

Senior Portfolio Book

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About Me

My name is Garrett Wood and I am a current Animation/Illustration student at the University of Northwestern - St. Paul. The main focus of my time here has been on 3D character animation and visual effects, but I enjoy doing a little bit of everything. I have been interested in the world of animation for a long time; ever since I can remember actually. It was a while before I found myself in a position where I could not only come into this field, but see myself in a career in it.

Unlike most students at the school and in the major, UNW was not my first college and Animation was not my first major. I graduated high school in 2016 from the White Bear Lake Area High School system with very little idea of what I wanted to do when I got out into the world. Since I was told by friends and teachers alike that I excelled at math and had a mind for science, I decided that perhaps an Engineering major is where I should try. I registered for Century College, a local community college in White Bear Lake, in the 2016 Fall Semester and became an Electrical Engineering major.

After 3 years of taking generals, I transferred to the University of Minnesota - Twin Cities in the Fall 2019 semester to continue my Electrical Engineering education. In my second semester, the COVID pandemic happened. It was during this time that I had an opportunity to really think about where I wanted to go, now that I knew a bit more about how the world worked. Just because I had all of this advanced math and science knowledge, that doesn't mean that I have to be stuck in the world of engineering. So, taking a huge leap of faith (literally), I registered for the University of Northwestern - St. Paul in the Fall 2020 semester as an Animation major.

As to who I am personally, the best way to describe me is that I like to learn new things. One of my interests includes listening to music, so I learned guitar and trumpet at a young age so that I could also play music. I also enjoy travelling, so I took German in high school and I'm learning Russian currently so that I can talk to more people around the world when I do travel.

As for what my art style is, I believe the best way to describe that is to share what I believe the purpose of my art in general is.

Artist Statement

I don't remember who said it, but I heard once that said the best way to see if an idea is valid is to challenge it. In my opinion, this should be true not only for theoretical philosophical ideas but also for practical, tangible things. It is because of this that my favorite genre of art is often called "Parody Art".

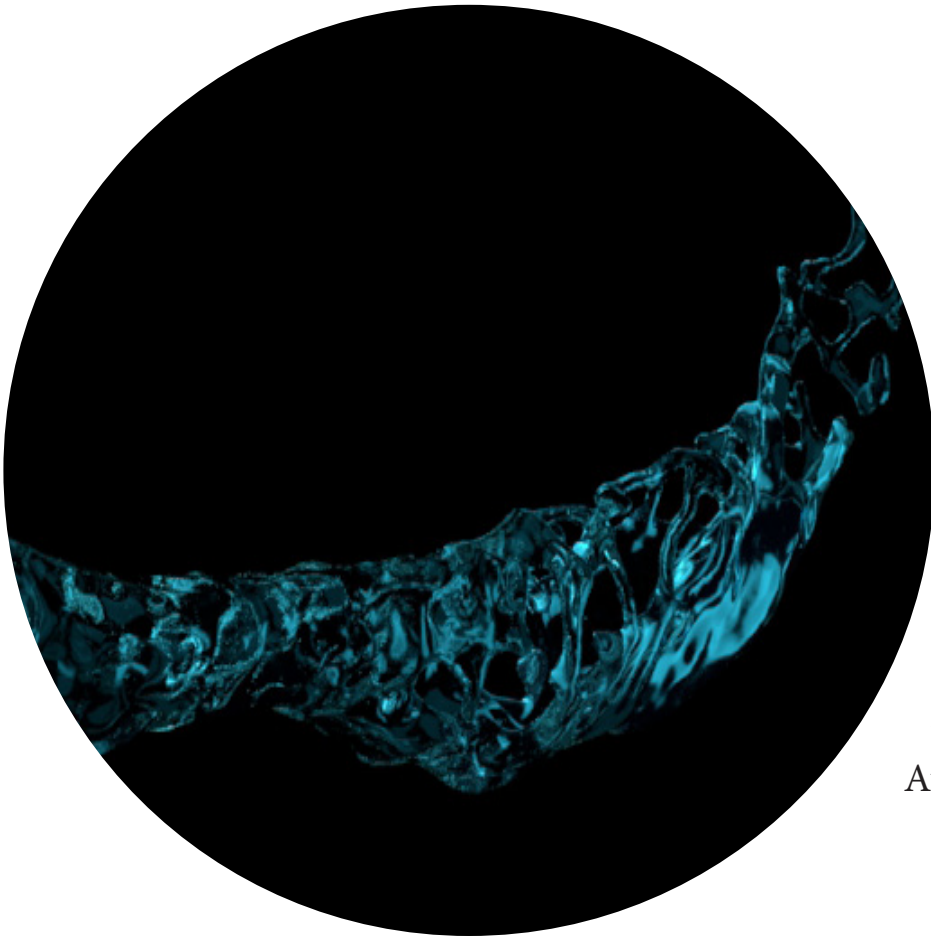
For example, if one pokes fun at a recent trend and that trend remains popular afterwards, then it can be said that the trend has some inherent merit to it. However, if the trend sees a sharp decline in popularity afterwards, then it can also be said that the trend was likely going to fade out anyways. I enjoy doing this with both physical art that I've drawn and digital works.

