.

ZModeller was used to add the additional details like the ring and the pad below the googles.















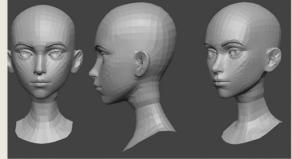


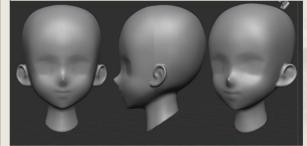




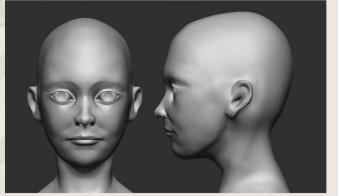


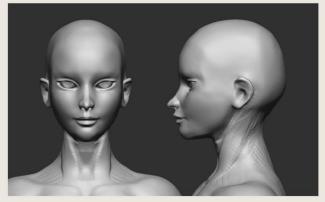


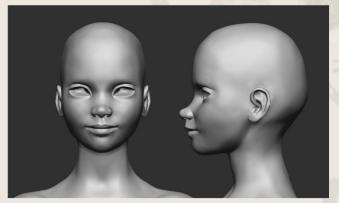




FACE





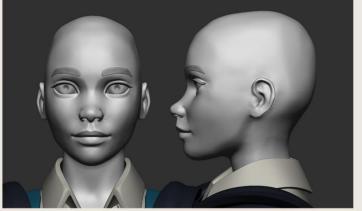


Head itteration, the first one has really intense creates under the eye and on the nasolabial fold making the character look old. The second one was too severe and sharp look for the character then 3rd was more appropriate but looked to baby-like





Paintovers and main reference

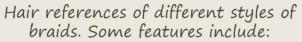




The final iteration of the face balances all these elements together creating a more teenage looking character.



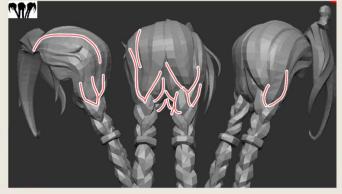




- -Varying sizes of chunks on the head hair.
- -Fringe placed over top of the hairline.
 -Uneven hairline with some variation.
- -Chunks of hair slot into body of braid.
 -Braids thin towards the end.
 - -Some lose strands flicking out.















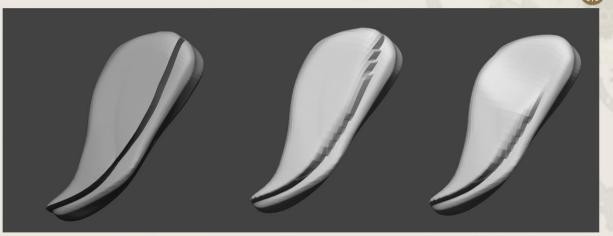




HAIR



Sketches thinking about the shape of the hair.



To create the fringe a base shape was made and duplicated.
Using clip curve this was then cut into to create the higher layer of hair. Using a morph target the top layer was then projected down and the morph brush was used to blend between the layers.

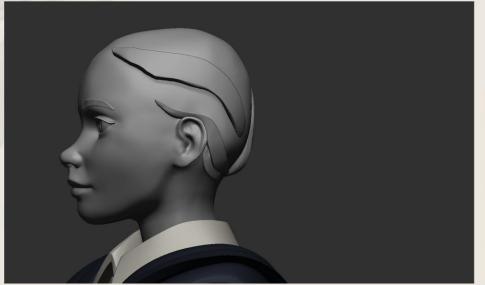


Clay polish and the Orb brushes were used to clean up the hair.

These were made flat in front of the face and bend curve was later used to place them into the hair line.

The head hair was blocked in with Curve Tube Snap trying to be mindful of the direction of the hair, being pulled back from the scalp into the braids.

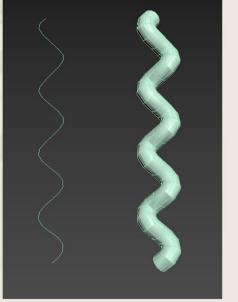
HAIR



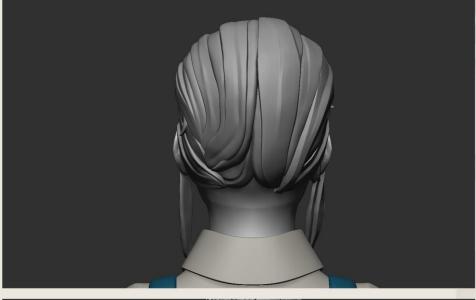
The head hair followed a simialr method to the fringe of using clip curve and morph tagets. Using the sea of thieves reference for hair placement and the detials.









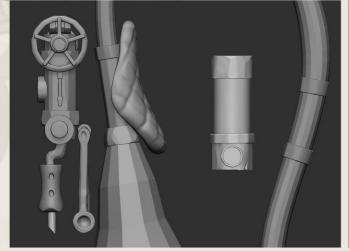


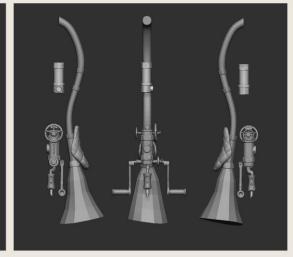


3dsMax 2015 -Tutorial - Modeling a braid
Rosanna Giannotti • 26K views • 8 years ago

Following this tutorial by Rosanna Giannotti for using splines to make braids in 3ds max. Using the ripple modifier to create the shape and then creating 3 copies for each strand of the braid. Went into Zbrush to add subdivisions and sculpt the hair details on.









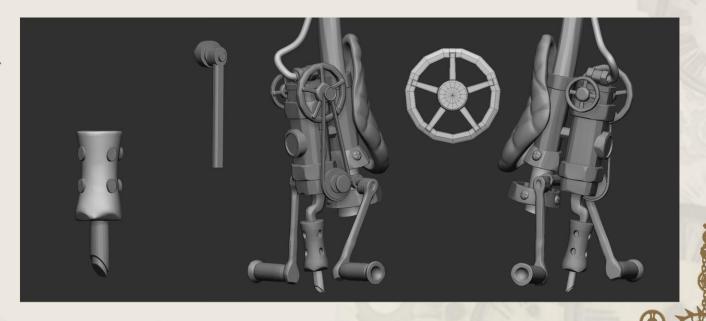
Broom development, starting blocking out using basic cylinders. Wires were made using splines in 3ds Max. Cogs were also modelled here.

Using Booleans to cut out shapes from the mesh to create the exhaust and pedals.

