

VIRTUAL PRODUCTION DESIGN

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This semester, I worked with a group to design and create a Virtual Production workflow. After discussion on multiple different prompts, we decided to create a short horror-themed sequence. During the production of our shot, I worked on storyboarding, concept art, environment lighting and volumetric fog, rendering, compositing and keying.

Our Virtual Production sequence was to be set in an open clearing in a dimly lit, foggy forest. We wanted to create an ominous feeling for our character within the shot—it was also an aim to add narrative and story to our sequence by creating a creature to appear in the background. To achieve this, we had to create an environment in Unreal Engine^[1] so we could have an environment to place our character within. This was also beneficial when it came to our lighting, as we had full control over the atmosphere in Unreal Engine^[1].

We decided that recording footage ourselves was the best plan of action, as we had originally planned to use the immersive room. This, unfortunately, did not work out as planned, and we quickly chose to record in front of a greenscreen instead.

STORYBOARDING

Storyboard 1



CHARACTER WALKS THROUGH DARK FOREST

- LIT BY LANTERN
- QUIET, OMINOUS NOISES
- COLD COLOURS, CONTRASTED BY LIGHTING



SIDE SHOT OF CHARACTER WALKING

- LEAVES CRUNCHING BENEATH FEET



NOSE ABRUPTLY STOPS CHARACTER

- CHARACTER & NOISES STILL

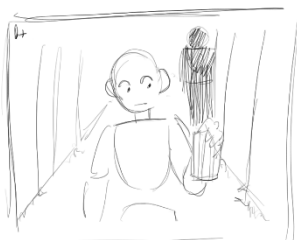


FIGURE APPEARS AS LANTERN FLICKERS OUT

[Figure 1: Storyboard 1, showcasing forest sequence.]

Having decided upon our prompt, I created a storyboard to plan out the shots. I wanted the three sides of the screens within the immersive room to be utilised to give us a dynamic look to our sequence. I also included sound design into our storyboard, as my group partner, Laura, planned to add SFX into our sequence in post-production.

The issue with using the screens was easily resolved during shooting, as we could utilise the same technique; turning the actor around to face different directions. After reviewing our storyboards, we decided to change the lantern prop being held by the actor to a phone, as there were plans to add a conversation and dialogue in with SFX.

I created another two smaller storyboards as renditions of our previous two ideas, being a 'freefalling' sequence and a 'time-travelling' one.

STORYBOARD 2



CHARACTER FALLING THROUGH
SKYBOX

- Moving through static models in UNREAL ENGINE
- STATIC SKYBOX
- RECORDED BY PROPPING(?) SOMEONE UP WITH A GREEN SCREEN BOX(?)

[Figure 2: Storyboard showcasing free-falling sequence.]

STORYBOARD 3



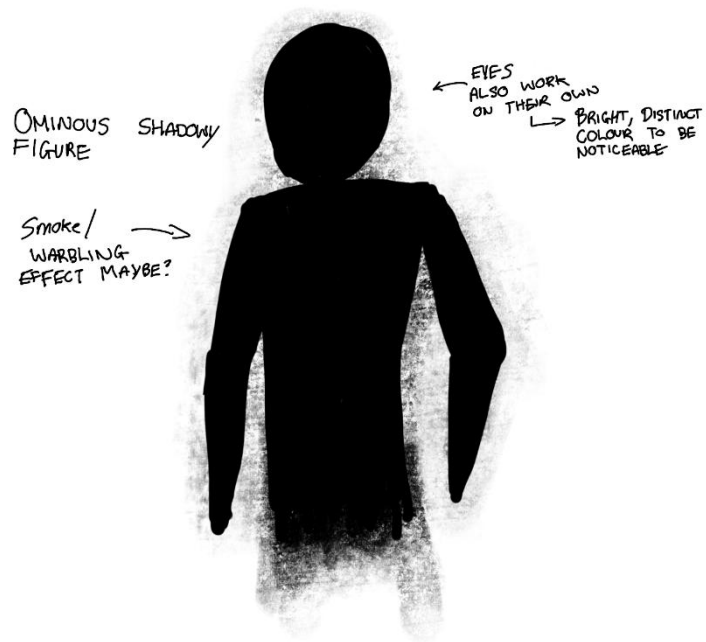
[Figure 3: Storyboard showcasing time-travelling idea.]

