

Animation Final - Stage 2: Final Analysis and Reflection

Authors

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Part 1: Final Analysis

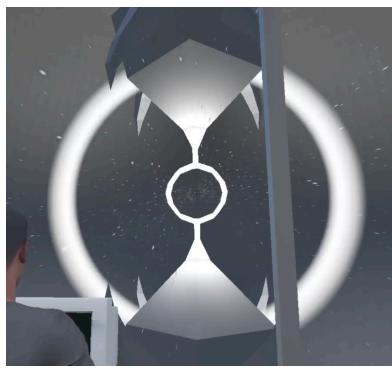
Narrative Paragraph

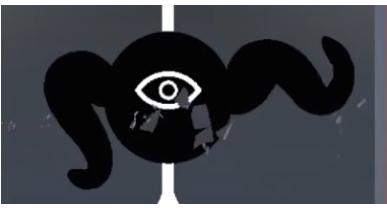
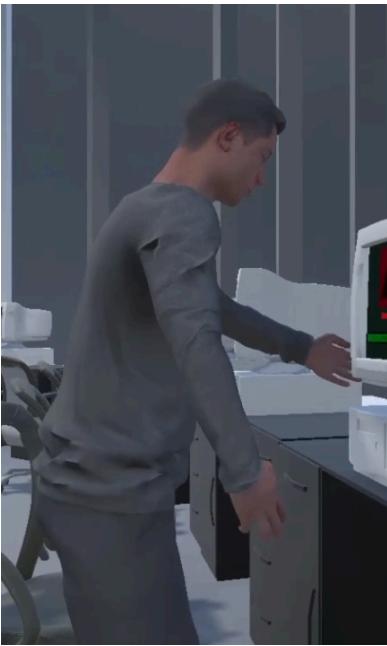
We are creating an animation that is based on our GDW game. Here is our story overview from our design document,

An immovable artifact was discovered in a mine deep underground. A government-owned company was tasked with building a small research facility around the artifact to investigate its properties. Research led to the discovery of multiple unique properties of the artifact. One such major discovery was that when energy was transmitted into the artifact, it would seemingly disappear and then reappear with a greater current/power. Through the promise of unlimited energy and military capabilities, the company was given funding to build a more advanced research facility to study the artifact. While studying the artifact, people noticed that they would hear things, almost like whispers. One day, while most of the people were out of the research facility, the artifact made contact with one of the workers. The artifact was manipulating the worker, trying to get them to overload the artifact with energy. The worker refused but soon realized that they were losing control of their body. The artifact started taking control of the worker. The worker possessed by the artifact, waited for everyone to leave the lab.

Once the lab was empty, the worker pressed the energy emitter button and released the full capacity of it into the artifact. They then ran out and hid. Soon after, our characters realized they had forgotten something in the lab. They entered the lab and noticed something was wrong. They rushed over to the terminal and tried stopping it, but it was too late. They looked up at the artifact and noticed it was absorbing everything around it. Suddenly, an explosion shot out from the artifact, knocking back all the surrounding items. Tentacles started growing out of the artifact, soon covering the whole facility. Communication between the lab and the outside world suddenly stopped and unexpectedly, the facility sealed itself off. Months later, the world has changed drastically. The sky darkened, plants died, animals went extinct, and civilizations fell. Sickness and monsters run rampant and no one outside of the lab knows the cause.

Master Feature List	Used In	Asset
Selection Arrows [Interactive]	Animating selecting buttons in the UI	 
Warning Symbol	Animated in UI to communicate warning	 
Progress Bar	Animated in UI to communicate initialization progress	
Computer	Holds main UI, acts as a physics object for explosion	

Chair	Acts as a physics object for explosion, and communicates to the player that someone was sitting at the main scene computer	
Stack of Papers	Acts as a physics object for explosion	
Desk	Acts as a physics object for explosion. Used as a surface for the computer	
Artifact	Main target of the scene. Communicates story and draws interest	
Explosion Effect	Scene event	
Warning Light	Communicates the idea that something has gone wrong in the scene.	

