

This semester I ran an independent work study for three main reasons: To connect with other artists in my industry, to learn how stylized 3-D VFX itself works, and to use all knowledge gained to help my team work on our senior short. Five interviews with industry professionals were done with three of them directly correlating to this paper. This paper is a recollection of knowledge gleaned from what I found in overlap between a Professional stylized lighting artist, a VFX freelancing veteran who runs his own VFX Academy, and a VFX team lead at one of the biggest well-known studios.

The first thing I learned was from the VFX team lead and it was that stylized VFX and the way it works is a very specific niche that while still growing, is very private. Even though he's from a very well known studio, he had never actually done stylized vfx himself. He did however say that Sony is currently at the heart of it.

After that interview, I was lost. I didn't know how I was going to connect with such a small group of people when none of the connections I had made so far were anywhere close. I was completely unsure how I would continue with the study. I kept researching alumni on LinkedIn, desperate for any alumni that had the word stylized in their bio or had works that looked slightly stylized, at this point I didn't care if it said VFX or not I was willing to reach out to any part of the 3D pipeline. I found an alumni working as a professional lighting artist for a studio I had never heard of and I took a chance that ended up paying dividends. Upon starting the interview it became abundantly clear that this person had a very clear understanding of how stylized works are made. He had already made stylized lighting for his work to begin with. He explained that the way

studios stylize their 3D work is entirely dependent on their size, budget, and time. For high budget studios, there are two main methods either paint as much as you possibly can like Fourtiche's Arcane where all the models and backgrounds are hand painted as well as adding in 2-D effects to further break the mold of 3-D, or the Sony method which is developing your own high end tools as you work, then using those tools to make something unique. For low budget studios the process is entirely different. You use the traditional 3-D workflows but make the shaders and textures look as close to the finished product as possible. Then you create a truly stylized look in comp. Overall, I learned that there were three main methods: paint everything by hand, develop or find tools, or be really good at comp/nuke. I suppose I should also mention that you can mix methods. A great example the Lighting artist brought up was Puss in Boots: The Last Wish wish uses a mix of the first and third method, the film's 3D models are all heavily stylized and of course and of course has a lot of handpainted textures and backgrounds then the parts that couldn't be painted in 3D (the fur) was comped in Nuke using a kawahara filter.

The series of images below show the process of making Puss in Boots: The Last wish and how its stylization works:

Heavily Stylized models and textures



VFX added



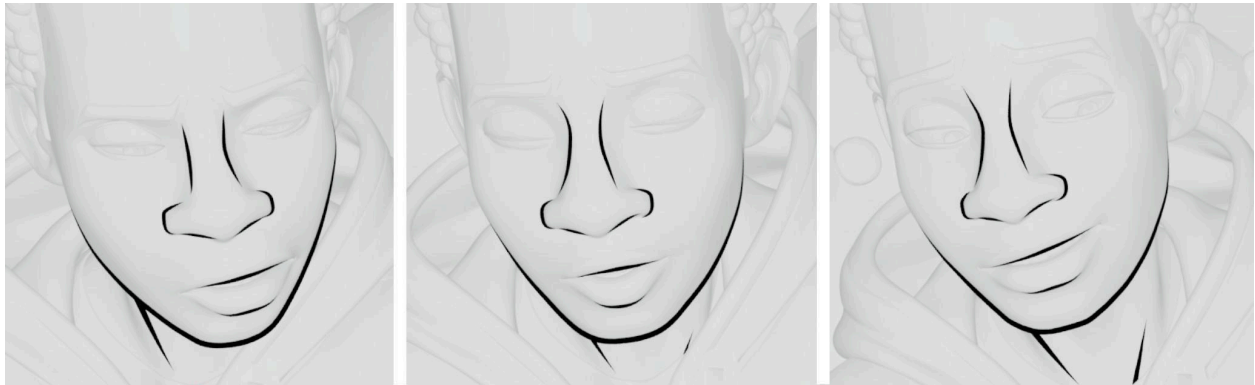
Nuke/ stylized comp added (final render)



Finally, after a month or so of trying to stylize stuff myself, I finally found a VFX alumni, who was willing to have an interview. I knew going in that this interview would be a bit different because he had done some freelancing then turned to making his own VFX school that had its own graduates also in the industry. I started the interview with this in mind and went ahead and asked him. He gave me a deep dive into the second method and went so deep that I discovered the second method was splitting in two, and that a fourth method was being developed

Before I continue, I should give some context. Before I even began this study. I had done some research to find out how the Spider-Verse franchise had gotten its stylization because it has become the poster boy for 3-D stylization as a whole, especially because the outcome and methods used are so different from Arcane. I learned that the tool Sony made to achieve the look is called Kismet. Kismet was made in Houdini, the same VFX software I'm currently learning. Kismet is a tool that graphs two lines onto 3-D

characters faces and is a machine learning model that Sony image works created using Python and SKlearn. Artists can then tweak the lines Kismet made easily in Houdini. Kismet needs multiple software's as well as Sony's image library for Spider-Verse to work and is extremely complicated.