Ultimately, we chose the first storyboard, as we felt it had the most freedom creatively, and that we could create a convincing environment and atmosphere for our actor to be placed within.

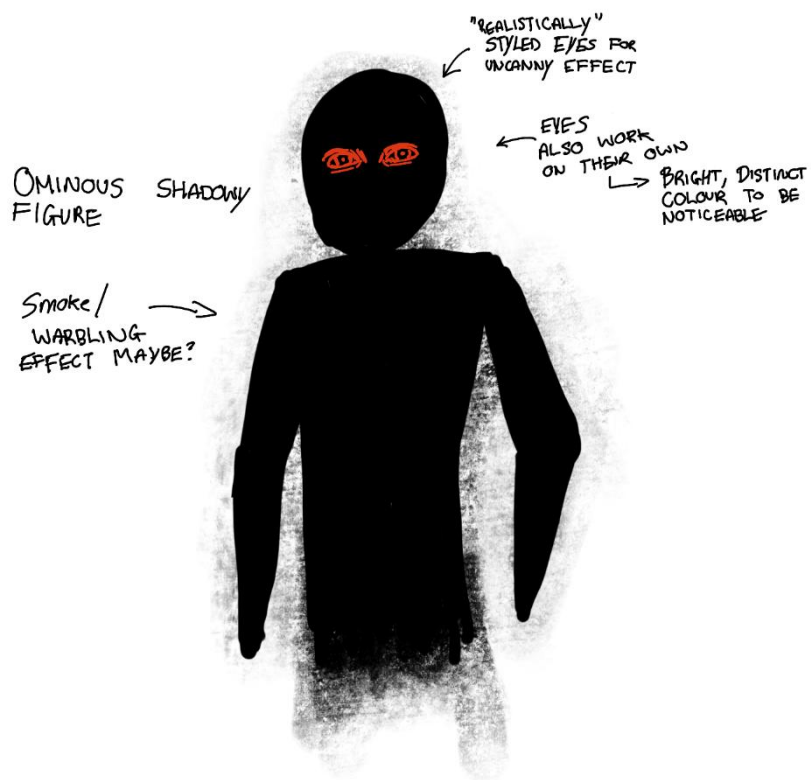
I think I could provide further clarity in these storyboards by detailing better—though I believe they were effective in getting our point across and making sure we had a sturdy plan for our sequence. I had received feedback at the time, however, that the storyboards were ‘unfinished’, so perhaps better communication with my team could assist me in creating a storyboard in which we are all happy with as a team.

