

CS 148: Introduction to Computer Graphics Final Project

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1920 x 1080

Concept

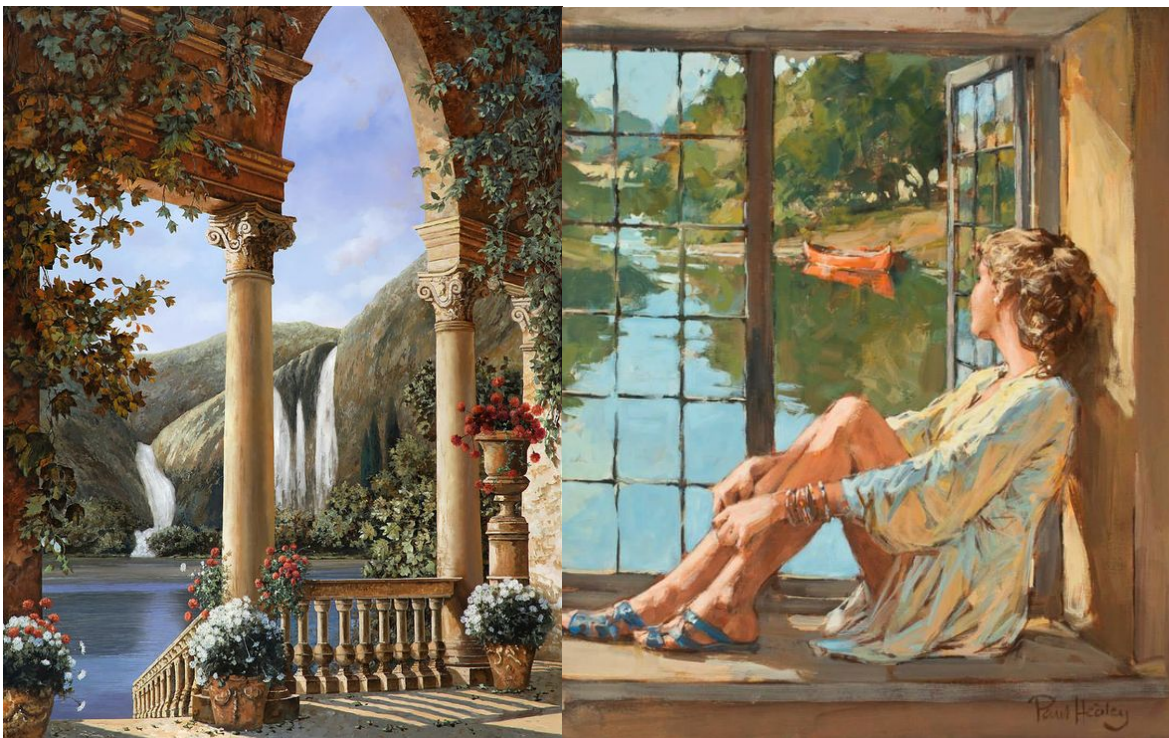
The scene draws inspiration from Greco-Roman architecture and warm, natural island scenery with an overgrowth of foliage and ruins of some sort of temple. I wanted to create a warmly-lit atmosphere that seemed out of a fantasy, utilizing a ton of global illumination effects as well as somewhat of a bloom effect, depth of field, procedural methods, and custom texturing and geometry. The scene itself was meant to be a step past realism, where everything looks very painterly and artistic but it ventures a bit into a dreamscape.

The viewer is meant to be peering into this moment from afar, hence the effect created by adding bushes right in front of the camera. We can see a vast natural landscape and the woman, who is just off-center, as a primary focus. I wanted to include many small details from the cracks in the wall to the birds in the background to the leaves on the floor.

