



Sunset at a Cottage by the Creek

CS148 Summer 2023

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Individual Project (No Group)

Project Requirements

Requirement	Evidence
Leveraging the power of ray tracing	<p>My composition makes heavy use of reflections in the creek and the windows. These elements are poorly reproduced in a scanline re-rendering of the scene.</p> <p>Additionally, advanced material properties like transmission and subsurface scattering were used in numerous elements, including the creek, lily pads, and glass.</p>
Main geometry from scratch	<p>The cottage and the creek are the primary focal points of my composition. I created the geometry for these elements entirely on my own without aid of tutorials or external assets. The only external geometry used was for the grass tussocks, the flowers, and two rocks.</p>
UV mapping and texturing from scratch	<p>I UV unwrapped and textured a number of geometries. The cottage roof is a prominent example, where you can observe a repeating tile texture.</p> <p>I also utilised procedural techniques to create custom textures. I followed tutorials to create procedural bark and stone textures, then used that knowledge to create a procedural lily pad texture on my own.</p>
Blender/Cycles advanced feature	<p>Depth of field is used subtly to draw viewers' eyes towards the cottage. The grass, rocks, and flowers in the bottom-left of the image were originally too salient, so by simulating a narrower aperture, they are tastefully blurred. This also showcases the advanced capabilities of cycles.</p>
Sources cited	<p>See later in the document.</p>

Project Assets

MADE FROM SCRATCH

Cottage • Surrounding Landscape • Creek • Fence • Lily Pads • Rocks • Particle System Configurations • Geometry Nodes

I modelled the cottage from scratch with basic hard-surface techniques and some modifiers that I learned throughout the quarter. I then applied textures to the geometries, UV unwrapping where necessary to apply textures I downloaded from Polyhaven.

I had a specific composition in mind when creating the terrain, and used sculpting techniques to carve out the creek, general terrain features, and the gentle hills in the background. The creek banks in particular required a lot of attention, and I used reference images to help.

The creek stone geometries were procedurally generated with geometry nodes, as was their random distribution. Then, I applied a custom procedural texture, making them an entirely procedural element. Though they seem small, I'm really proud of these rocks.

The fence is another procedural element. I modelled four base fences and created a path for them to follow. I then mapped the path to the terrain so that fence would sit properly on top, and set the posts to follow along the path. I UV unwrapped the base fences and applied a modified version of an earlier texture used in the house.

GENERATED WITH HELP FROM ADD-ONS OR TOOLS

Trees (Sapling Tree Gen Add-On) • Sunset Texture (Midjourney)

The Tree Gen Add-On helped me to quickly create custom tree geometries for my scene. I found the Add-On to be difficult to use at first, but it was still much simpler than modelling the tree and its leaves from scratch. I then applied a procedural bark texture to the trunks for increased realism.

The scene's environmental lighting mostly comes from a single HDRI background sourced from Polyhaven. However, I wasn't happy with the lack of saturation in the sky, so I used an image texture I generated with Midjourney placed on a plane in the background to add colour and further motivate the light.

SOURCED FROM INTERNET

Grass Tuft • Pink Flower • 2 Large Rocks • HDRI Background

Along with my image textures and HDRIs sourced from Polyhaven, I also downloaded some models from the internet to use in my particle system. In particular, I downloaded some grass and flower geometries to be scattered around the scene for use in ground cover, as well as two large rock models to be placed in specific places in the scene.

Resources Used

TUTORIALS

Procedural Rock Cave Wall Material	https://youtu.be/Bs2El4J0vcc
Procedural Tree Bark	https://youtu.be/6ECeHoATa74
Dynamic Fence using Geometry Nodes	https://youtu.be/IFVZd3Utt0U
Geometry Nodes from Scratch	https://studio.blender.org/training/geometry-nodes-from-scratch/

TEXTURES

Assorted Textures	https://polyhaven.com/
Generated with Midjourney	https://www.midjourney.com/

ADD-ONS AND TOOLS

Sapling Tree Gen Add-on	Included with Blender
Midjourney	https://www.midjourney.com/

ASSETS

The Plant Library	https://blendermarket.com/products/the-plant-library
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