CONCEPT ART

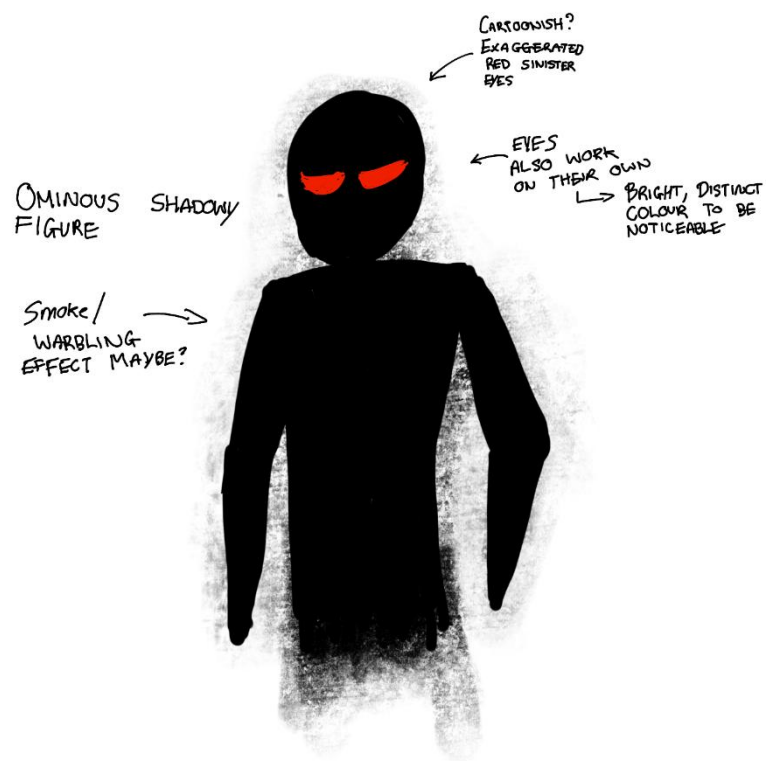
My second task within our group was to create a creature to add to our shot. While another group member was to create the animation for said creature, I wanted to make sure we were all on the same page and that we could all contribute creatively to our workflow.



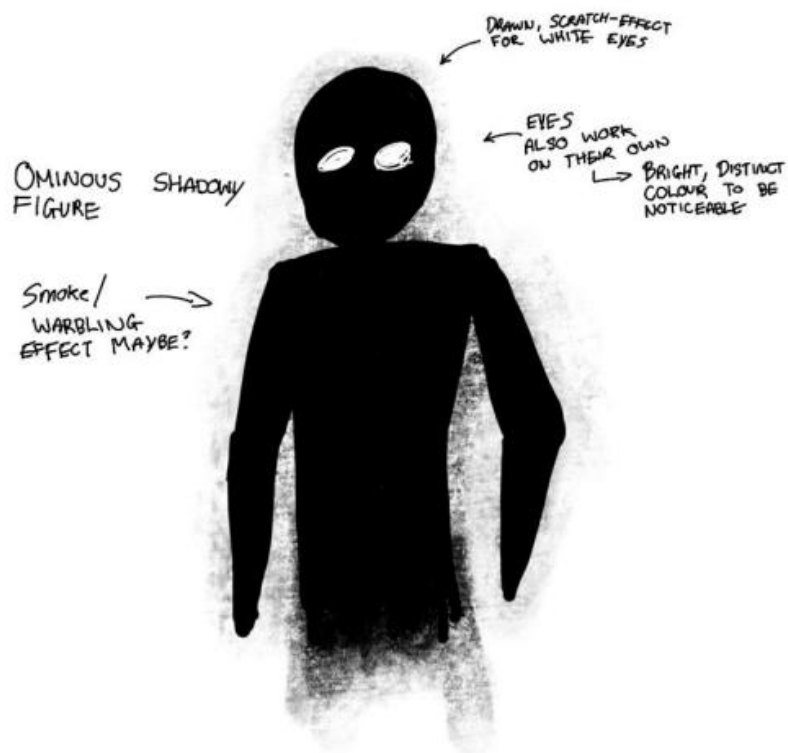
[Figure 4: Concept design of ominous creature.]



[Figure 5: Concept design of ominous creature with uncanny eyes.]



[Figure 6: Concept design of ominous creature with red, cartoonish eyes.]