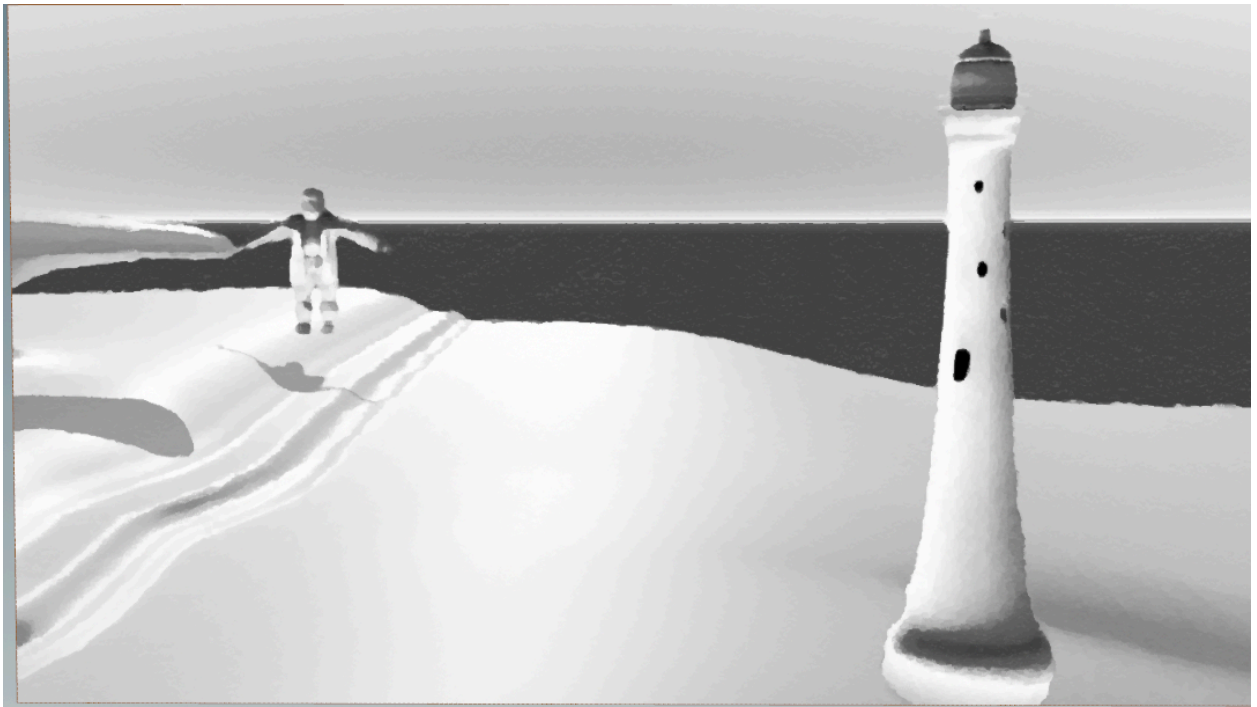
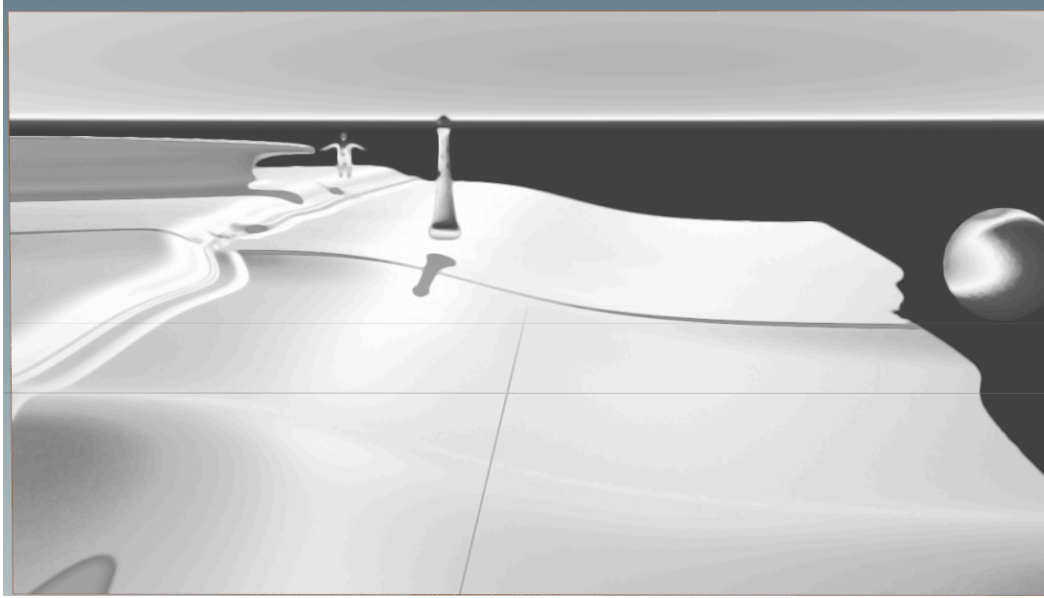
These behind the scenes images from SpiderVerse show how the inklines generated by Kismet change depending on what is happening in the animation. Because the character's face moves the lines must be drawn differently by Kismet to fit the new pose and perspective.