There are many similarities between creating a parody of something and making a "real" piece of art. In order to differentiate between the two, there must be a balance of reality and fiction which is where my artist statement comes from.

In creating art, especially animations, you must take care to make them realistic enough to be believable, but fictional enough to be enjoyable.

Senior Project - Overview & Goals

For my Senior Project, I wanted to have it be more of a learning experience than one final animation. Of all the classes that were offered at UNW, there wasn't one specifically for visual effects, which is what I was becoming interested in at the time. I thought that a good idea for my Senior Project would be to create a library of different effects that I've taught myself how to do.



In this library, there would be the following effects: A fire effect on a stationary object using nParticles in Autodesk Maya, a “waterbending” effect utilizing a motion path and the BiFrost add-on in Autodesk Maya, and finally a shattering effect using the Bullet add-on in Autodesk Maya.

Though I will only be including images in this book, all of the renders will be up on my website: garrettwoodsportfolio.godaddysites.com (QR code provided at the end of this section)

Senior Project - Timeline & Process

Effect #1: Fire Effect

I thought that a fire effect would be good to start with, as I've messed around with it a little before. To create this, I created an nFluid emitter and attached a bounding box to it. The first main render that I did on it was just to be sure that the bounding box was working.



After confirming that the effect is working, I went to work creating the rest of the scene. I added some basic three-point lighting and gave the torch a basic scene to live in. I also went to work adjusting how the flame would



look, as a real torch wouldn't just look flat and monochromatic. To fix that, I added a turbulence field and a separate nParticle emitter to give off smoke behind the original emitter. After messing with the color ramps a little bit, I rendered it again and here's a sample image of how it came out.

The main problem with the previous render was that apparently I had set up the scene a bit too intensively, so it took roughly 17 hours to render a 5 second clip! I hadn't even finished the effect yet and I've already learned something about the rendering process.

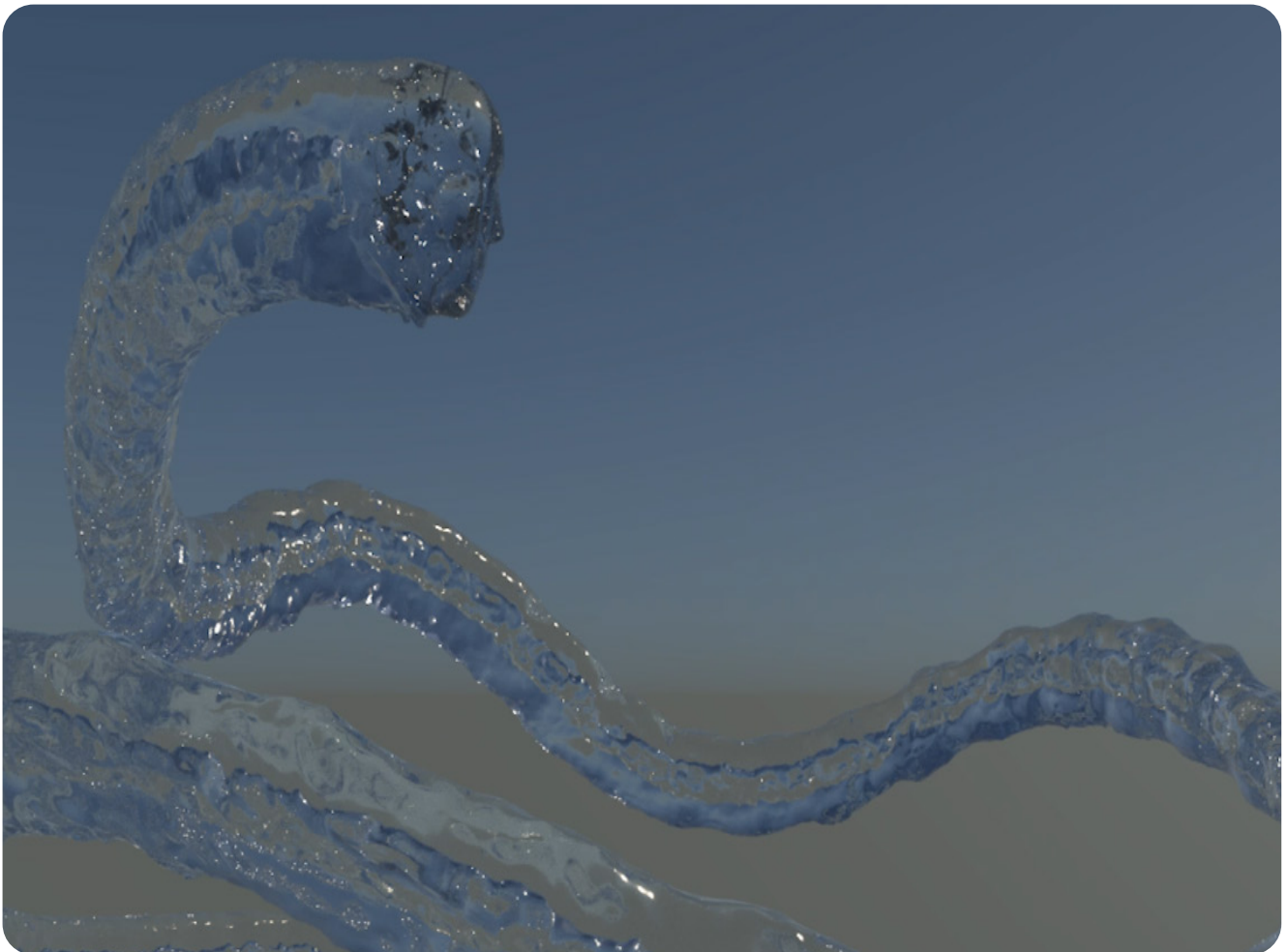
For the last render, I changed up some of the camera movements as my second render accidentally showed some of the environment that I hadn't put anything on. I also wanted to change up the color settings, so that it would look even more realistic. Here is a picture of how the final render turned out!