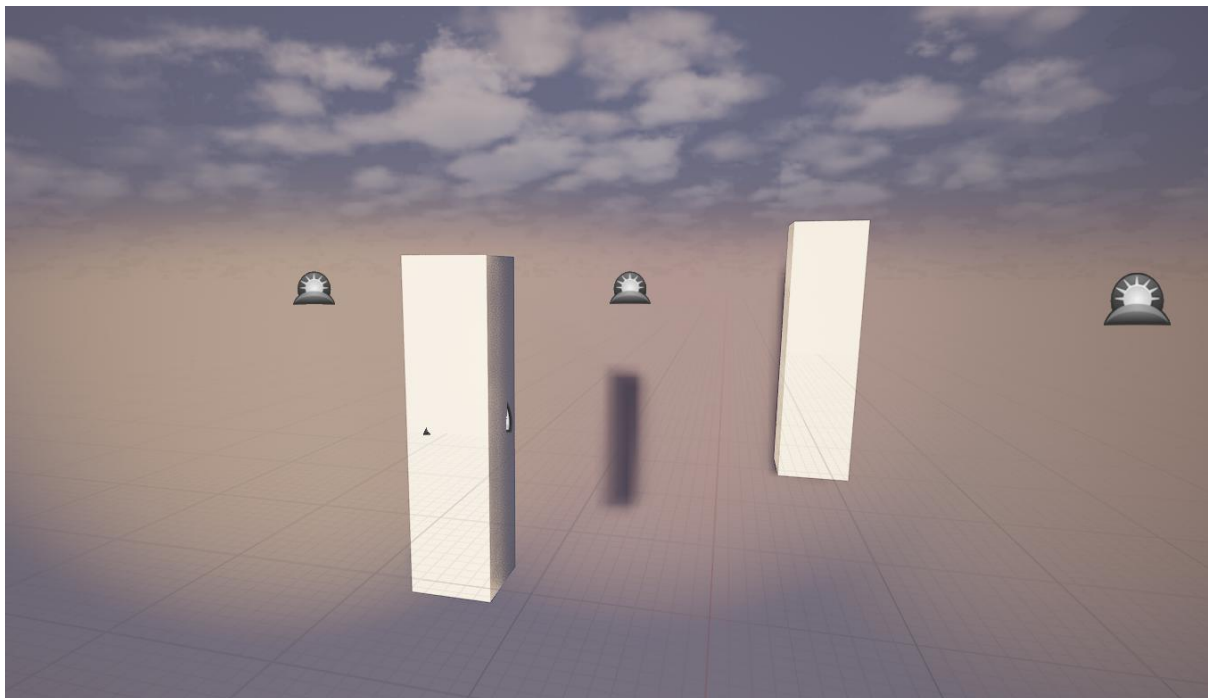
[Figure 7: Concept design of ominous creature with squiggly, drawn white eyes.]

I wanted to create four different creatures with slight adjustments, so my group would have the choice as to what effect they would like to create. I also recommended the choice to utilise the eyes on their own, as if our shot was too dark, we would not be able to see our figure, and creating a humanoid figure might have been too time-consuming for our team. I planned that we could easily have achieved the same effect for our narrative with the eyes alone.

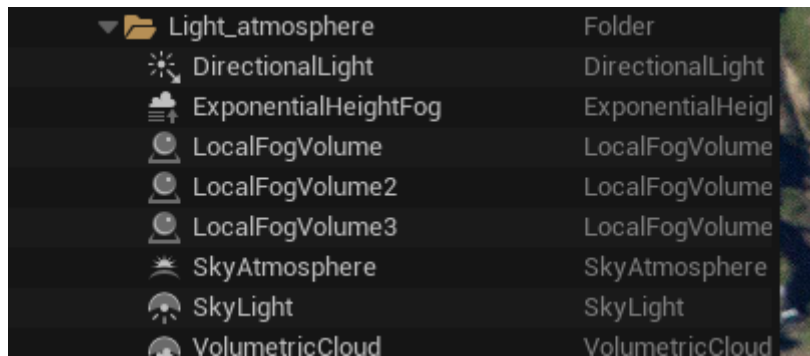
LIGHTING AND ENVIRONMENTAL FOG:

Provided an environment by another group member, Monica, I began to work on the lighting and environment for our shot.

Originally, I planned to create a ‘blueprint’ in Unreal Engine^[1] while Monica worked on our environment for efficiency and timesaving. This unfortunately had a few issues, of which I resolved by using a newer update of Unreal Engine^[1], but it was still disheartening to know my work would not be able to be used.