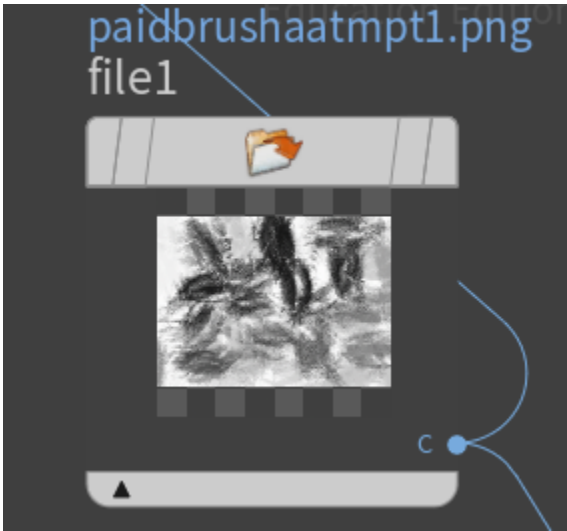
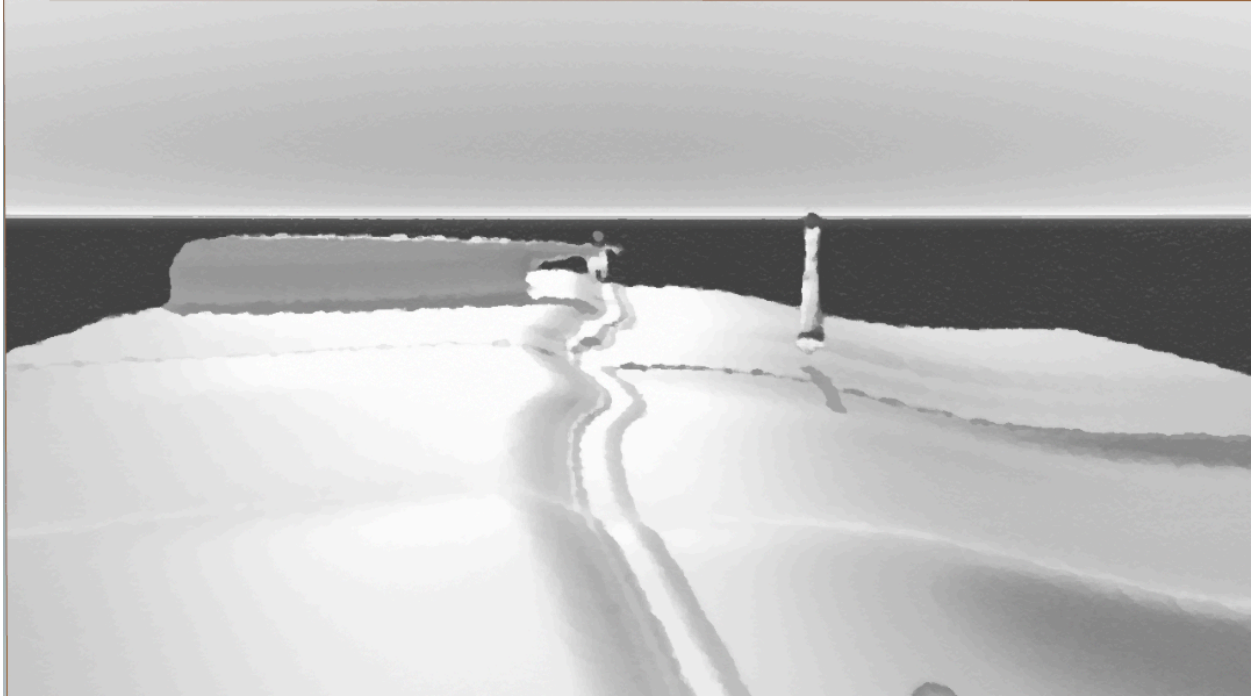
However, there is another way currently being developed. AI, which is the thing I talked with the final interviewee about. Unlike the precise amount of control you get from a painstakingly handcrafted tool like Kismet, AI will not have a microscopic level of control because the AI will only have a general database or whatever you give it access to, so there are two paths available. Either painstakingly make your own tool to have absolute precision, or use AI but be unable to adjust the fine details, although I'm sure it will only improve within the next couple years.