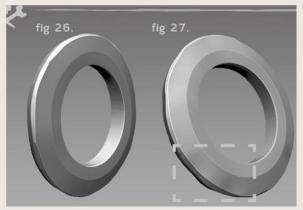
Using Orb flatten edge and other trim or polish to work on the edges.

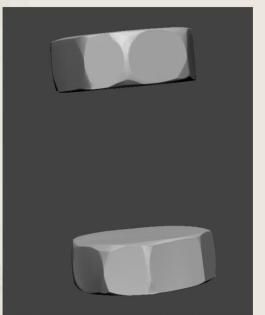






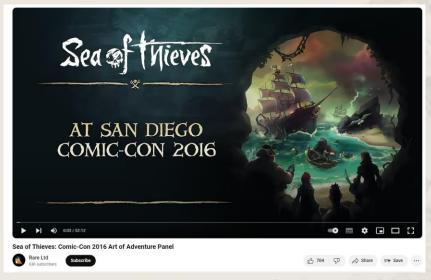








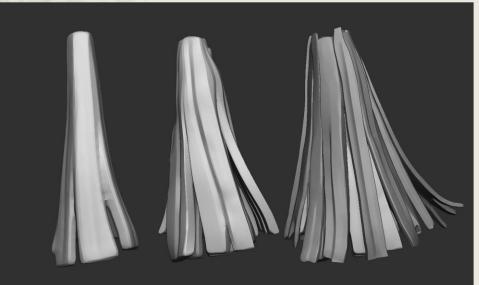
Images form the Sea of Thieves style guide on Art Station by Matt Wilkins.
Copying a similar look onto the metal and wood onto the broom using the flatten brushes and clip curve to flat en off the edges. This took a few iterations to get right.

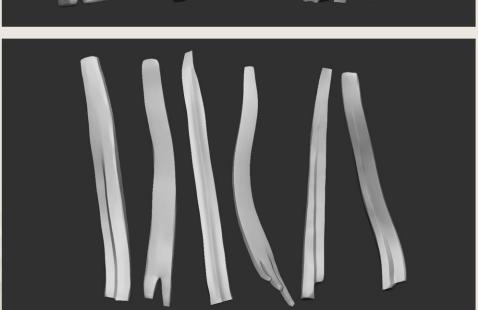


In this talk the team discuss the illurtsatuive style of Sea of Thieves and how everything can tell a story.

2 Key parts of this are object being wonky and adding wear and tear. These ideas feed in well to the concept as you get the sense that character is clumsy and disoganised due to her being late and loosing the papers as she takes off.

BROOM





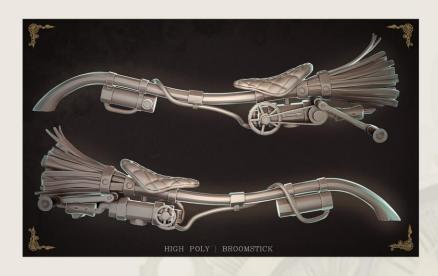


Braking down the shapes of the straw on the broom.

Placing them with curve straps to start off.

There are 3 layers that make up the straw, the first 2 have dynameshed together straps and the outer layer is made out of individual strands.

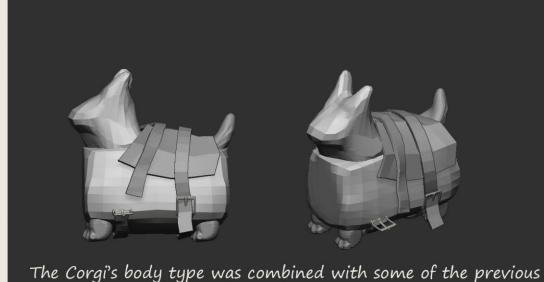
The straw strands are made with a similar method to the hair. Some use morph targets and others dam standard to add the shape. Clip curve is also use to cut the shape away.



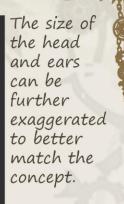








bag references.





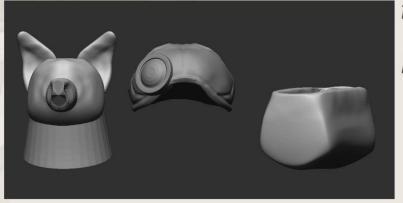




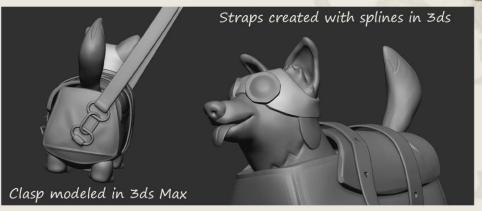


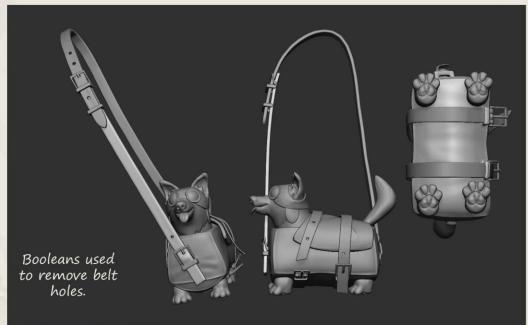
Finding additional reference of corgis and dogs in bags. In the concept the dog is clearly much bigger then the bag. Experimenting with the feet and tail poking out of the bag makes it look like the dog belongs there more.





Blockout of the primary shapes.









Buckels from the IMM Clothing brush.