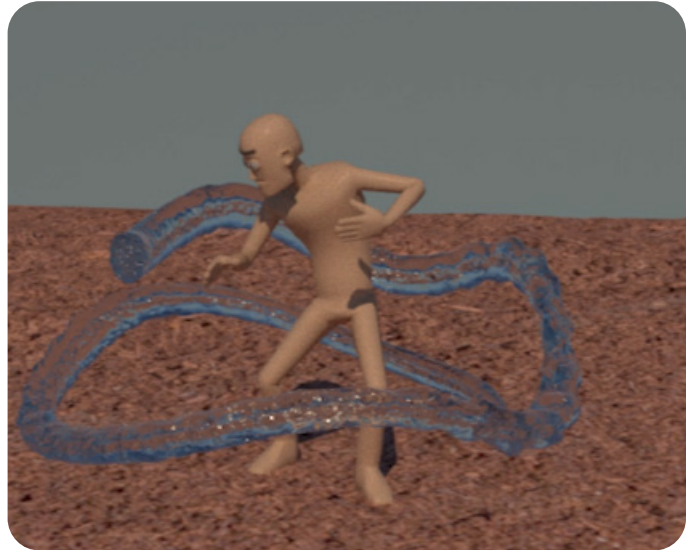
Effect #2: Waterbending

If you grew up in the mid-2000's like I did, then you're probably familiar with the show "Avatar: The Last Airbender". Even if you didn't, perhaps you've heard of it through a friend or even your child. The show involved several nations, based on the four elements, in which certain individuals were gifted with the ability to "bend"/manipulate the element associated with their region. If it's not already obvious by the name, I take a lot of inspiration from there for this effect.

To start out, I created a BiFrost water emitter, attached it to an object, and attached that object to a motion path over the course of 120 frames. The result of this was an object floating through the air, constantly emitting a stream of water behind it. While not technically how waterbending was done in the show, I refer back to my artist statement and remember that it just needs to be entertaining!

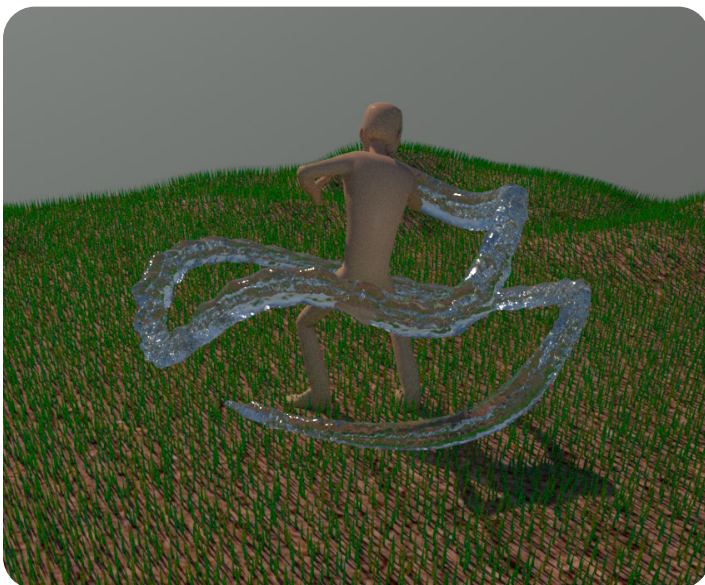


Now that I knew that the effect looked good, I cached it out and saved it to an alembic file to reference into the animation scene later. I was expecting the resultant file to be large, but I was absolutely not expecting a 20 GB .abc file! In any case though, the next step was to animate a character to look like they were manipulating the water. The first two renders of this looked a bit off, but that is because I had only gotten to the keyframing portion of the animation process on them.



It took a little while to refine the animation, as the reference videos that I could find were not the best quality. Doing this demo taught me a lot about how to animate someone doing very quick actions with not only their hands, but with how their entire body moves simultaneously.

I also thought that the ground looked a bit barren, so I thought it would be a good idea to learn XGen in order to create some grass. It worked out well,



except for the fact that apparently my version of Maya 2020 has an inherent glitch where the XGen Expression Editor doesn't open. So the grass does exist within the scene, but it doesn't sway in the breeze and the density of it on the ground is fairly uniform.

Effect #3: Shatter Effect

The last effect that I wanted to try out was an object shattering. The main reason that I wanted to do this was because having previous experience in physics, I was very interested to see how an animation engine handled something as complex as 100+ pieces of shrapnel moving independently of each other through a scene.

