3. PRODUCTION

3.1 Pre-visualization

To begin the previsualization process, we recorded ourselves and created a live-action test video to experiment with timing and mock up the camera shots. Once we were satisfied with the results, we developed an animatic based on that footage. While the animatic served as a useful reference during the early stages of animation, it ultimately was not used extensively, as several significant changes were made to the story during production.

3.2 Modelling and Texture

3.2.1 Character Modelling

Catherine, the main character of *Hide & Seek*, was designed to look innocent and vulnerable. Her full body, including the head, hair, and eyes, was initially sculpted in ZBrush which were then moved to Maya for retopology. Her outfit was inspired by Victorian-era children's sleepwear, chosen to reinforce the period setting. The clothing itself was first created using Marvelous Designer. After the garments were built, they were exported and retopologised in Maya to ensure clean, animation-ready topology. Her shoes were also modelled directly in Maya to match the rest of her wardrobe.

The doll is the main antagonist of our short movie. Her base body was initially modelled using the character Catherine as a foundation, which was then significantly modified in ZBrush. One of the key alterations involved rounding the cheeks to create a more porcelain doll appearance. Unlike the other models, her eyelashes and eyebrows were not modelled; instead, these facial features were hand-painted in Substance 3D Painter to preserve the stylised, toy-like look. Her costume, including the dress, headdress, and ruffles was fully modelled in Autodesk Maya.

The father character's design is inspired by Victorian-era menswear, which is characterized by its formal and structured, multi-layered silhouette. For the production, the character's body and hair were sculpted in ZBrush. The clothing base mesh was modelled in Maya, then brought into ZBrush for high-resolution detailing, such as seams and folds.

All of the models were baked and textured in Substance 3D Painter, utilizing custom shading to emulate a 2D, illustrative aesthetic. Hand-painted details were incorporated to maintain the stylised feel, especially on the face and clothing area.

Image 3.1 Catherine Final Look

Image 3.2 Doll Final Look

Image 3.3 Father Final Look

3.2.2 Environment Modelling

To match the narrative's setting and character profiles, the 3D environments were developed with a distinct Victorian-era aesthetic. The world is composed of three primary locations: a Child's Room, a Hallway, and a Father's Office, each designed to evoke a specific mood.

The asset creation pipeline began with base modelling in Autodesk Maya. For objects characterized by significant curvature or protruding details, a high-poly sculpting pass was performed in ZBrush to add intricate surface information. Following this, the assets were imported into Adobe Substance Painter for the texturing phase. The final textures were rendered in 2K. The intended art style was a form of stylized realism, blending realistic material properties with artistically rendered 2D-style shadows. To maintain efficiency, smaller or less visually important assets relied on height map data within Substance Painter for fine details, rather than complex geometry.

The design choices for each room were deliberately tied to the story's progression. The Child's Room was furnished with soft, rounded forms and blunted edges to create a safe and innocent atmosphere, reinforced by a bright yellow colour scheme that reflects the child's cheerful disposition. The Hallway was treated as a neutral transitional area, featuring a muted and non-distracting palette. In contrast, the Father's Office marks a tonal shift towards horror. Here, the colours become dull and intimidating, dominated by red, while the furniture's design becomes pointed and sharp, creating a visual language of danger that directly opposes the safety of the child's room.

Image 3.4 Final Render of Bedroom – Day

Image 3.5 Final Render of Hallway – Day

Image 3.6 Final Render of Office – Lit

3.3 Set Design

Once all the assets were completed, they were compiled into their respective scenes within Autodesk Maya. All environment assets were organized into separate Maya files based on location. Instead of splitting the project by individual shots, we grouped shots based on their environment. This approach allowed us to focus on one location at a time, streamline our asset usage, and avoid unnecessary duplication across scenes.

Due to significant changes made to the story during production, we did not rely on our initial previsualization. Instead, camera angles were planned and adjusted directly during the animation phase.

To create a consistent atmosphere as the story progresses from one room to another, the visual tone gradually becomes darker. Since the mood intensifies toward the end of the movie, the furniture in the child's room features brighter colours, while the father's room shifts to a darker palette. Most of the environment was designed by Fransiska, especially the hallway and the father's office. Some of the furniture in the child’s bedroom was created with the help of Wynne.

3.4 Rigging

The rig for the characters were made using Advanced Skeleton in Autodesk Maya. While there were some problems with using the rigging tool, it proved to be much faster than rigging it manually.

However, there were still elements that had to be done manually, like the weight painting and additional controller for the hair and skirt.

Image 3.7 Rigged Catherine

Image 3.8 Posed Catherine

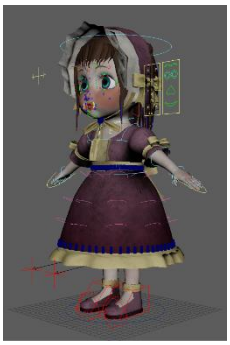

Image 3.9 Rigged Doll

Image 3.10 Posed Doll

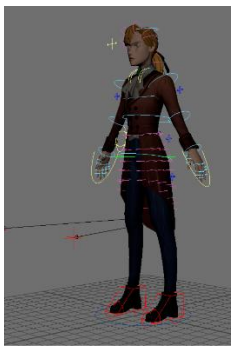

Image 3.11 Rigged Father

Image 3.12 Posed Father

3.5 Animation

To manage our time efficiently, the animation tasks for this project were divided among us. Wynne was responsible for all of the keyframe animations in the bedroom scenes, while Fransiska worked on the hallway sequences, and Gilbert handled the office.

All animation was done in Autodesk Maya, starting with blocking, where we lay out key poses and timing to establish the character's movement. We continued into the polishing phase using the graph editor to refine the fluidity, arcs, and weight to the movements.

In addition to the characters, furniture and props in the bedroom were also animated to enhance the atmosphere and storytelling. These were primarily animated using blendshapes, which allowed for distortions. To optimize performance and reduce simulation load, these animations were baked afterward, minimizing render strain without sacrificing visual quality.

For the hair and clothes specifically were achieved through simulation, using Autodesk Maya's integrated nCloth and nHair systems. This task was solely handled by Gilbert, who was responsible for setting up, adjusting, and refining all dynamic simulations throughout the film.

Image 3.13 Keyframe Animation

Image 3.14 Simulation Process

Image 3.15 Baked Animation for Furniture

3.6 Rendering

Rendering began before all of the animations were completed. This was done because we were short on time and Arnold render, which we used to render the entirety of the film, takes a long time. As such, we had to reduce the render samples and instead rely on image denoiser to maintain visual quality without significantly increasing render times.