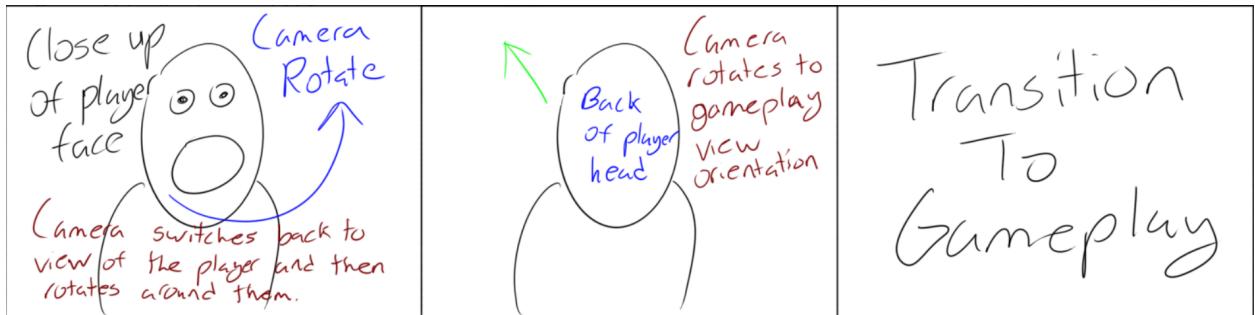
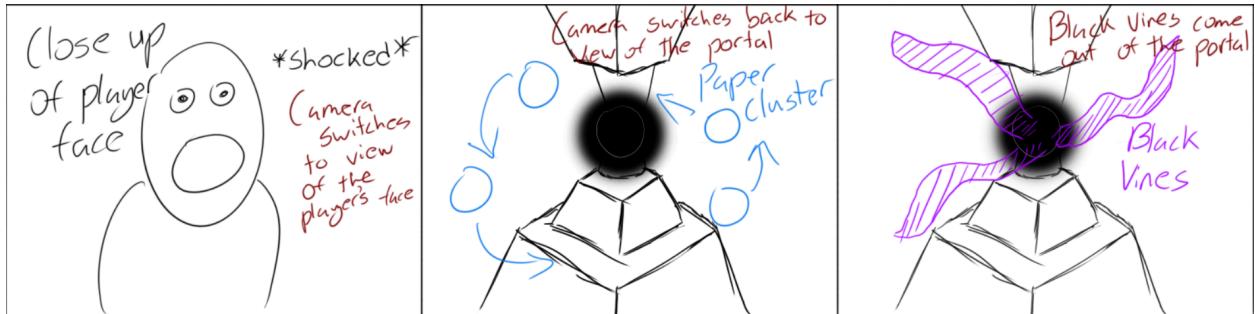
Flying Papers	Creates secondary animations around the artifact to make the scene more interesting.	
Artifact Eye	Draws attention to the artifact. Always pointed directly at the camera.	
Black Vines/Tentacles	Serves as secondary animations and communicates that the artifact is alien-like.	
Door	Draws the player's attention to what comes through the door.	
Character	Directs the player to what they should be paying attention to in combination with the camera angles. Communicates emotion and state of different points in the scene.	

References

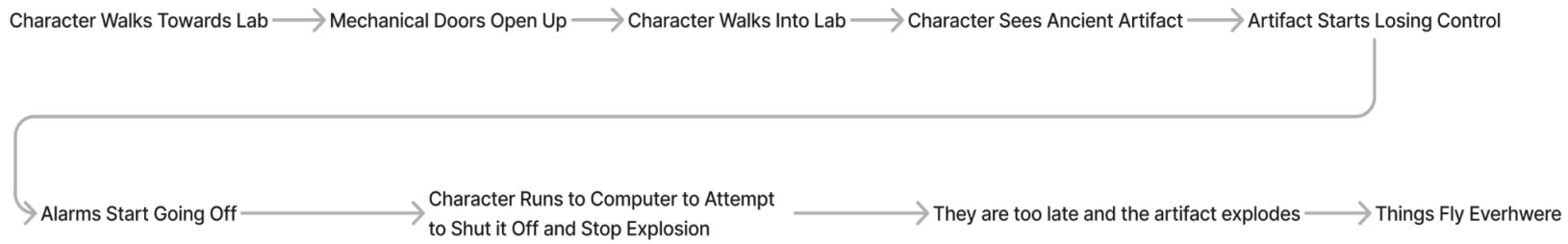
https://miro.com/app/board/uXjVLacZCfo=/?share_link_id=910172709752