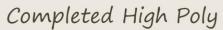






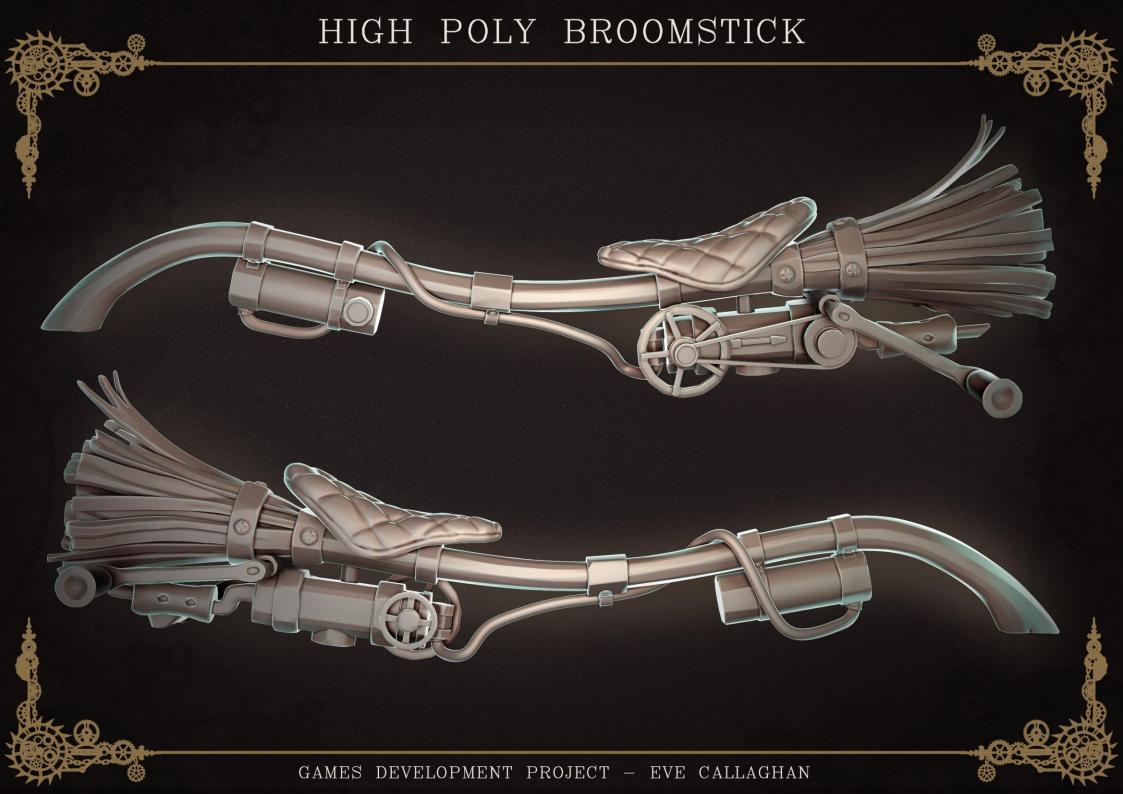
The shape of the bag was inspired by these refernces. Having the dog partially straped in make it seem more sucure and limit visablity of the body.





HIGH POLY CHARACTER







HIGH POLY CHARACTER GAMES DEVELOPMENT PROJECT - EVE CALLAGHAN

ZBRUSH RENDERS



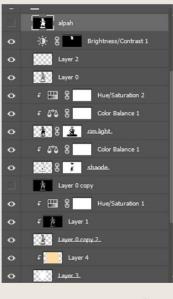






Lighting and material set up inside zbrush to render out the high poly model. Lots of trial and error was used to light around the hat in particular and make sure the shadows weren't too harsh on the face,

When this was set up each layer of the render pass was exported to set up in Photoshop.





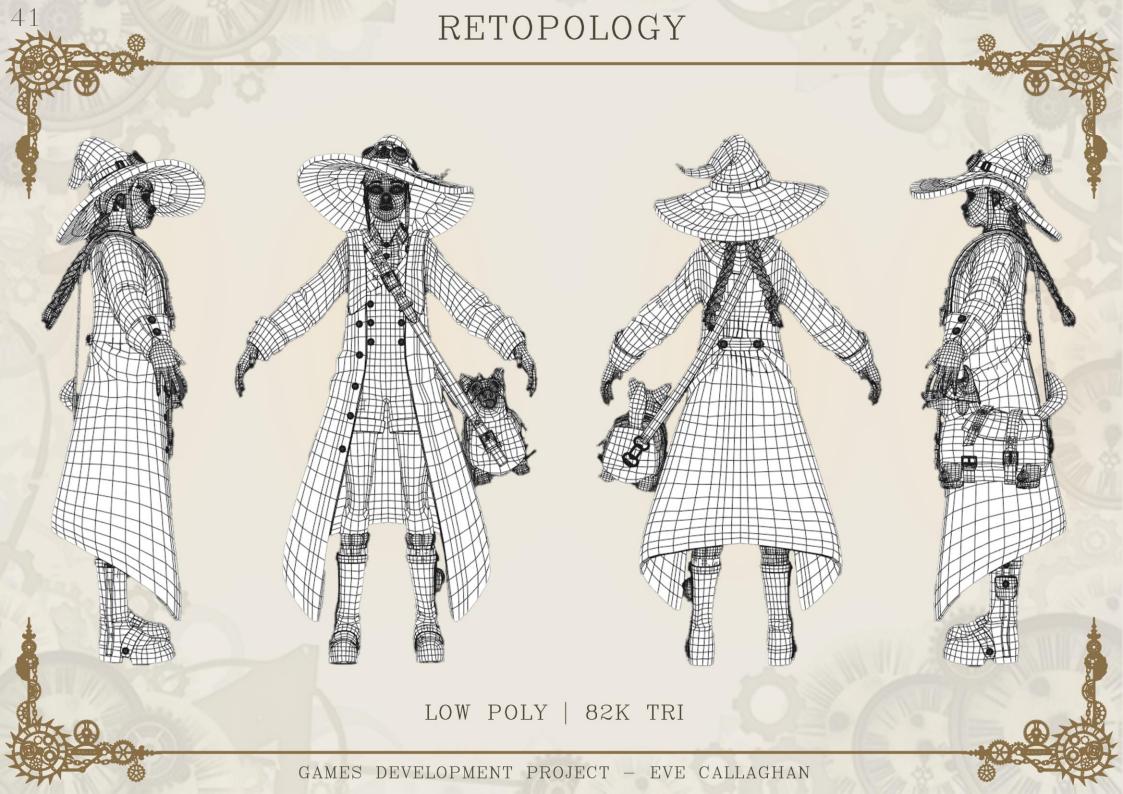
Layers were used to add in extra light and shadow using the render passes as well to add colour.