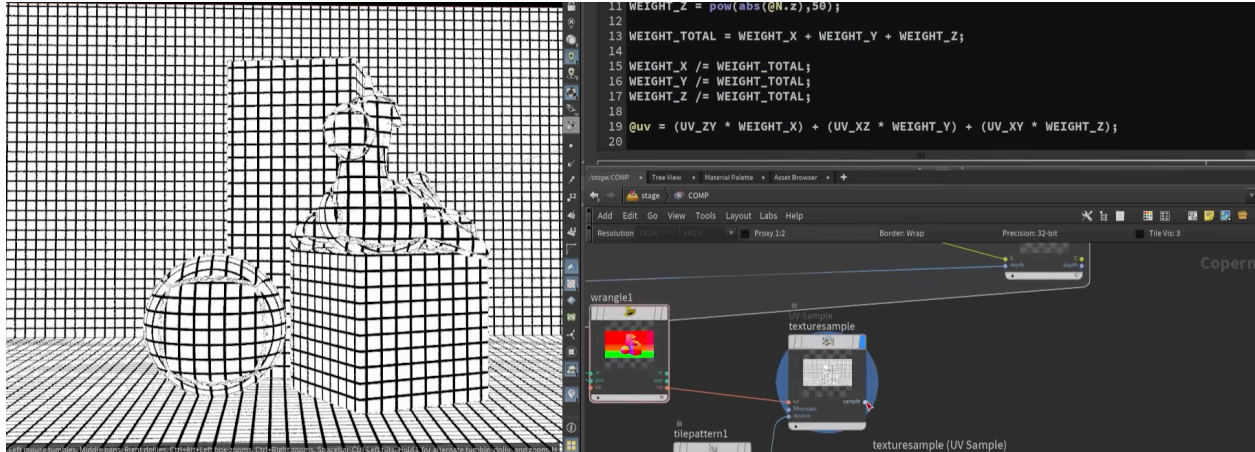
My own experience so far

Before the study even began, I had already attempted to make my teams work stylized. Our team's short film is rather tricky because we are trying to stylize our film to look like it was drawn in charcoal. I was experimenting with water simulations in Houdini at the time, and given that there was no native charcoal filter or texture inside of Maya, (what the rest of my team was using) I figured Houdini would have a way, after all I already knew it was the software that Sony ImageWorks Kismet tool was made in. I followed some great tutorials and ended up making a slap comp style filter. For the low amount of effort I put in I was quite pleased with the results. As shown below the slap comp acted as an editable final render of my early scene. Although I'm a bit rusty on the details because it's almost been a year, once the scene got pressed into a 2D plane Houdini's Copernicus nodes allowed me to put an equal 2D grid on everything in the shot which then let me have a reference point, then other nodes were created to draw outlines around objects, finally brushstrokes (as shown below) were added then grafted onto the entire scene. Using the already prepared grid and outline to differentiate different things in the scene and accurately approximate distance. The slap comp was uses the third method of stylization, taking a finished render and manipulating the finished image.

It's almost a year later and I'm still happy with the results although I am unsure if my team will be able to use them because I'm the only one comfortable using Houdini and it would require us to port our entire film and assets into Houdini.



