

CS148 Final Report

Grace Zhao, Abby Chen

Our Image



Reference Image



iPad art by Abby

Project Requirements

We leveraged the power of Ray Tracing by combining area, spot and point lights along with multiple emissive materials as light sources. In the final image, these came together as a cohesive whole to create an image with photorealistic lighting. Even though the wall and foreground are meant to be somewhat in darkness, the placement and type of lighting we used allowed for soft shadows and general visibility of our models. We also created the main geometry from scratch: Grace modeled the central pipes using cylinders and cubes, and used a plane with various extruded parts for the background wall. Abby modeled and sculpted the astronaut from scratch using a mixture of spheres, and also sculpted the foreground land. We also did UV mapping and texturing from scratch, namely through the water and warning signs. For the water, we textured it using material nodes through noise and a transparent BSDF. We similarly used material nodes and texture mapping for the warning sign. Finally, we implemented an advanced feature with Blender/Cycles through creating volumetric fog and using shader nodes. The combination of ray tracing, unique modeling and texturing, and implementing volumetrics allowed us to meet the project requirements.

Member Contributions

Grace:

- Created central pipes (2)
- Created the entire background wall
- Created waterfalls (3)
- Created pipes (14)
- UV mapped / textured all objects above
- Handled lightings
- Helped adjusting composition and adding details

Abby:

- Created astronaut
- Created trees (2) and tree branches (5)
- Created foreground
- Created clouds (5)

- Created warning signs
- UV mapped / textured all objects above
- Created volume fog
- Adjusted composition

Asset Categorization

Models found online:

- Rocks in the foreground (texturing was done by ourselves)
- Grasses in the foreground
- Birds (image)
- Industrial pipes (10) (the ones with joints and nails)
- Steel stairs (7)
- Air condensers (2)
- Background sky (image)
- Space suit's gloves and boots
- LED Lights (3)

Models made from scratch:

- Central pipes (2)
- Giant pipe behind the scene
- Thin pipes (14)
- Background wall
- Astronaut
- Foreground land
- Trees on the side (2)
- Tree branches (5)
- Warning signs
- Waterfalls (3)
- Clouds (5)

Sources

CGtradedder:

- Rocks: <https://www.cgtrader.com/free-3d-models/scanned/various/rock-pack-vol-2-free>
- Grasses/flowers:
<https://www.cgtrader.com/free-3d-models/plant/grass/grass-field-d9d4726c-1ea3-4c08-b59a-681473197e3b>

Sketchfab:

- Industrial pipes: <https://skfb.ly/6SsGZ>
- Industrial air condenser: <https://skfb.ly/oxOVT>

TopPNG:

- Birds image:
https://toppng.com/free-image/birds-flying-in-the-sky-PNG-free-PNG-Images_88496

Pexels:

- Sunset photo by Akkaya
<https://www.pexels.com/photo/vibrant-sunset-sky-with-colorful-clouds-29012876/>

YouTube Tutorials:

- Clouds: [Clouds in Blender: Secrets for Fast Rendering](#)
- How to import materials: [Blender 3.4 - Instantly Set Up PBR Materials](#)
- Volumetrics: [Everything About Volumetrics in Blender - Tutorial](#)
- Volumetrics 2: [Create Volumetric Fog in Blender!](#)
- How to quickly make pipes: [the best way to model pipes in blender](#)
- How to split screen: [Blender how to split screen and remove split screen](#)
- How to make objects glow: [Make Objects Glow in Blender 4.3](#)
- Texture mixing: [Perfect Textures in Blender - Works Every Time](#)
- Show overlays: [Can't see Grid, Selections or Axes in Blender? \(Show Overlays\)](#)
- Manage massive scenes: [How to manage massive scenes - Quick Blender Tutorial](#)
- Realism: [The Key to Realism in Blender \(or 3D\)](#)

- How to fix texture stretching: [▶ How to Fix Texture Stretching in Blender!](#)
- Fix viewport clipping: [▶ Fix Camera or Viewport Clipping Problem | Blender Tutorial](#)
- How to separate joined meshes: [▶ Blender How To Separate Joined Meshes.](#)
- How to use bevel tool: [▶ Blender 3.4 - Bevel Tool](#)
- UV unwrap: [▶ How to unwrap an complex object in blender](#)
- Waterfall: [▶ Blender Waterfall Tutorial](#)