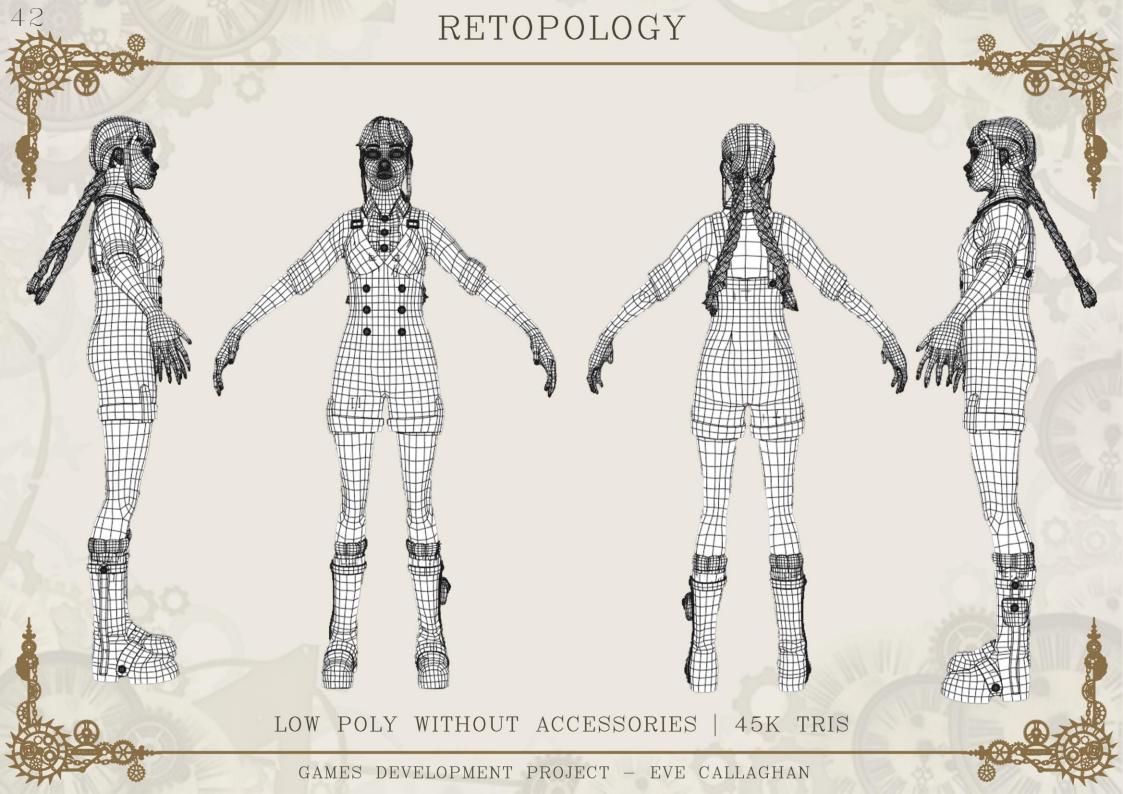


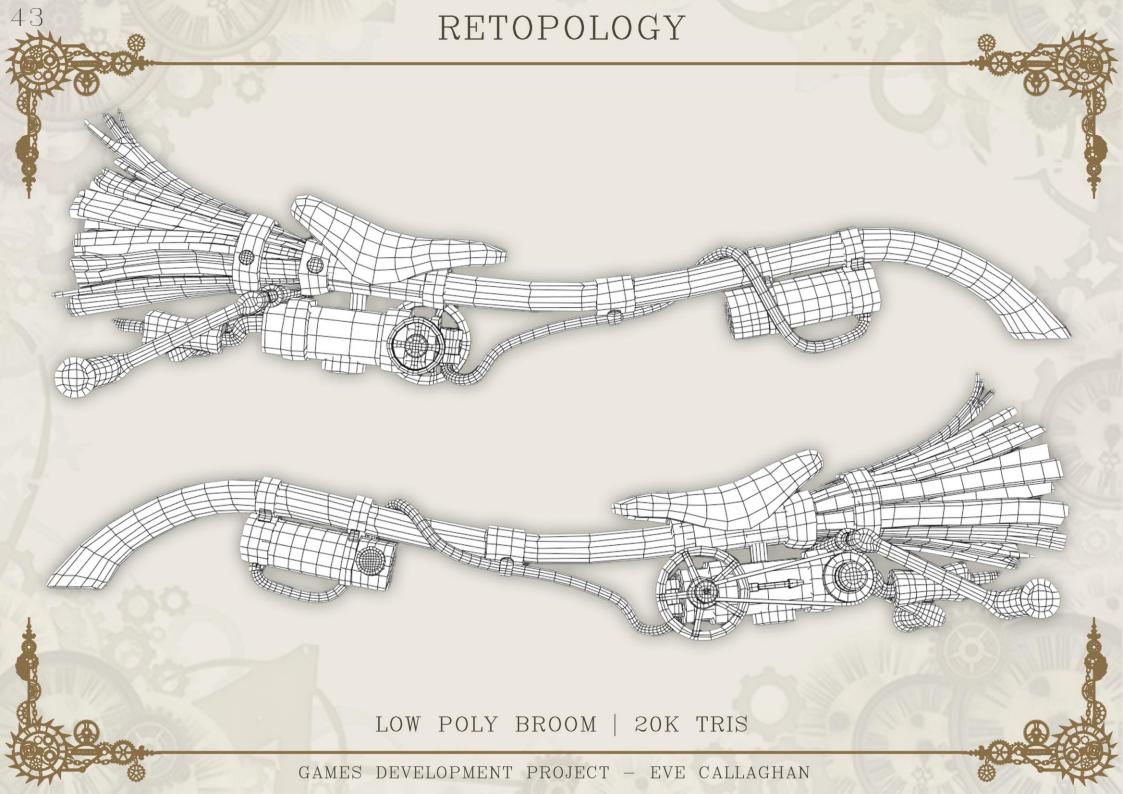


Before and after

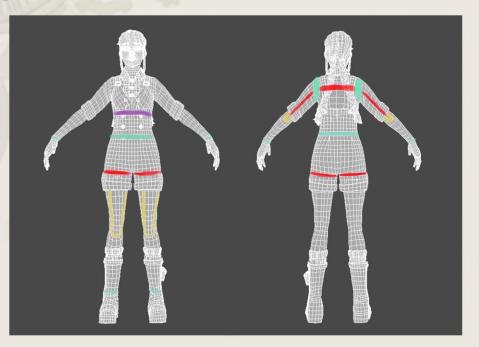






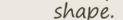


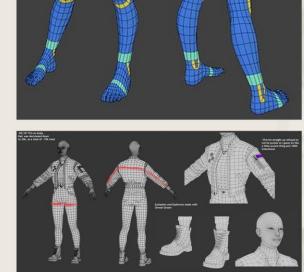
RETOPOLOGY



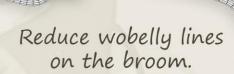
Retop created in Maya:
Paintover
comparisons of loops. Comaparing refernce and examples off Art station. Having these correct loops will help with defformation when rigging and posing the characters.