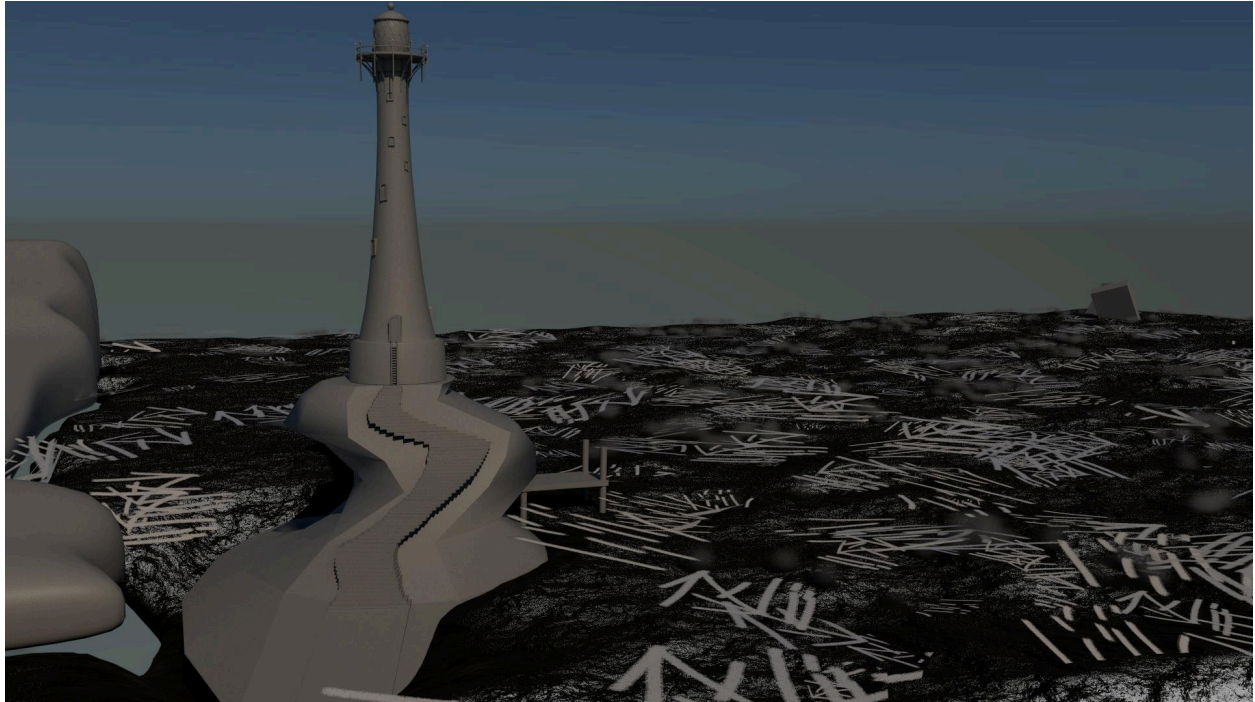




Our early Captain model with the completed filter in Houdini

Because this was early on and our team kept insisting that we keep everything in Maya. I had to shelve this idea. The next semester I began this study. Right after the interview with the Professional lighting artist and right before the meeting with the VFX artist, I

had found a person on Gumroad who claimed to be selling a way to stylize things in a similar way to SpiderVerse locally inside Maya. I bought the person's Gumroad and gave it a shot. These were the results:



The method was to use Maya's MASH network to create a massive amount of planes, then add brushstroke png's onto the planes, then place them wherever you need them. The size, amount, location, and visibility are all controllable. As nice as it was to have such a fine degree of control. I discovered two issues, the first is that this method works best with static objects and I need it to work for an entire animation; Second, while the planes do move with whatever you stick them too they don't account for perspective, so if you stick them in a spot you need to match perspective for one scene, then need a different camera angle/perspective for another scene you have to manually delete the old place and add new ones; Finally, I needed the stylization to engulf the entire screen equally like in Houdini, it would not be reasonable to rearrange the lines or tiles for

every individual shot. For static models or barely moving objects this method was perfect, but for my use case, it doesn't work. So I'm left with two options, either learn nuke or convince/ find a way to do it in Houdini so I can use the original filter.

Puss and Boots images pulled from

<https://beforesandafters.com/2023/01/11/heres-how-dreamworks-lent-a-whole-new-brand-of-stylized-look-and-feel-to-puss-in-boots-the-last-wish/>

Spiderverse Images pulled from

<https://www.sidefx.com/community/spider-man-into-the-spider-verse/>