Storyboard





Flowchart



Menu

- <https://www.youtube.com/watch?v=HLddFvCOFyU>
- For our game menu and UI, we will be using an old school style computer that will function as our menu. The menu will show a warning message to the player that blinks every second and display two options. The options will be “activate” or

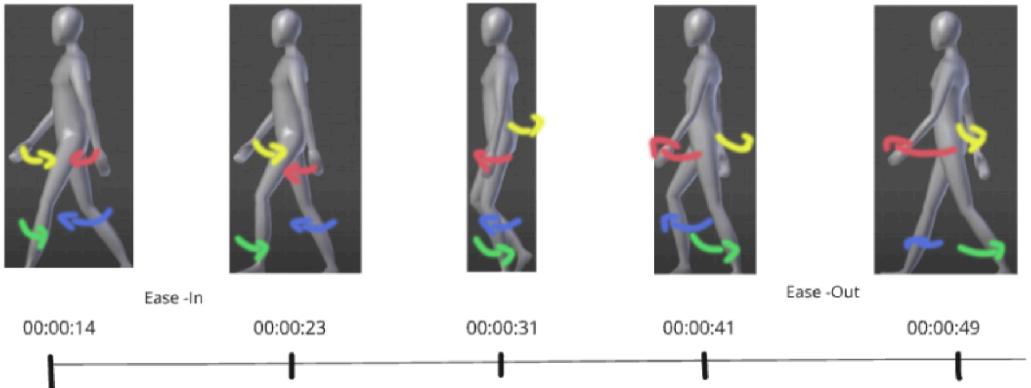
“deactivate”. The player will only be able to select the activate option and this will cause a green loading bar to appear. The loading bar will take a couple seconds to get to full which then causes the animation to begin. The menu will have the computer screen be animated with the red warning message flashing on the screen. Additionally, the buttons will be animated when the player selects an option. There will be an arrow on each side of the option the player is selected on, indicating that they are currently selected on that option. These arrows will be animated and blinking on and off every second.

Player Walking

- <https://www.youtube.com/watch?v=qFf5eGCjUUg&t=2s>
- This animation contains our main character walking. The animation appears to be relatively smooth. From the 12 animation principles, we have a solid drawing with the model, timing, follow-through / overlapping action, and ease-in and ease-out. There appear to be around 25 bones. Looking at the image below, there appears to be one bone in the head, 2-3 within the chest and stomach, one in each shoulder, two in each arm, about four per hand, three for each leg, and then a couple of bones in each foot. This doesn't include the facial bones which we will add for facial expressions. We will approximately have 30 bones for the face. The movements appear to be relatively simple, slightly moving only a couple of bones at a time to make the character walk. The animation looks pretty fluid and realistic with how the bone appears to move.



Primary Key Motions



- Right Arm Starts In-Front
- Right Leg Starts Back
- Left Arm Starts Back
- Left Leg Starts Forward
- Right Arm Starts Moving Back
- Right Leg Starts Moving Forward
- Left Arm Starts Moving Forward
- Left Leg Starts Moving Back
- Right Arm is Beside Body
- Right Leg is Beside Body
- Left Arm is Beside Body
- Left Leg is Beside Body
- Right Arm Starts Going Back
- Right Leg Starts Going Forward
- Left Arm Starts Going Forward
- Left Leg Starts Going Back
- Right Arm Ends Back
- Right Leg Ends Forward
- Left Arm Ends Forward
- Left Leg Ends Back