The base animation that I used for this scene was one that I had created earlier, so I could save myself a little bit of work by recycling that. It was a quick animation of my character walking forward slowly with a sword in hand, raising it to his face, then plunging it forward into an object. It was about 80% completed, so I would still have some work to do refining it but it's still better than starting from scratch!

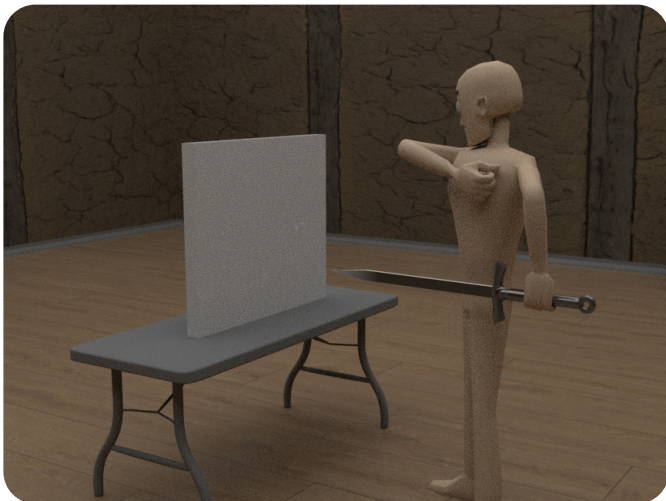
For the actual shattering effect, Maya has a plug-in called Bullet (and I think other engines use it too.) In this plug-in, there are multiple options to shatter an object depending on what you want the effect to be. For me, the effect that I wanted was for one object to become multiple, smaller objects and they would all be effected by both the force of the incoming sword and gravity.



The first render didn't go according to plan, as apparently my simulation wanted to begin at frame 1 instead of frame 122 like I had set it to. But, referring back to my artist statement, I was entertained even though it wasn't quite as realistic as I would like.

There was a fair amount of work I would have to do, in order to fix this. To start I did a couple more passes to see where exactly the problem was. It turns out that when the simulation starts, the object just completely shatters without even waiting to be acted upon by the sword. To fix this, I had to do two separate render passes: one from frames 1-121 where the simulation is turned off & one from frame 122 to the end where the simulation is turned on. Though it's a bit of a cheap way to fix the issue, I suppose if it works it works. If I learned anything from this exercise, it's that sometimes you need an "any means necessary" approach to working in 3D.

There was also an issue of the shattered pieces phasing through the table that I modeled for it to sit on. Even though I had a bounding box on the table, it seemed as though the shattered pieces were ignoring it. To fix this, I created a box that was approximately the same size as the table, placed it in the same spot as the table, created a bounding box around it, and turned its opacity to 0. Thankfully, this did solve the issue for the most part. Another point for the "any means necessary" mindset.



Senior Project - Final Thoughts

All in all, I would say that my senior project was a success. I went into it hoping to learn a lot of new tricks to developing visual effects and that is what happened. Though not the typical senior project of an animation student, I feel that I got more from this than I would have if I had gone through the path of doing a 3D animation by myself. Having been through CG Production, I am aware of how intense the pipeline for creating 3D animations is and I feel like doing that by myself would only have yielded stress and an incomplete assignment.

My fire effect is probably my favorite because of how realistic it appears to be. The additions of the smoke emitter & the turbulence field really bring together the idea that this fire exists in the physical world and it's being moved by natural causes.

The waterbending effect is the runner-up to that, as I am proud of how it came out but I still see issues to fix at a later point. The actual water effect looks fantastic, but the trouble with XGen and some animation goofs seem to take center stage in the scene. Once those get fixed, though, this will project will absolutely be one of my favorite pieces!

The shatter effect has to be the one I'm least happy with. The animation of the character is solid, but the effect took so much work to get right and it still looks a bit choppy. The Bullet plug-in worked great, but trying to do the simulations with it caused me a lot more trouble than it looked like. I don't know how much more work I want to do on this one, so if I want to continue to use this effect I may just start over and create a new scene.



Portfolio Pieces

Maya Lighting Exercises:

These images were done for a class that I had called Video Production. We were meant to do a project where we rented physical lights and got a lot of different shots on real people, but I chose instead to do it in Maya.

Three-Point Lighting



Rembrandt Lighting



Hard Lighting



Motivated Lighting



Graphic Design Pieces:

Digital Portrait:

This piece was supposed to be a portrait of someone made in Adobe Illustrator, but the rules of the assignment didn't say that they had to be a real person.



This piece demonstrates my knowledge of digital composition, as well as a bit of humor of putting a fictional character in the style of a 1930's-1940's propaganda poster.

Skateboard Designs:

For a different assignment, we were tasked to go through the process of creating designs for a company that makes sports equipment. My group was tasked with a skateboard company, so we chose Element.

We chose a theme of MSDS (Material Safety Data Sheet) hazard warning signs for a few reasons. One reason is because our target audience would likely be teenagers, we had the idea to make our designs seem “dangerous”. The other reason is that the signs used in areas where hazardous materials are used can be easily changed to encompass the element symbol.

