

CS 148: Introduction to Computer Graphics and Imaging

Fall 2025

Lighting & Camera

Final Project CA Section

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What We'll Cover

Scene
Demo

Lighting

Camera
&
Composition

Resources

Story

Scene Demo

Going from a scene with no light to a complete project.

Lighting #1 : Cozy restaurant table

- HDRI of restaurant – Visible on glass reflection
- Sunlight - Directional light through windows
- Volumetric rendering – God rays streaming inside

Lighting #2 : Magician's altar

- Emissive potions – Volumetric rendering
- Contrastive color lights – Fantastical
- Rim light – Dramatic, foreboding

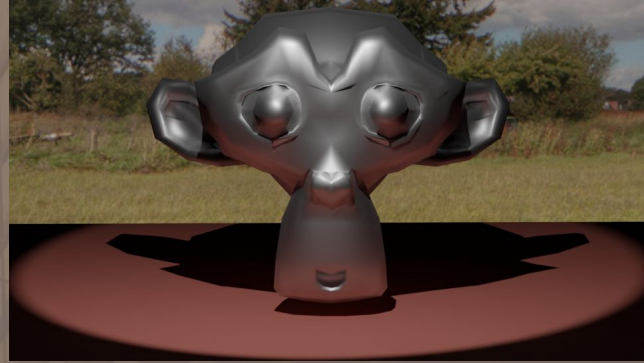


Lighting : Types of Light



Point

Emits equally in all directions. Adjust radius to soften shadows. Localized light source eg. lightbulbs, candles.



Spotlight

Emit cone light. Adjust radius to soften shadows, blend to soften cone edge, spot size for cone width. Flashlights, headlights.



Area

Emissive rectangular/elliptical surface. Adjust spread to focus/diffuse. Windows, screens.



Sunlight

Lights everything evenly. Adjust rotation for direction, angular diameter for atmospheric diffusion. Outdoors, sunlight, moonlight.

Lighting : Types of Light



HDRI

Ambient illumination, realistic outdoor and indoor lighting



Nishita Sky

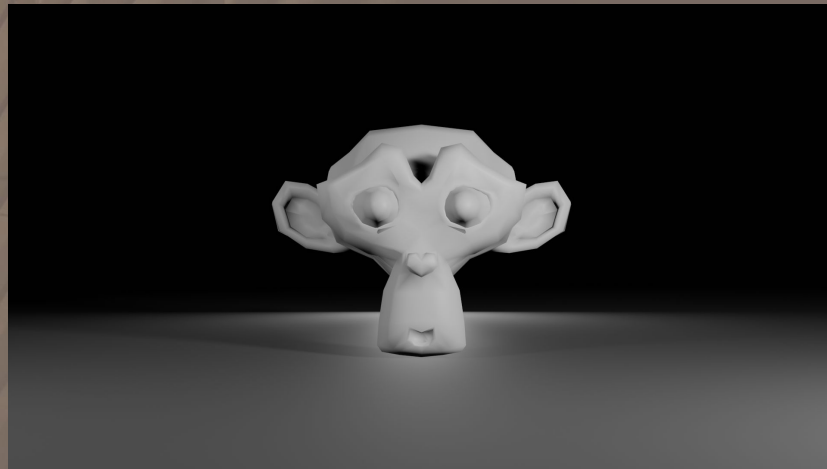
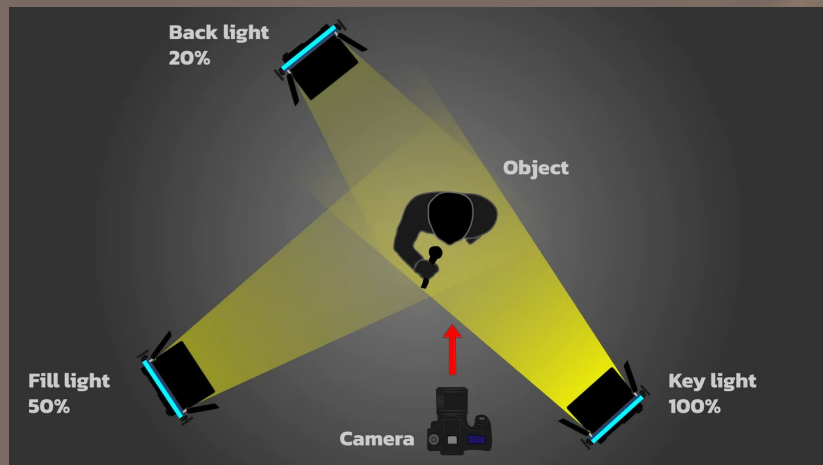
Realistic sky lighting dependent on sun position and atmospheric properties