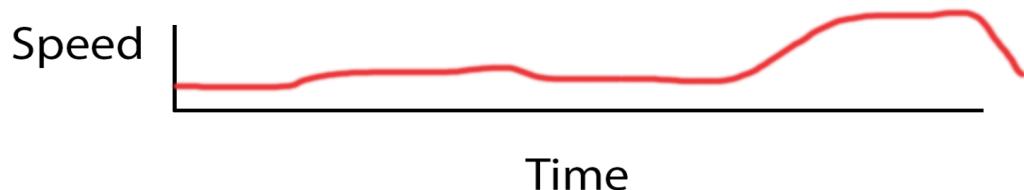
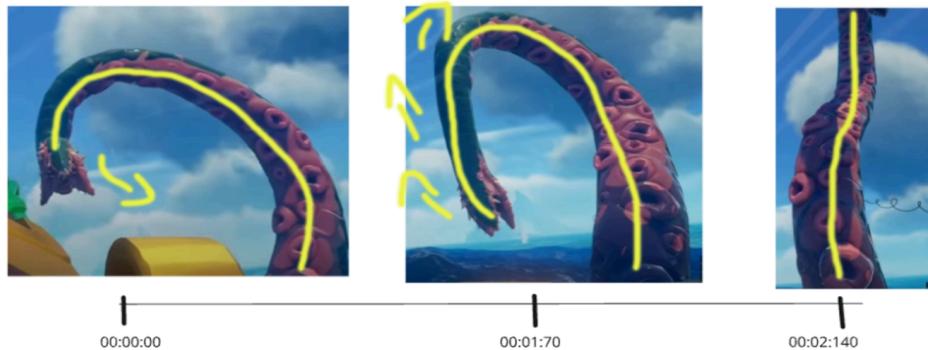
Vines

- For our project, we will be having vines that expand out from the portal. These vines will act as a dynamic object in the scene. As our main reference, we used the *Sea of Thieves* kraken tentacles. This is because the way the tentacles twist, turn, and the smoothness of it is what we want to replicate with our vines. The tentacles in the video appear to be using a spline to animate their movement. We will also be using a spline to implement the movement of our vines. The vines will move relatively fast as they expand throughout the scene.

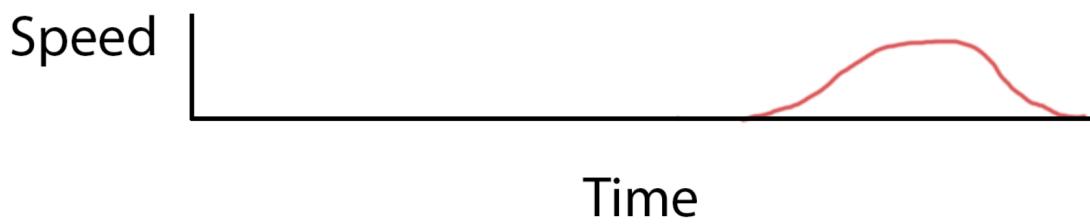
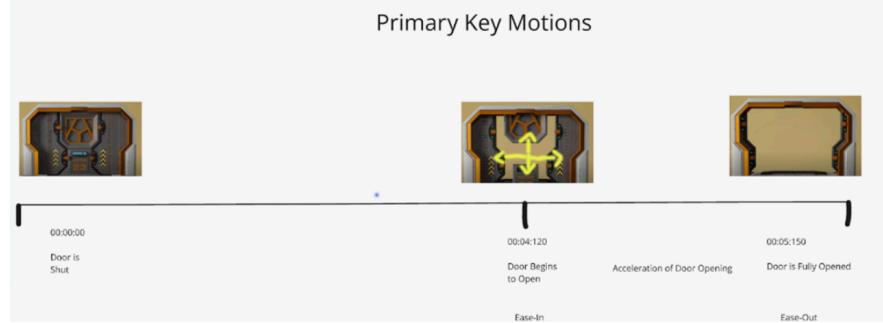
Doors