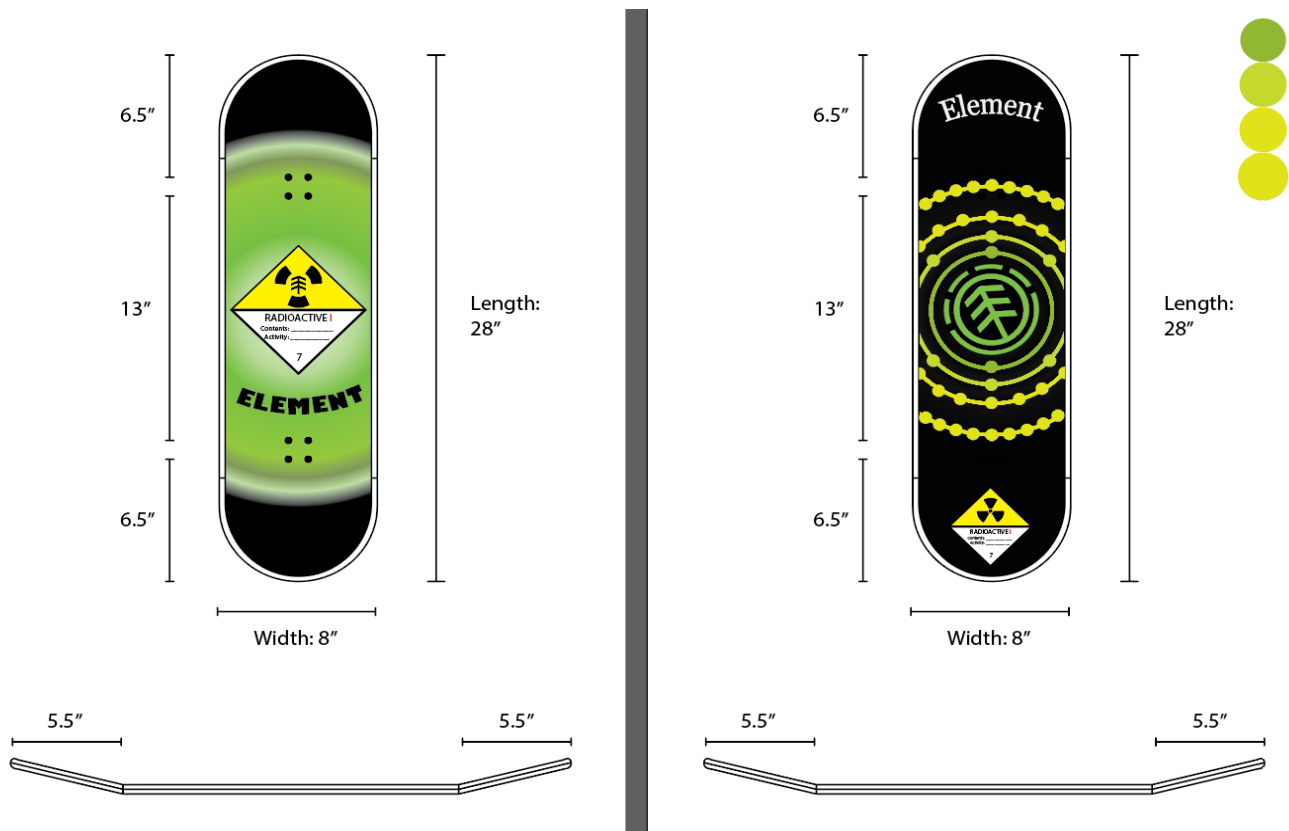
We first started with reference images, as we needed to know what a typical Element skateboard looked like. We also needed to see how a typical MSDS hazard sign was set up, so that we could accurately replicate it.



Once we knew how to properly set up our boards, we began making some sample images based on those designs. Below are a few of the designs that I made for a prototype review.



Here is what our final board designs looked like.



Magazine Advertisement:

For another assignment, we were tasked with creating a magazine ad for a product that doesn't actually exist. Kind of a strange concept, but I made it my own by basing the layout of it off of one from the 1950's.

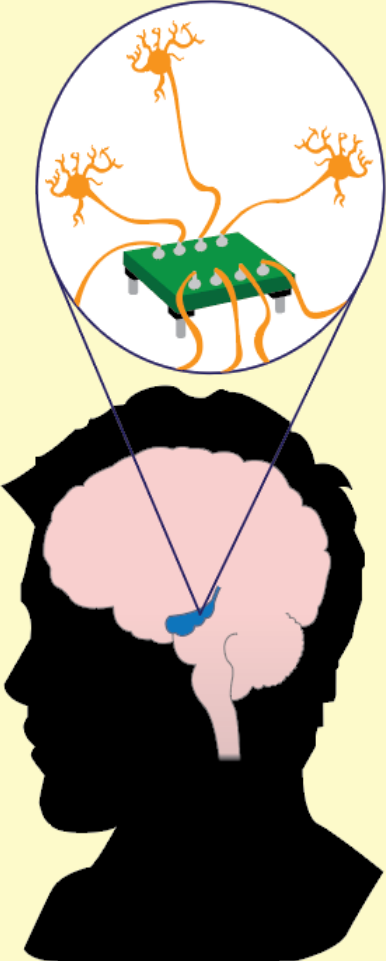
I wanted to have the product be a computer chip that you could get inserted in your brain to make you more attentive and better and recalling information. And, like true 1950's fashion, the product had to have both a fun acronym and a tagline to leave the reader with so they remember it!