Straw couldve had more even polygon distribution, however the varying silhouetes made this difilcult. Some areas had more dense topology to keep the circular



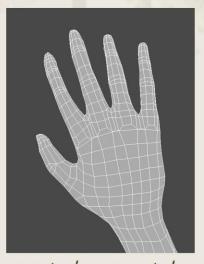


Work by Aaron Callander on Art station

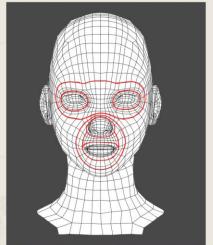


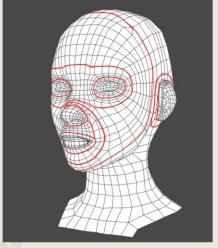


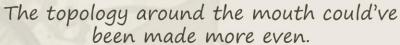


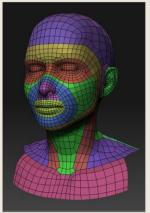


Paintovvers to compare retop to optimized hand example. This was executed accurately and should work well when it comes to posing.

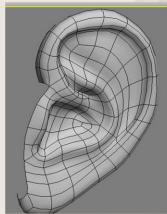




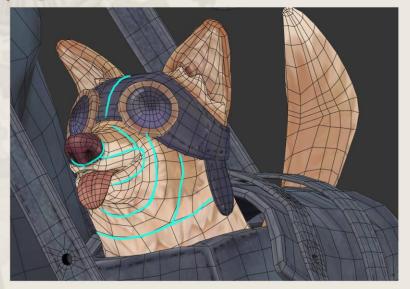








Displaying accurate loops on the face based on these references.

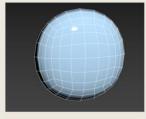




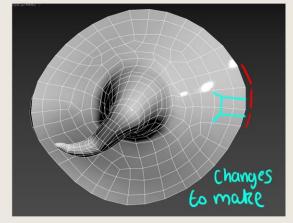
Using this reference of a bear retop to figure out where the loops on the dog would go.

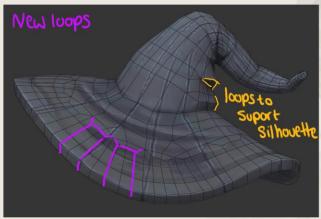
The initial hat re top had to little geometry and it was very visible so extra loops were added for a rounder silhouette.







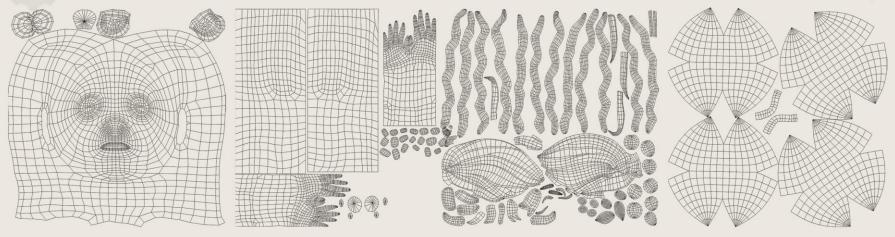




Areas like the socks and buttons could've been optimised better. Baking the straps down could've also been explored to further reduce the tri

The changes to the hat also made the bake cleaner.

Unwraping in 3ds Max, trying to utilise as much uv space as possible for higher resolution on the textures.



Face

Arms, Legs, Nails

Hair, Lashes, brows

Eyes





Jumpsuit & Shirt

Boots & Socks

Hat, Googles, Bag & Dog

Broom

BAKES

Baking inside Substnace Painter.
Some baking issues and the different ways they were resolved.



This issuse was fixed by editing the frontal and back distance till it baked correctly,



Cleaning up smoothing groups.



Indside of high poly baking, deleted the inside of the sleves to fix.



Adding extra loops to the collar to better match the high poly and checking the alignment of the hair for a cleaner bake.

Detatched the collar completely to bake seperately so it wouldn't bake down to the shirt. Reatatched after the bake.



Changed the shape of the low poly to improve bake.

TEXTURING









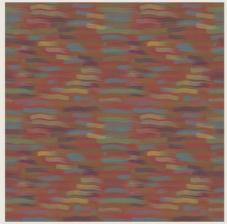
Hand-Painted Texture Tutorial: Metal

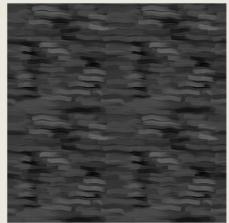
Kairosmith • 13K views • 5 years ago



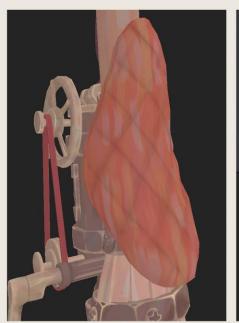
How To Create Stylized Textures in Substance Painter - Beginners tutorial Rosie Jarvis - 36K views - 8 months ago

This tutorial by Matt Wilkins has a tilling brush stroke texture applied to base colours for variation and the brush stroke features of Sea of Thieves.





Painting a tiling texture in photoshop for colour use with colour and value variation.





Applying the variation in the most appropriate directions over the base colour.





TEXTURING











Using fill layers to block in the initial fur colour patches on the dog. Going over with a paint layer and hand painting in all the fur. The leather texture was hand painted in Photoshop and used on all the belts the stitching was added with the path tool.





Embroidery was done with the path tool following these images for inspiration





TEXTURING









Painting in colour zones.