- <https://www.youtube.com/watch?v=jeonUvtEnZA&t=1s>

Primary Key Motions



Primary Key Motions

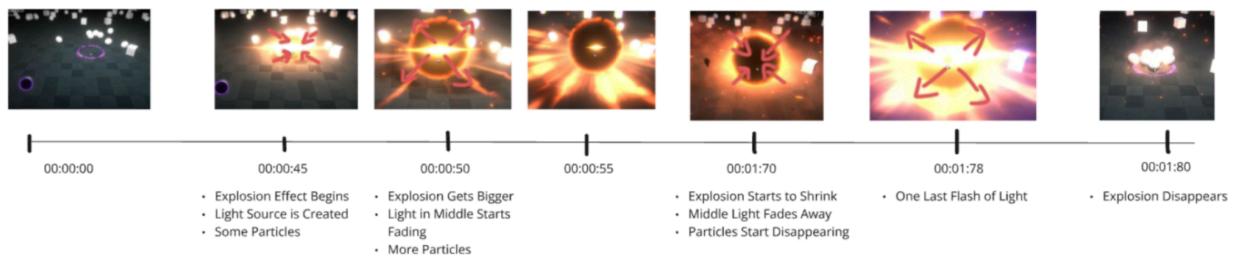


- Our animation opens with metal doors opening up. We found these two

references that we like and are using as a guideline for our animation. We like the smoothness of the animation as well as the theme of the doors. The door looks very ominous and like something important is hiding behind it. The little details like the latches and the red light security system imply that this is a high-tech facility which is what we were going for. The door appears to have a slow-in and a slow-out effect on the animation as the door opens. There are some secondary actions on the door as it opens up. We see some latches that unlock as well as the security system turning from red to green, indicating that it is unlocking. The latches as well as the actual doors are dynamic components of this animation. It also adds an anticipation factor.

Explosion

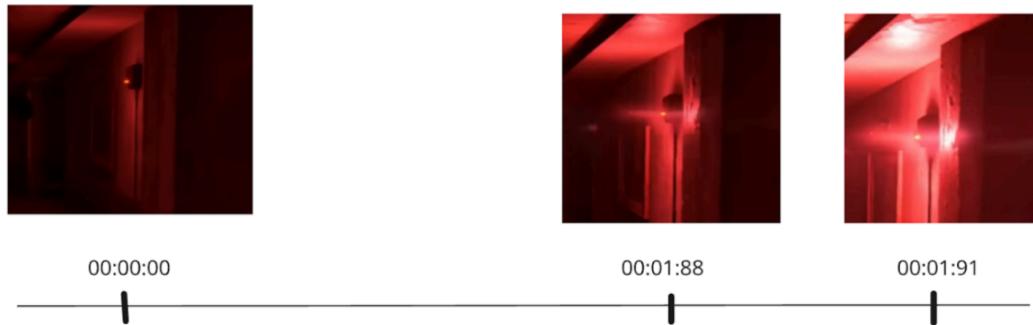
- The explosion effect will act as an environmental animation. We really liked the smoothness and the visual effects of the animation within the reference video. The effect uses appeal to make it interesting with the different colors and particles and usage of shaders. There is also some anticipation with the build up of the explosion effect. In our project, we will be using this to simulate an explosion.



Red Alarm

- The red alarm will act as both a dynamic object and an environmental object in our scene. We will have the alarm animated so that a red light is flashing on and off. This will be a simple transformation of the light being turned on and off. This will be a 3D model and will turn on and off based on the timer. Approximately, every second the light will flash red. The light will have 2 states. These states are on and off.

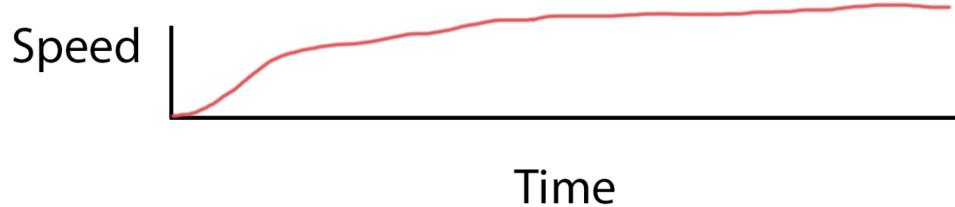
Primary Key Motions



Papers Flying

- The flying papers will act as both an environmental object and a dynamic object. We will use the wind feature in blender to create the effect on the paper objects, making it look as if the papers are being flown around. The papers will be 3D models that will be scattered around the environment. When the explosion happens, the effect of the explosion will cause the papers to fly around the scene, scattering them throughout the area. The papers will have two states. These states are stationary and flying.