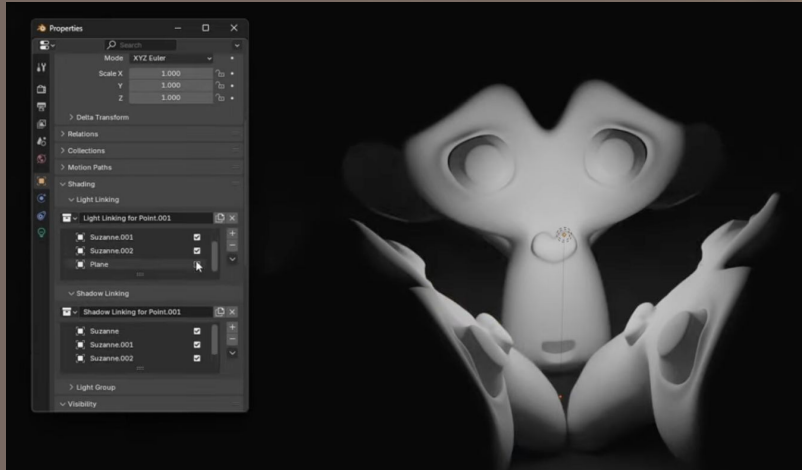
Emissive Geometry

Creatively shaped glowing objects, eg. neon signs

Three-Point Lighting

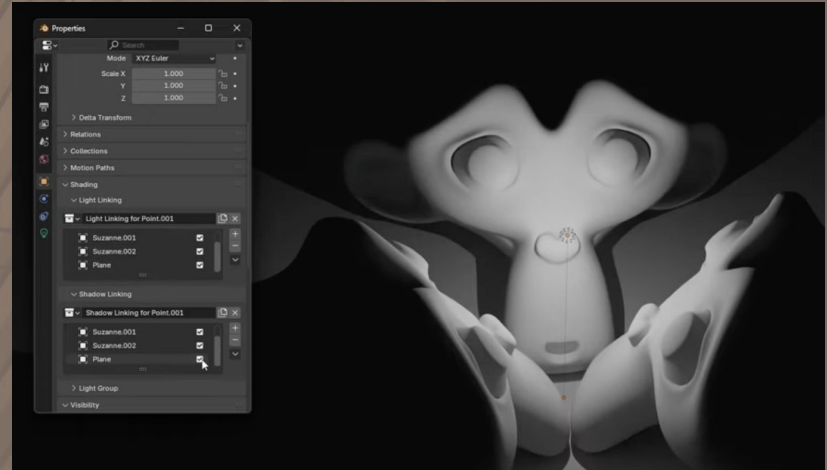


Light Linking, Shadow Linking



Light Linking

Control which objects are illuminated by a particular light source



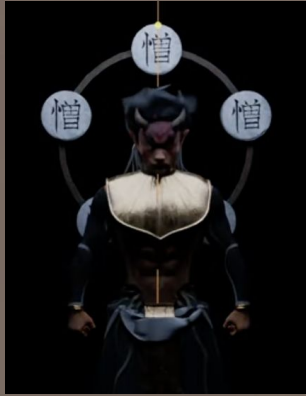
Shadow Linking

Control which objects create shadows due to a particular light source

Lighting & Story : Position



Above
Sunlight, natural.



Overhead
Indoor lights.



Side
Emphasizes form.
Duplicity, conflict.



Back
Emphasizes form
and texture.
Mystery,
anonymity.



Below
Emphasizes light
source. Eerie,
centered, dramatic.

Lighting & Story : Intensity



High Intensity

Creates focal point. One is more prominent than everything else.



Low Intensity

Moody, atmospheric. Attention is diffused. Balance.

Lighting & Story : Size



Smaller Light

Creates sharp shadows. Dramatic lighting.



Larger Light

Soft, diffuse shadows for natural look.

Lighting & Story : Shape



Keep in mind that the shape of your light shows on reflective surfaces and affects shadows.
Be creative with the shape of your light to get the effect you want!

Lighting & Story : Color Temperature



Warm Colors

Inviting, cozy.



Cool Colors

Calm, Mystery, Tension.

THIS IS NOT ABSOLUTE! Feel free to be creative with the unique atmosphere of your scene.

Lighting & Story : Color Contrast



High Contrast

Dramatic differences, intense storytelling, vividness.