Painting in more shape to the face similar to Arcane

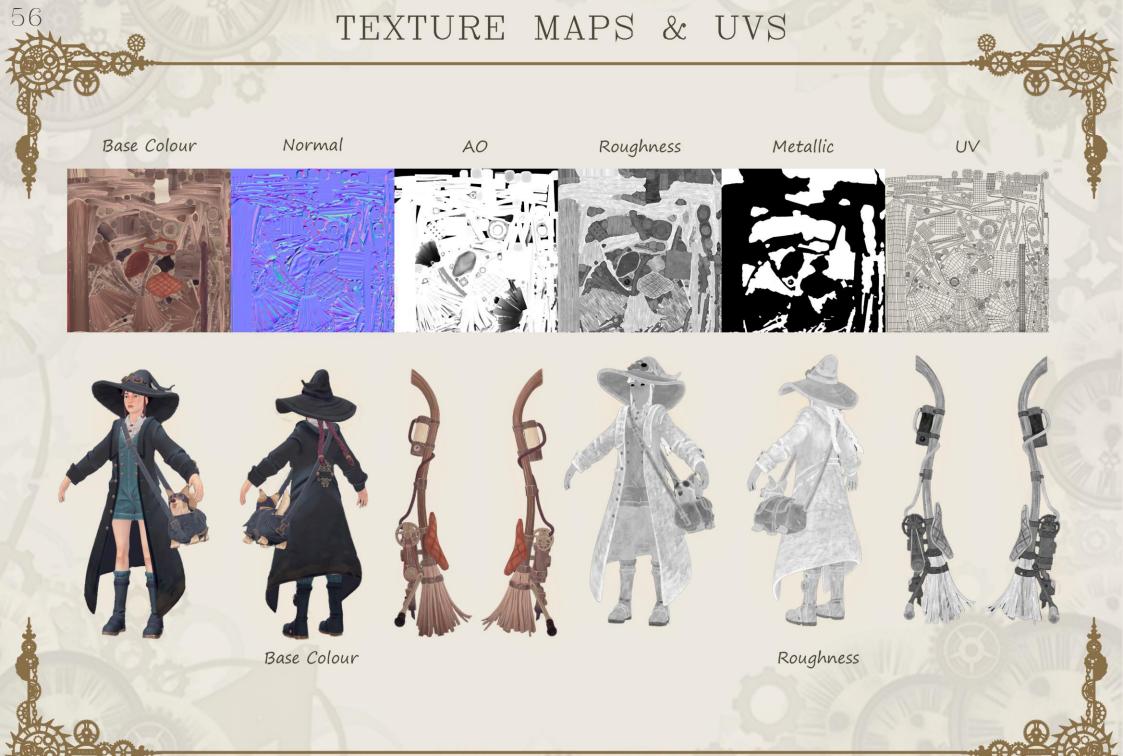
Adding freckles

Hand painting highlights and shadows for the brush stroke look.



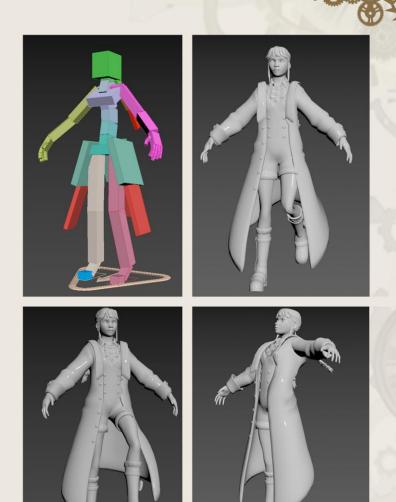






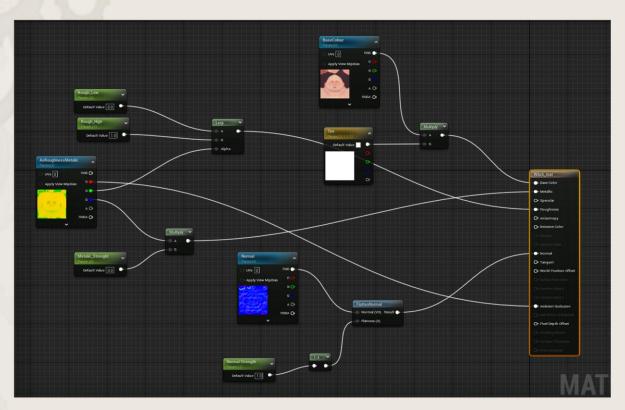


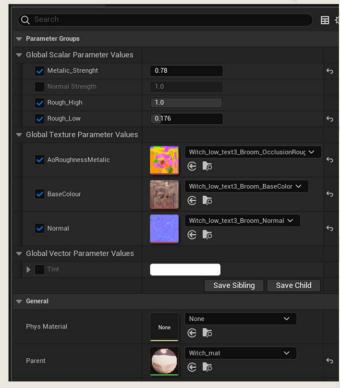
Posing using TPose mesh in ZBrush to move the model into a similar pose to the concept. The back is still rigid and could use more of a curve to it like the clothing.



Exploring posing options, creating a CAT rig and skinning the model, the weight painting will need some cleaning up before this is a clean rig to pose with.







Setting up materials in engine, Including roughness/normal and metallic strength controls. Converting everything into a parameter in order to create material instances for each Material ID on the model.





Arcane's character renders have a warm and cold rim light on each side of their renders.

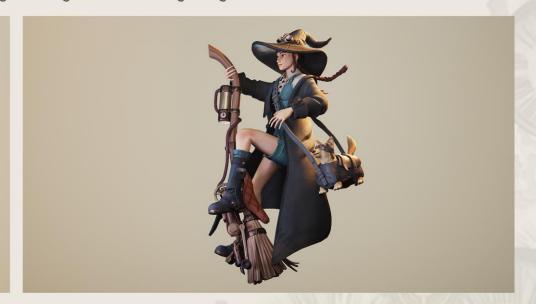


Using spotlights as a key and fill light and using rect lights for rim lighting

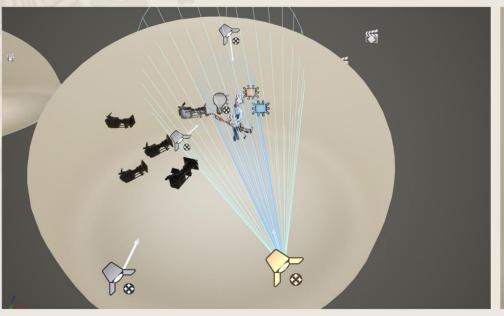
Metal Human lighting scene used as a base.

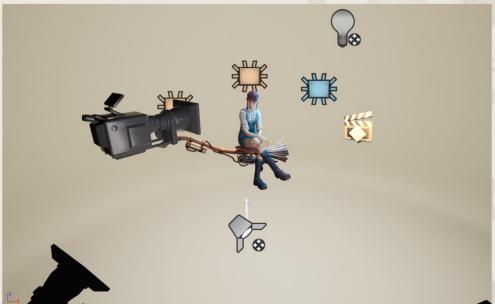
Additional point lights were added to get more shine on some of the metallic areas



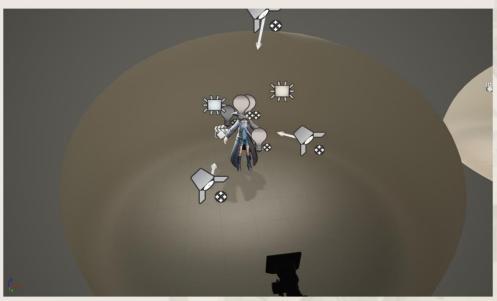


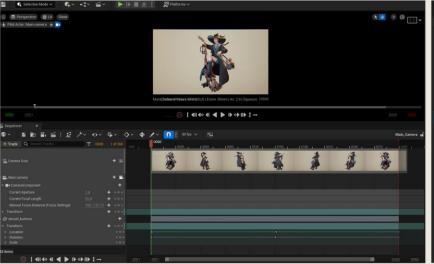
Testing lighting, the cold colour was originally on the left but this was swapped over so that the warm light would contrast the blue of the coat and the cold light would contrast the brown on the broom.