I am proud of this one especially, because there is so much here that looks exactly like how I imagined it would.

Never forget something again with the...

MEMORY RETRIEVAL & PATHWAY REMAPPING OPERATOR

Mr. Pro for short!



Sometimes, trying to pull a fact or figure from the back of your mind just doesn't work out. But, those days are in the past thanks to new advances in computing technology! Your brain is constantly trying to categorize and properly file away things you need to know, but there are times where that knowledge gets lost and your brain is stuck looking for the information in a place where it doesn't reside.

Powered by the electricity that already exists in your head, the **Mr. Pro** is inserted into one's hippocampus and keeps a digital record of where your memories are. This allows your brain to consult **Mr. Pro** as to where something is stored and access it in an instant!*

You'll be a PRO in no time!

copyright MCMLV

*Side Effects include but are not limited to: Epilepsy, blindness, paralysis, inability to make new memories, loss of old memories

Logo Designs:

Personal Logo:

For my personal logo, I wanted to create a design that was simple, yet not so simple that it was unprofessional. What I decided to do was put my initials down in a font that I liked (preferably one with a few flat-tops on the letters) and surround it in a circle. This kind of a design would be one that has a direct relation to me & the brand that I am building, but can also be increased or decreased in size without worry that I will be losing the quality of some complex design on it.



The real impact of this design comes from the fact that I am doing 3D animation, instead of 2D. If I was going for a 2D career, then perhaps I would go for a more cartoonish quality in my logo. But, since that is not the case, I believe that this design is sufficient for my future branding needs.

77.7 FM - Fake Radio Station:

For the next logo, this is something that I did for a project back in a class called “Audio Production”. Our final assignment was very loose on its requirements so I decided to poke fun at how radio stations love to structure their advertisements. It always seems like it’s 30 seconds of hyping up their station, a handful of sound burners, and then a song that doesn’t meet the high standards they set for themselves.



The border surrounding the logo had to look very rough and ragged, since that is how most metal stations advertise themselves. The font follows similar logic, it needed to look more DIY than refined. Finally, the color scheme was chosen because of how they contrast with each other. The black border separates itself from the red inner circle, which also is distinct from the metallic sheen of the font inside.

For the clips of how the project came out, check out the website!

Marshmallow Jump

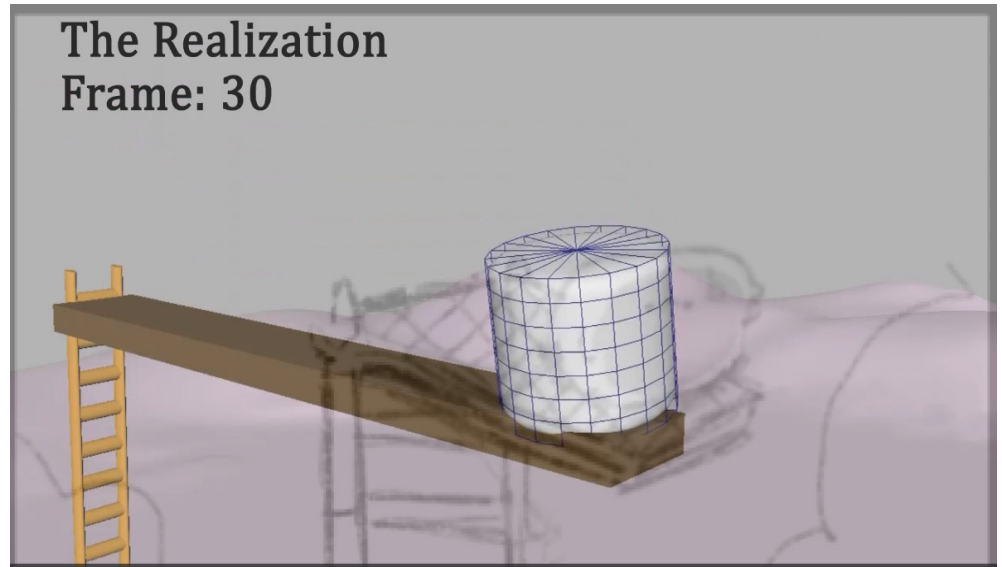
The most professional project that I had the privilege to work on has to be the “Marshmallow Jump” project back in a class called “CG Production”. It was a culmination of the works of four people (including myself) doing everything on a short film. From look books and storyboards to animating to compositing, our group was responsible for doing it all and more. It was a difficult class, but one that I also picked up a lot of helpful information in.