[Figure 8: Screenshot showing Unreal Engine^[1] volumetric fog set-up.]

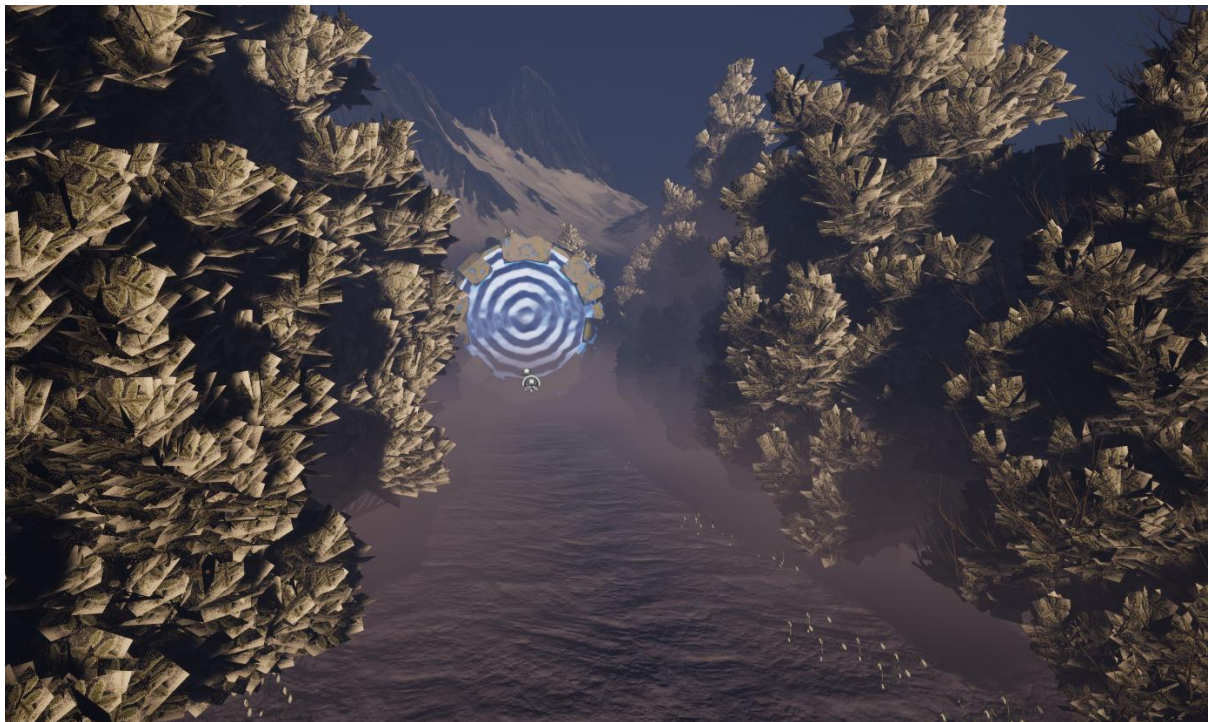


[Figure 9: Screenshot showing contents box of Unreal Engine.]

I combat this by using what I had learned from my previous attempts to create another layout within the environment that we would be using. I utilised the 'LocalFogVolume' tool in Unreal Engine^[1] to create a fog within our environment. I referenced multiple YouTube^[2] tutorials^{[3][4]} to assist with my process in learning how to make it seamless.

With the 'LocalFogVolume' tool, we could render cameras at any angle. This would save us time in post-production with adding fog to our scene and makes it visually realistic.

To add a darker light, I referenced a course^[5] on LinkedIn^[6] to help. I changed the skybox of our Unreal Engine^[1] set up to create a darker scene more fitting to the sequence.