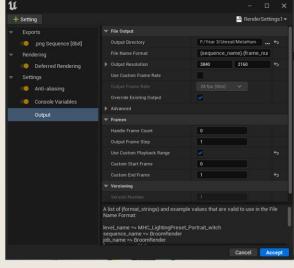


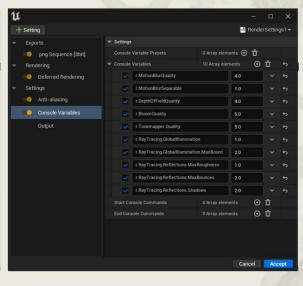












Setting up the sequencer and movie render queue, tracking the camera and the moving actor.

Setting up the render to add Anti-Aliasing and commands to improve and sharpen the image found in the official Unreal Engine documentation.

https://docs.unrealengine.com/4.26/en-US/RenderingAndGraphics/RayTracing/MovieRenderQueue/ The frames can be changed to render out a single shot or an image sequence.



Video used for set up



Setting up lights and cameras around the model.

PRESENTATION

Renders from Engine







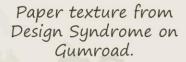






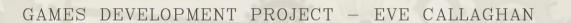


Using these Professor Layton screen shots in the background, as well as sky photos. These paper textures were also overlaid for more variation.



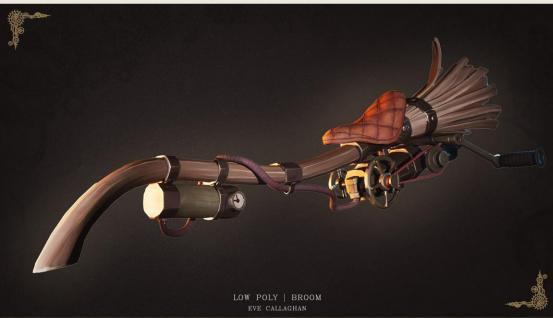


Editing them together in Photoshop removing the background, lightening some areas and darkening some shadows.



PRESENTATION





Renders of the low poly were inspired by the presentation of Sea of thieves models.

The A pose has four angles and a slight rim light.

The gun is also light with a gold contrasting light.

The blue rim light on the broom could've been stronger to add more contrast in the render. The cog pattern in the background could also be more visible.







A-POSE TURNAROUND



A-POSE TURNAROUND GAMES DEVELOPMENT PROJECT - EVE CALLAGHAN

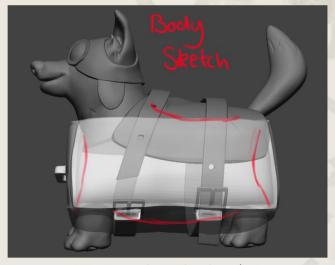




The folds on the high poly could've been improved. The folds on the jumpsuit are too harsh and should've been softened, they draw to much attention to that area of the model due to the high contrast. Comparing the folds to this image of trousers (Charles Tyrwhitt, n.d.) the folds should be more horizontal and far less drastic. Here's a paint over to show changes that could be made.



The dog could've also been modelled in full rather than having each part sticking out of the bag, this would've allowed him to be posed independently. It would've also made the inserting inside the bag look more real rather than just having the feet stick out of the mesh they could've had their own holes and some puckering in the fabric to interact with the bag better and make it seem like to dog was really in there.



Dog parts inserting into bag



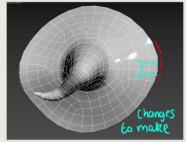


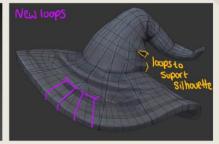
EVALUATION

The poly count was much higher that originally outlined in the proposal document, this was down to several factors. The character had several accessories and layers of clothing to ensure she could pose without elements like the hat and jacket and it would still be a full model underneath. Extra topology was added to ensure the quality of the bake as well as to support all the curved edges on the model; the hat for example had extra polys added to keep its shape and not have any visible corners.

The low poly could've been better optimised in several places. The eyebrows have to much topology as well as the buttons and the socks. While this level of topology was there to maintain the curved shapes it should've been reduced to create more even topology across the model. Similarly the straw on the broom wasn't very consistent. The different shapes of the straw pieces has resulted in uneven topology across the straw with some strands receiving significantly more polys.

The bag strap could've also been reduced in poly count. The retopology on this model by Jose Monreno (Moreno, 2021) has evenly sized squares across the belt and more points to support the edges. The holes on the belt were then baked down instead of given their own topology. Baking down the belt holes on the bag strap wouldn't have made any large stylistic changes and it would've reduced unnecessary polys.



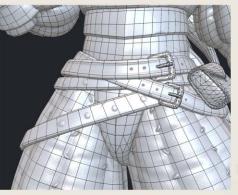




Hat edits

Different looks





Improvement Paintovers



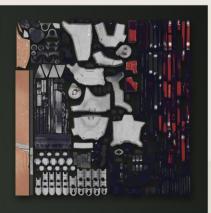


(Moreno, 2021)

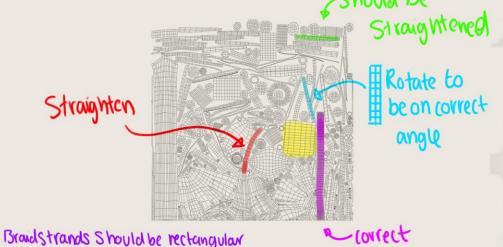
EVALUATION

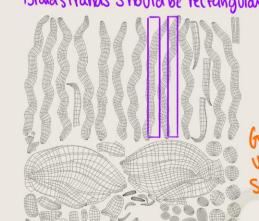
The broom Uv layout could've been cleaner and better organized. The edges of the Uv could've been straightened to prevent bake issues particularly on areas of the brooms Uv as well as some of the straps across the rest of the Uvs. In this work by Tristan McGuire (McGuire, 2021) the Uvs have straighter edges all at 90 degree angles and are well packed. This can be achieved by straightening the edges and pinning them in place and relaxing the mesh inwards. Doing this to Uv maps like the hair would've decreased wasted space between the Uv braids and given them more texture resolutions. Other areas of the Uv have been laid out well, the coat has been given straight edges to fill as much space of the uv as possible.