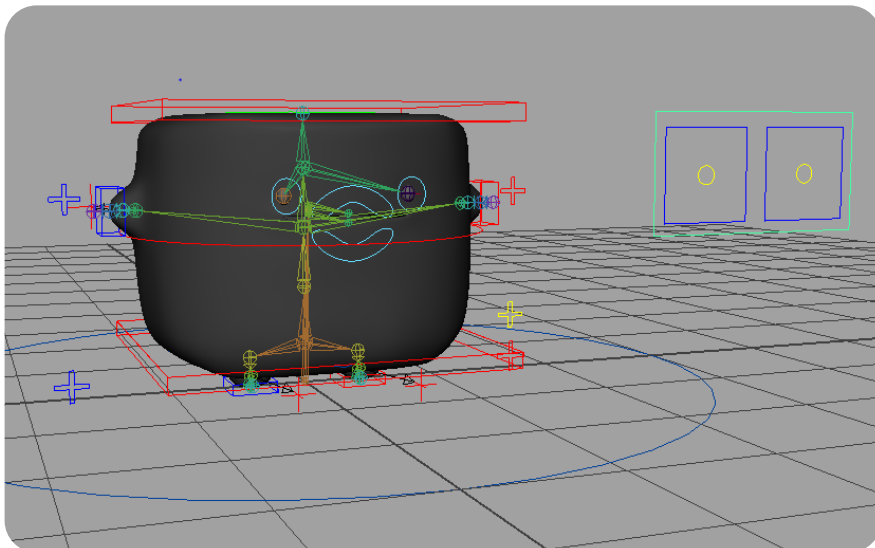
The story follows a Marshmallow named “Marsh” as he prepares to break out of his comfort zone and take a dive from a perilous height. As to what I did, my jobs were mainly focused on the technical aspects. I was responsible for: the animatic, the rigging, character animations on three scenes, doing the cloud effects, and the editing of the final cut.

Creating the animatic meant plotting out how the final animation would look in a fairly primitive way. I referenced storyboards that were created by a different member of the team and duplicated the camera angles & framing to the best of my abilities.

Here is an example of how the animatic turned out. Notice how the you can see the storyboard as well as the animatic.



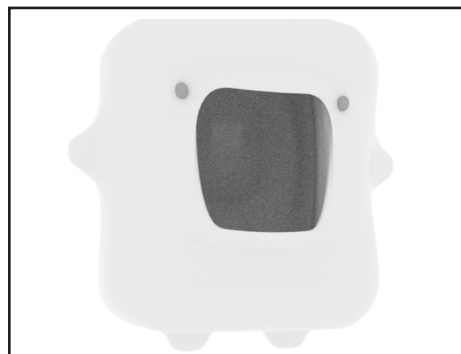
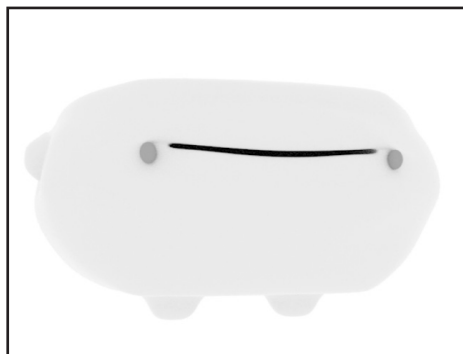
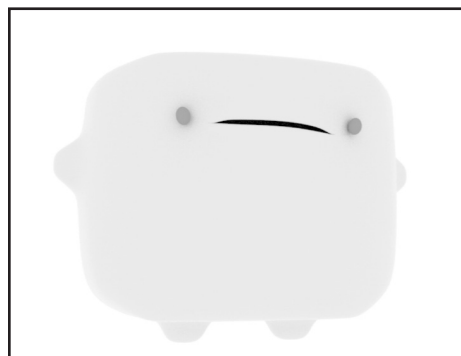
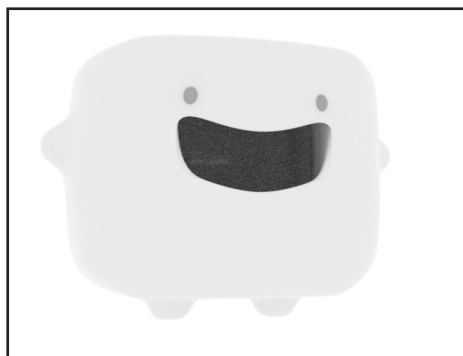
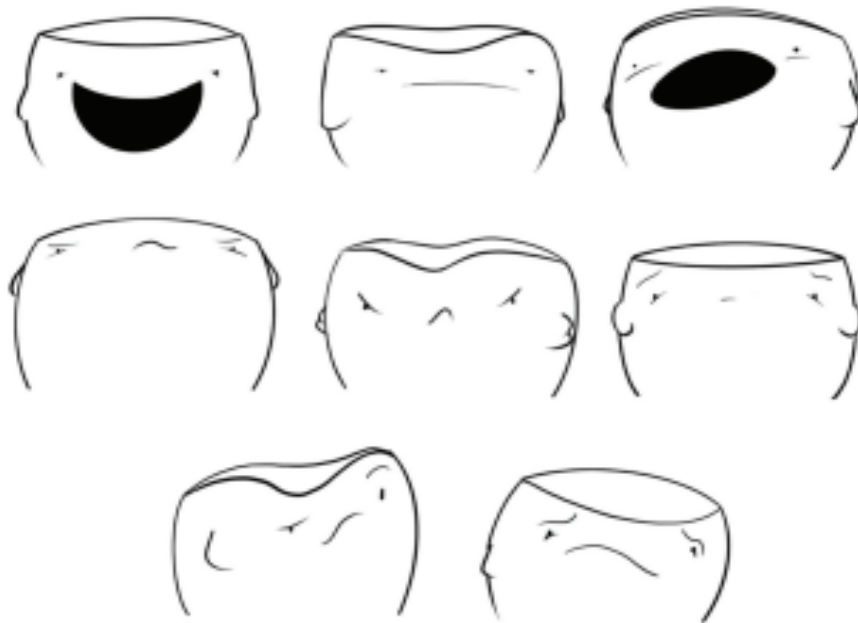
After pitching what the final animation would look like, our group's next job was to create the assets that would be used in the real thing. One person had to create the model, another would create the objects used, another would create the environment, and I would create the rig for the character. Since I had never done any kind of rigging before, this was a learning experience.