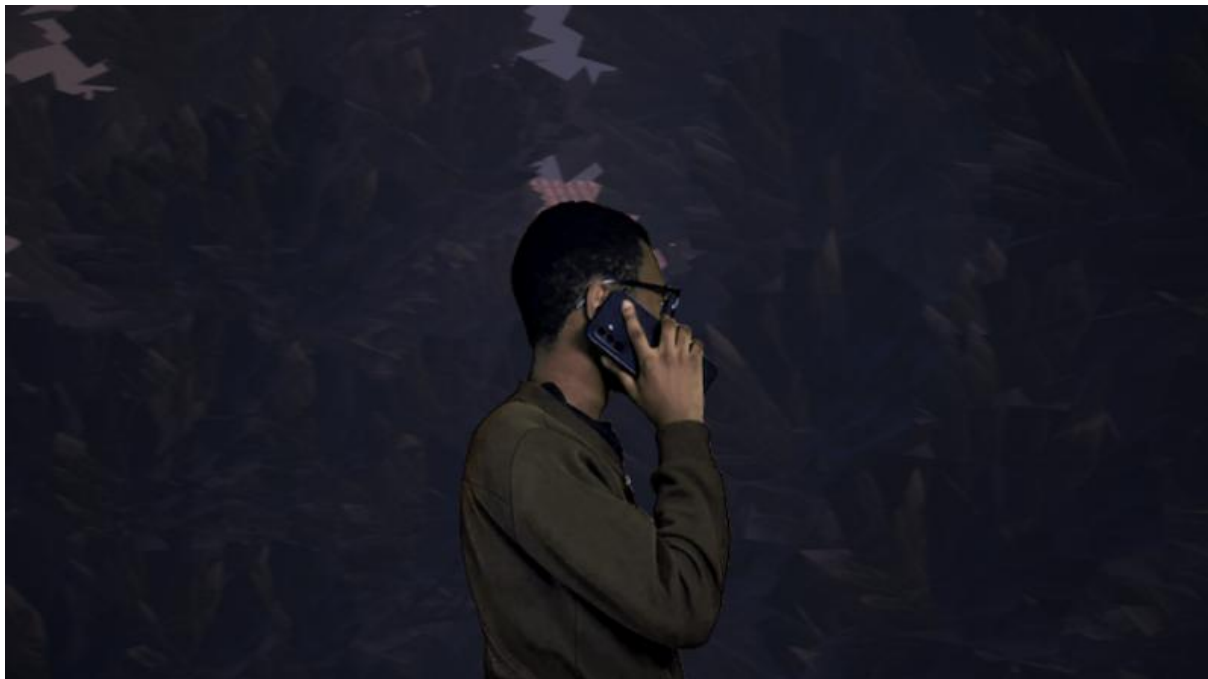
[Figure 10: Screenshot showing the additional fog within our scene.]

With updating Unreal Engine^[1], we quickly learned that we had been using two different versions. Fortunately, this program is forwards compatible, so our files were still able to be used, but it was not backwards compatible and that meant we all had to use the newest version going forward. I think better planning within our group ahead of time could avoid this issue.

RENDERING:

My next step was to render out the cameras of our environment, so we would have a backdrop for our actor.

I did this by using a ‘CineCameraActor’ node in Unreal Engine^[1]. This allowed me to have full control over our cameras and the shots we could export, as I was in the environment itself. This encouraged me to keep as close as I possibly could to our storyboards and our previous planning.



[Figure 11: Keyed-out actor in front of rendered backdrop.]

I faced some further issues in compositing later, that I believe could have been addressed during the rendering stage of my creative process.

Originally, I planned to allow the camera to pass through the environment much faster than our actor so we would have more freedom with the speed of our shot. This would mean that we could match our actor to the backdrop effectively and make it believable as he would be walking the same speed as the environment around him.