References



Above is my own mockup of what the general composition of the scene should look like. Below are some photo references for inspiration of this scene:



Assets



Number	Name	Source
1	Columns (3)	Self, modeled in Blender Textured in Substance Painter
2	Wall	Self, modeled in Blender Textured in Substance Painter
3	Large flower pot	Self, modeled in Blender Textured in Substance Painter
4	Red roses (2)	DownloadFree3D Elvina , Archibase
5	Pink roses	vandoan , Turbosquid
6	Railing (3)	Self, modeled in Blender Textured in Substance Painter
7	Floor/Ceiling	Self, modeled in Blender Textured in Substance Painter
8	Human	Original rig by cvbtruong , Turbosquid , (modified geometry) Posed in Autodesk Maya Textured in Substance Painter Hair particles modeled in Blender

Number	Name	Source
9	Dress	Self, modeled in Blender using cloth simulation Textures: Katsukagi, 3DTextures (modified)
10	Vines	Self, modeled using IvyGen in Blender Leaf Texture: ROSTISLAV, Turbosquid
11	Foreground bushes (2)	MarkAlis, CGTrader
12	Background bushes (2)	frycekpolska1994, Turbosquid
13	Birds (2)	umar6419, Free3D
14	Water	Self, procedurally modeled in Blender
15	Mountains (2)	Self, procedurally modeled in Blender Textures: Katsukagi, 3DTextures McPoly, Gumroad
16	Fallen leaves	marcusparisi, Sketchfab
17	Sky	Part Nishita sky Part HDRI: Sky: CGAxis Island: CGAxis

Variant A (960 x 540) - Different Angle



Variant B (960 x 540) - Gray Diffuse BRDF



Project Requirements

Geometry Modeled from Scratch

- Columns (3)
- Wall
- Large flower pot
- Railings (3)
- Floor
- Ceiling
- Dress (4 layers)
- Vines
- Water (procedural)
- Mountains (2) (procedural)

UV mapping and Texturing from Scratch

- Columns (3)
- Wall
- Large flower pot
- Railings (3)
- Floor
- Ceiling
- Human
- Water (procedural)
- Mountains (2) (procedural)

Custom/Procedural Material

- Water
- Mountains (2)

Cycles Features

- Depth of Field
 - Distance: 40 m
 - F-stop: 0.5
- Denoising (NLM)

Specific Techniques

Human + Dress

1. First, I imported the already-rigged female model into Maya and altered her body shape/overall geometry to create a unique figure. Then I posed her in a leaning/sitting position and exported the mesh into Blender.
2. I custom-unwrapped the UV seams for the new pose and textured the skin from scratch using Substance Painter. Maps include base color, roughness, displacement, normal, specular, and subsurface scattering.
3. For her hair (eyebrows, eyelashes, and scalp hair), I designated separate vertex groups on the mesh and generated particle systems for each, grooming each type of hair correctly and altering the kink, curl, and clump parameters.
4. The dress was first modeled as a basic plane around her body, and I then used physics-based cloth simulation in Blender to drape it around her torso and legs. After choosing the frames of the animation to my liking, I further altered the mesh until it hung as desired. I repeated this process twice to create two layers of the dress, and then duplicated the second to alter it even more and create the third layer, and again with the fourth layer.
5. Texturing the dress was part custom and part sourced from 3DTextures. I wanted the dress to be mostly tulle with a lace outer layer, so I created a custom tulle mask to be overlaid on top of a lace texture, and altered a different lace texture on top to appear larger and more prominent.

Bloom + Particle Effect

1. To create the glowy look of the scene I created a cube with a principled volume material of a light yellow/orange color and very low density. This would mimic god rays/sun rays that filter between the columns and strike the areas where the sun hits the wall's material.
2. I used the same participating volume material in the far background (farthest mountains) in a blue color to create a mist effect caused by distance.
3. Using a new cube in the foreground, I applied a particle system on a simple emitting sphere with another sphere of a more-dense principled volume material around it (to create tiny glowing balls). I lowered the scale of the particles and dispersed them throughout the cube like small specks of dust that the sunlight hits.

Vines

1. To create the vines, I used the Blender add-on IvyGen to randomize the branches for each cluster of ivy (on the left and right sides) and then converted the curves to meshes to resemble physical branches.
2. I applied a particle system to them using a plane (modeled to be a leaf), randomizing the scale and rotation across the branches.

Mountains + Water

1. For the water, I used a procedural geometry method on a very large plane to combine two noise texture nodes and a bump node to create the effect of ripples, simply acting as a normal map.
2. For the two mountains, I used a procedural method with a displacement node and noise texture node, varied with a ColorRamp, to change the height of a large subdivided plane. I was able to change the roughness and height of the mountain peaks, and also randomize the placement on the plane through a mapping node.