There was a point where I had to start over on the rig, as the model wasn't properly centered at the origin and that messed up mirroring the skin weights and joint placement. Even though I had to learn rigging in the short span of two weeks, it was still kind of fun to mess around with!

After the rig was created, I did a quick demo reel for Marsh to ensure that he would be able to hit all of the poses in the character reference sheet. He was able to for the most part, but he didn't have eyebrows which made him unable to be super upset or confused (which we never used anyway).

CHARACTER EXPRESSION SHEET



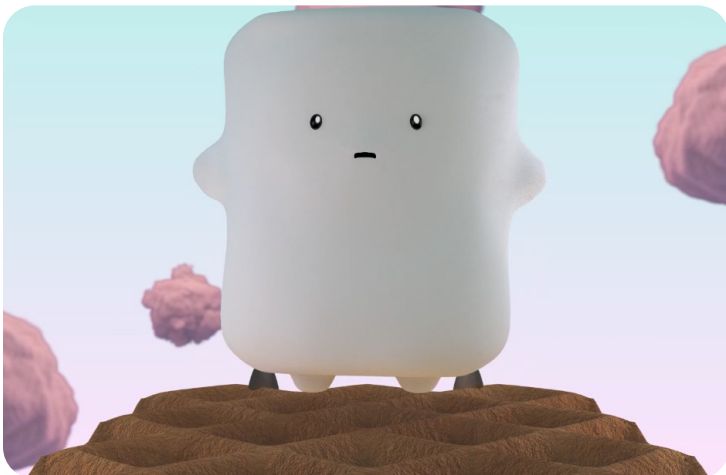
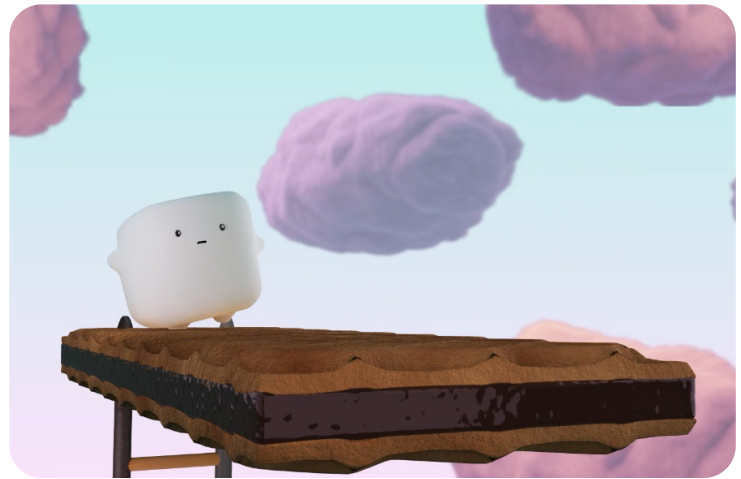
Before getting into the actual character animations, I had to also create clouds to fill the sky so that Marsh would look like he's really high up. I had originally tried to do this with Maya's BiFrost Aero tool, but the results that I kept coming up with were not what we wanted. To remedy this, I downloaded a separate program called "Houdini", which specializes in effects such as clouds.

I sought help from a teammate to create the cloud geometries, then I brought those geos into Houdini and used them to create the actual clouds. I then had to learn about exporting .vdb files and bringing them back into Maya for rendering. Lots of learning to do for this portion.



Now that we had all of our assets, we could finally move on to the animations!

I was responsible for animating three scenes. One scene was viewing the clouds from a high vantage called “Vertigo”. Another was having Marsh react to being so high up and quickly retreating to the back edge of the wafer called “The Realization”. The last one involved Marsh gaining his confidence back and preparing himself to take the dive called “I Got This”.



The only things left to do at this point are the rendering, compositing, and editing. We were all responsible for getting our scenes rendered, so we all oversaw that process. My job after everything was rendered was to get all of the footage into an editing software and put in the sound FX & voice lines.

The main difficulty that I had with this was that instead of using Adobe Premiere Pro, I stuck everything into an After Effects file. This move didn't affect the final product, but it made the rendering time incredibly long. A short film of 1:23 took over an hour and a half to render out completely, not even including the fact that it timed out the first time in class. This was the motivation for me to finally download Premiere Pro, in order to avoid something like this happening again in the future.

Our final product is available to watch on my website and is the product of a semester's worth of work! We hope that anyone who watches enjoys it as much as we enjoyed the process of making it!