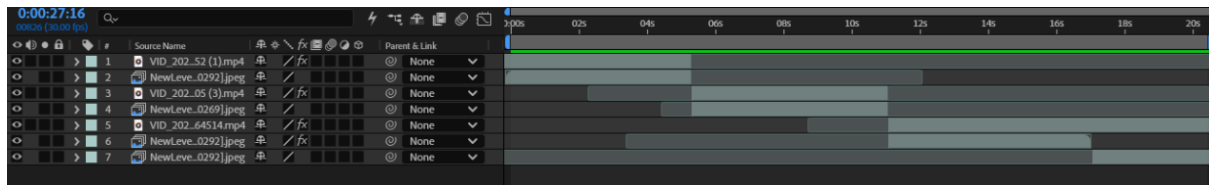
Upon slowing our footage down, I recognised that there was an immense framerate drop. I think that in the future this can be solved by recording at a higher frames-per-second (as I had originally recorded at 24fps), or by paying more attention to our recorded footage before rendering out the cameras and environment.

COMPOSITING:



[Figure 12: Greenscreen footage above rendered camera sequence.]

I used Adobe After Effects to composite our shot, as I believed it was beneficial for our group to have access to the same tools and programs. I cut the footage of our actor off at the waist to make his walking believable, as in reality he is walking on the spot. I wanted to make sure our actor was at a correct height in reference to the environment around him, also, so I positioned him according to the trees at his sides.



[Figure 13: Screenshot showing Adobe After Effects sequencing.]

While it does not look the neatest, I wanted to make absolute sure that the group member picking up our file after me could see the organisation of our shots and composition. It was also my intention to leave the footage unclipped, as I was aware we would not be rendering out our work right away, and any mistakes with our footage that I had not noticed could easily be remedied.

KEYING:



[Figure 14: Transparent actor in front of sequence.]

Due to issues with time allocation, I had to pick up the ‘keying’ process for our group. I used the ‘Keylight’ tool within After Effects^[7] to do so.

At first, I had a few issues with transparency with our recorded footage. This was easily fixed by tweaking the black and white levels of our recording. I made sure to keep the RGB levels untouched, as I was aware another group member would be picking up the colour correcting after me and I did not want to cause further issues.

The outline of our actor came out very clearly, but there were issues with the reflectiveness of our actor's phone and glasses. In the future, I think being more aware that reflective surfaces will cast the green light back to the camera will help this. I also believe that awareness of the lighting may also prove useful.



[Figure 15: Actor in front of sequence.]

Overall, I believe our shot came out interesting with a unique feel to it. While it is not as ominous and atmospheric as I had hoped, I think that it came out relatively close to our storyboard and original planning despite our issues with communication during production.

BIBLIOGRAPHY

- [1] Epic Games, "What is Unreal Engine 4," *Unrealengine.com*, 2019.
<https://www.unrealengine.com/>
- [2] "YouTube," *YouTube*. 2025. Available: <https://www.youtube.com/>
- [3] WINBUSH, "Local Fog Made Easy | Unreal Engine 5.4," *YouTube*, Jul. 31, 2024.
<https://www.youtube.com/watch?v=KQiTjNValbs>
- [4] Josh Toonen, "Master Cinematic Fog & Volumetric God Rays in UE5," *YouTube*, May 18, 2023.
<https://www.youtube.com/watch?v=Kjg6kCW2BtY>
- [5] Skillshare, "Creating an atmosphere - Unreal Engine 5 for Beginners: Virtual Production Basics," *LinkedIn*, Jan. 14, 2025. <https://www.linkedin.com/learning/unreal-engine-5-for-beginners-virtual-production-basics/creating-an-atmosphere?resume=false&u=77966930>.
- [6] LinkedIn, "LinkedIn," *LinkedIn.com*, 2025. <https://www.linkedin.com/>
- [7] "VFX and motion graphics software | Adobe After Effects," *Adobe.com*, 2026.
https://www.adobe.com/uk/products/aftereffects/campaign/pricing.html?mv=search&mv=search&mv2=paidsearch&sdid=G4FRYP7G&ef_id=CjwKCAjw5s_QBhAdEiwADD_gBkTR63A-S41o0xQ7O-vzhFcpSyDFCHe130GIktYBqwHzhOo2Y9xLKR0C0YEQAvD_BwE:G:s&s_kwcid=AL