Primary Key Motions



Analysis

After working on the finalized version of the animation, we had some changes that we made to the original plan we had. The first change that we made was with the explosion effect. Originally, we were going to make the explosion effect in Blender. We decided that we would instead do this in unity. This is due to the fact that creating this effect in unity would be much easier. Additionally, it would allow us to reuse the effect in the future and allow us to optimize it for the game engine. It also gives us the control to change it later if need be.

The second thing we changed was the secondary action of the door. We changed this due to the model that we acquired for the animation. Because this

assignment and class are focused on animations rather than modeling, we decided to use stand-ins for our models. The model we found for the door didn't have a way for us to use any secondary actions for free.

The third change we made was black vine animations. Originally, we intended to animate the vines using inverse kinematics. We decided to change this by using a damped track constraint on the bones of the vine to create smooth, automatic movements.

Finally, the last change we made was to the flying papers. We originally planned to use a wind effect to make it look like the papers were flying around. The issue with this was that it didn't give us enough control over the papers. We instead altered this to use a combination of wind, turbulence, and vortex forces as well as cloth physics to simulate the papers flying around. We used a collision sphere that allowed us to control what area the papers stayed in. This sphere then uses bezier spline interpolation to move so that the papers are forced to follow a predefined path.

In the process of making our final animation, we used a lot of different animation techniques. One of the techniques we used was morphing. We used morphing to animate the facial expressions of our character. We used a model that we found online that came with morph targets. We used and controlled the morph targets to create the facial expressions shown in the final animations.

Another animation technique we used was splines. We used splines to create pathways for certain objects within the scene. For example, for our paper animation, we have a sphere collider on a set spline pathway. This is so that we can control exactly where the papers fly around.

We also used inverse kinematics in creating the character body animations to help make the process easier.

Reflection

After finishing up the assignment, we feel that the animations successfully contributed to the overall experience of the scene. We successfully created the animations that we set out to create as detailed in the stage 1 submission with our references and our prototype. In making our scene, we focused on using the 12 animation principles to help make the scene come to life and feel believable. We focused on using anticipation, staging, slow in and slow out, timing, and appeal. These animation principles were important to us for a variety of reasons. The anticipation allowed us to prepare the viewer for what was about to happen. This is important because it allows us to build suspense and tension which was an important part of our scene. We carefully used staging so that we can direct the viewer's focus on what is happening in the scene. This was important because we wanted the watcher to pay attention to the important details of our animations so that they could grasp the story. Using slow-in and slow-out made our animations seem more realistic. This is because real objects have acceleration and deceleration as opposed to just starting and stopping abruptly. This ensured that our animation looked more realistic. We carefully planned out our timing so that our scene would play out as realistically as possible and so that we were carefully directing our viewer's attention to one thing at a time. This allows us to tell our story better and not overload the viewer with too much information at once. Lastly, we used appeal to make our scene seem interesting visually. We did this by selecting models that we found

would be appealing and appropriate for the scene. All of these contribute to the overall experience of the viewer by making our scene more believable, making sure actions are clear, and creating an engaging scene.

Asset References

- Human
 - [Humano Free Animated - Man Standing talking 5387-ST3 | Fab](#)
- Chairs
 - <https://sketchfab.com/3d-models/office-chair-41973aa1808d4a13b84c24497fc77c63>
- Desk
 - <https://sketchfab.com/3d-models/table-9f8576d74eda4fc6a591c0431d6d4b9a>
- Computer
 - [Retro-Computers - A 3D model collection by HansWurschd - Sketchfab](#)
- Papers
 - [Paper debris | Fab](#)
- Door
 - [Sci-fi Doors | Fab](#)
- Light
 - [SciFi Light 04 - Download Free 3D model by inuhitman \(@inuhitman\) \[97461e7\]](#)
 - [Industrial Wall Light | Fab](#)

Materials

- Wall Material
 - [Concrete Wall | Fab](#)