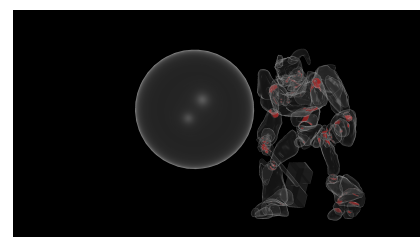


Mesh Snapping (Master's Project)

Shot 16 - 17 | 0:56 - 1:01 | Software: Houdini

- Developed an algorithm to ensure feet stay precisely on the ground with the option to pull the character into the ground or lift off the ground with a consistent distance offset.

Roles: Mesh Snapping HDA Tool Development (VEX, HScript)

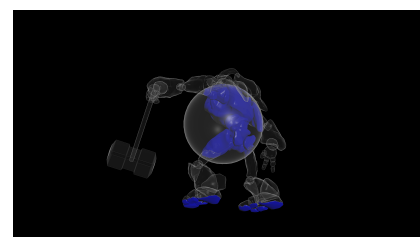


Self-Collision Detection (Professional Project)

Shot 18 | 1:01 - 1:03 | Software: Houdini

- Developed an algorithm that casts rays internally and checks orientation of intersected geometry to determine if character has a self-collision at that point, and if it does, then colors that point red.

Roles: Self-Collision Visualizer HDA Tool Development (VEX, HScript)

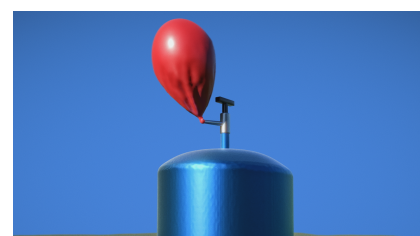


Procedural Eye Meniscus (Professional Project)

Shot 19 | 1:03 - 1:07 | Software: Houdini

- Developed an algorithm that casts rays internally and checks orientation of intersected geometry to determine if character has an external collision at that point, and if it does, then colors that point blue.

Roles: Self-Collision Visualizer HDA Tool Development (VEX, HScript)



Balloon (Master's Project)

Shot 20 | 1:07 - 1:13 | Software: Houdini, Davinci Resolve

- Procedurally modeled helium tank and balloon
- Created simulation setup that could be triggered to inflate balloon on user-defined start frame

Roles: Modeling, Layout, FX, Lighting, Lookdev, Color



Rats (Master's Project)

Shot 21-24 | 1:13 - 1:19 | Software: Houdini, Fusion, Davinci Resolve

- Wrote and directed a scene of rats engaged in a toothpick sword duel over cheese
- Procedurally modeled, rigged, and fur groomed characters
- Manually keyframed every foot step to ensure feet connected with the ground properly

Roles: Cinematography, Character Modeling, Fur Grooming, Rigging, Layout, Motion Editing, Lighting, Lookdev, Compositing, Color



Echoes of the Wild | Cinematography (Master's Capstone Project)

Shot 25 - 26 | 1:19 - 1:25 | Software: Houdini, Davinci Resolve

- As Director of Photography for my Master's Capstone Project, I meticulously planned every VFX shot in coordination with Director and Producer and executed the plan on the shoot
- Scanned every scene's environment using photogrammetry to provide spatially accurate scene geometry to match every shot's scale with precision and accuracy

Roles: Photogrammetry, Cinematography, Color



Echoes of the Wild | Flying Echoes Simulation (Master's Capstone Project)

Shot 27 - 28 | 1:25 - 1:31 | Software: Houdini, Davinci Resolve

- Collaborated with the director to bring vision for the flying echo creatures to life
- Developed a procedural system that enabled fine-tuning of the flying creature's behavior through parameterized controls

Roles: Cinematography, FX, Color



Collision Deformer (Personal Project)

Shot 29 - 31 | 1:31 - 1:36 | Software: Houdini, Fusion, Davinci Resolve

- Developed an algorithm to detect collision depth as a compression value which drives the outward squish amount to maintain physically accurate volume with manual user controls
- Optimized to run in realtime for fast iterations, and is much faster than simulation workflow

Roles: Collision Deformer Tool Development, CFX, Lighting, Lookdev, Compositing, Color