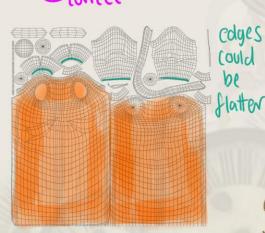
















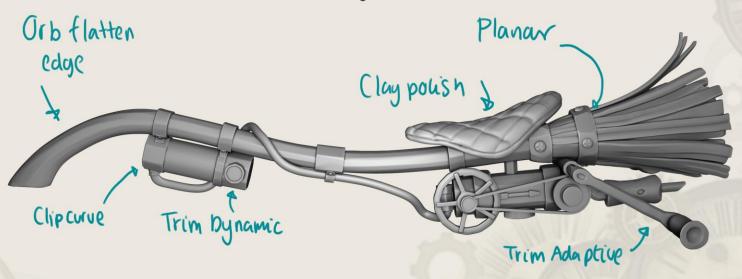
This breakdown by Matt Wilkins (Wilkins, n.d.) discuses the techniques used in assets production for Sea of Thieves.





These techniques were used on the modelling of the broom, overall they produced a similar result however there could've been more damage on the broom, for example larger scratches or chips taken out of the metal and wood. The concept portrays Abigail as a chaotic character and showing more damage to the broom would've conveyed how clumsy and disorganised she is.

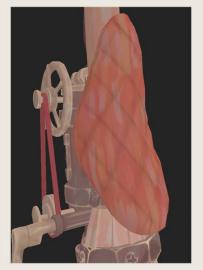
In this stylised model on Artstation (翼次方YCFCG, 2023) the fabric has a noticeable fabric pattern on all parts of the fabric. It helps separate the fabric types from one another and create another layer of interest. While this doesn't necessarily align with the painterly style other inspiration is being drawn from it would've been interesting to experiment with and see if the coat would benefit from some breakups across its large surface.



The breakdown also discusses texturing and creating a tiling brushstroke texture. The one created for the project had some areas with to much contrast that made some strokes appear much brighter than others, they also have more of rounded edge rather than a jagged paint like edge and are too consistently sized. The Sea of thieves: Comic-Con 2016 talk the 'Art of Adventure' (Rare Ltd, 2016) talks about the painterly look and visible brushstrokes being central to the style of the game and while the aim of the project isn't to directly replicate the style of the game it was still one of the inspirations behind it. The issues with rhe paint overlay took away from this effect.





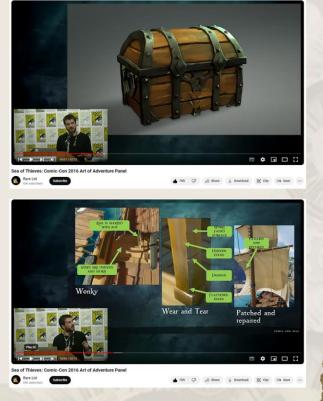


(Wilkins, n.d.)

Witch Project

In practice

Some colours have belinded to much creating drastic changes in contrast. Lack of size variation



Talk discussing painterly style







Pose comparison, model needs more curves

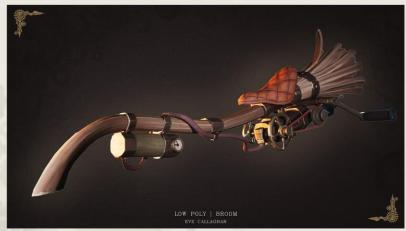
The posing could've used some improvements, when comparing to the concept pose (瑞, 2023) the final model is a lot stiffer. The shoulders and waist are too squared off and need to be more angled. The body needs more of an s curve to make the pose more dynamic. While the 2d concept anatomy is different the model could still be leaned back off the broom at a more dramatic angle, the arm could then be straightened to take hold of the broom at a more similar angle to the concept as well as making it look like more weight has gone onto it. The sitting pose also has some deformation around the knees and some clipping. This can be repaired by editing the weight painting on the rig or using zbrush to correct the position of the leg. The overall posting should be improved to better reflect the quality of the model when presenting it.

The renders of the low poly were inspired by the Sea of Thieves presentations. The A pose turn arounds by Hendrik Coppens (Coppens, 2022) has 4 angles of the model and even lighting, with a slight white rim light. This has been recreated well however the right hand render is misaligned making it appear larger than others. The broom render was also inspired by this unofficial work by James Crosbie the Principle Environment Artist at Rare (Crosbie, n.d.). The gold light helps separate the gun from the background slightly, by comparison the blue rim light on the broom isn't as strong as it should be and having more of it coming from the bottom would increase contrast and help separate it from the warm toned background.





(Coppens, 2022)





(Crosbie, n.d.)

BIBLIOGRAPHY

Charles Tyrwhitt. (n.d.). Retrieved from https://www.charlestyrwhitt.com/uk/ultimate-non-iron-chinos---mocha/TRCO274MCA.html?utm_term=TRCO273MCA382&gad_source=1&gclid=CjwKCAiAloavBhBOEiwAbtAJO2Z9ZAZVL2EOuMzpD1RnzPn5kHDEmmL2bT5FP7UODEfOPivUFfBkvRoC9yYQAvD_BwE&marketing=true&utm_campaign=UK-Shoppi

Coppens, H. (2022). Artstation. Retrieved from https://www.artstation.com/artwork/rAQEKm

Crosbie, J. (n.d.). Artstation. Retrieved from https://www.artstation.com/artwork/XyAoY

McGuire, T. (2021). ArtStation. Retrieved from https://www.artstation.com/artwork/48BlvY

Moreno, J. (2021). Artstation. Retrieved from https://www.artstation.com/artwork/GanX8Q

Rare Ltd. (2016, July). YouTube. Retrieved from https://www.youtube.com/watch?v=ZAIhlMH4ztY&list=PLKBL9pvcR23GBTMi9c63MpBVLULHO7q7p&index=35&t=1085s&ab_channel=RareLtd

Wilkins, M. (n.d.). artstation. Retrieved from https://www.artstation.com/artwork/Ka6R8G

瑞. (2023). ArtStation. Retrieved from https://www.artstation.com/artwork/39QxWA

翼次方**YCFCG.** (2023). Artstation . Retrieved from https://www.artstation.com/artwork/zPNKOq