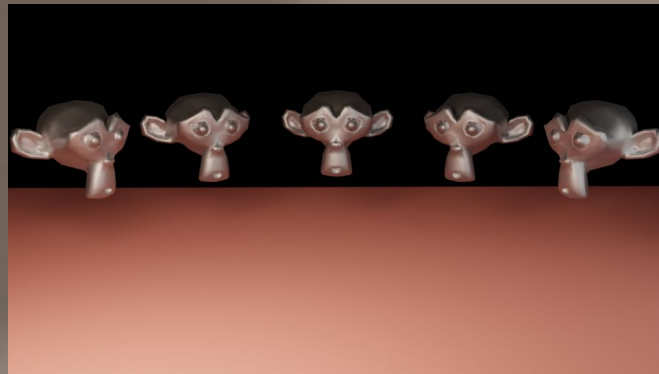
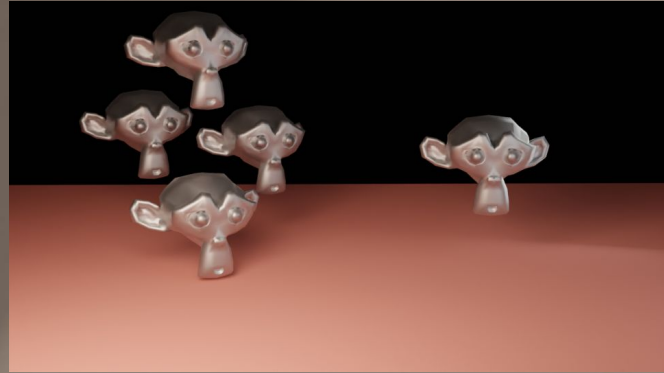
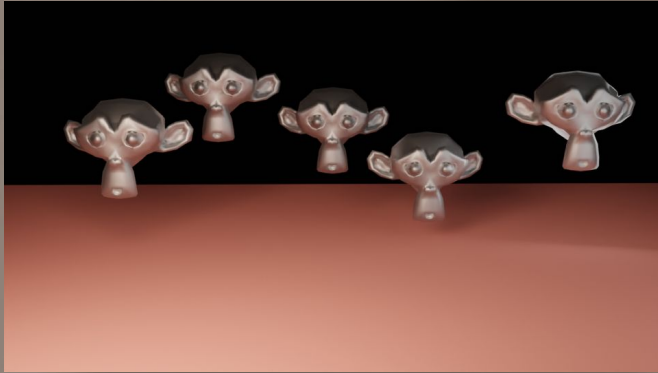


Low Contrast

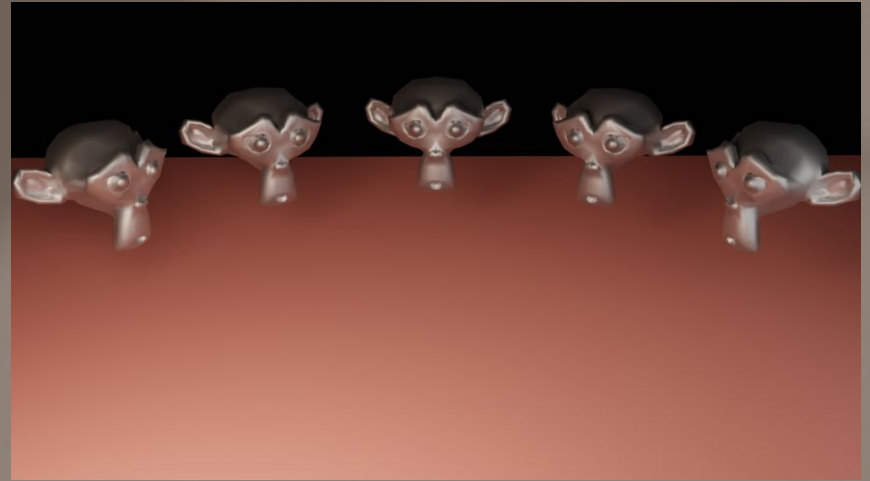
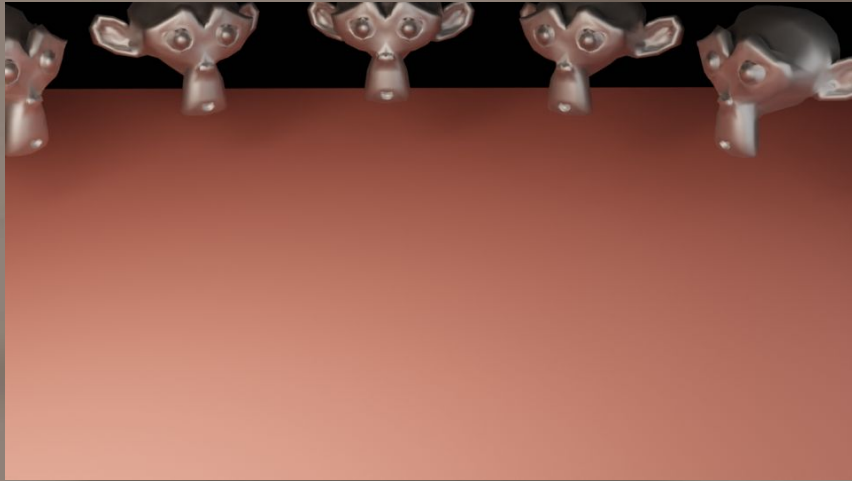
Soft, harmony, calm, natural.

Composition

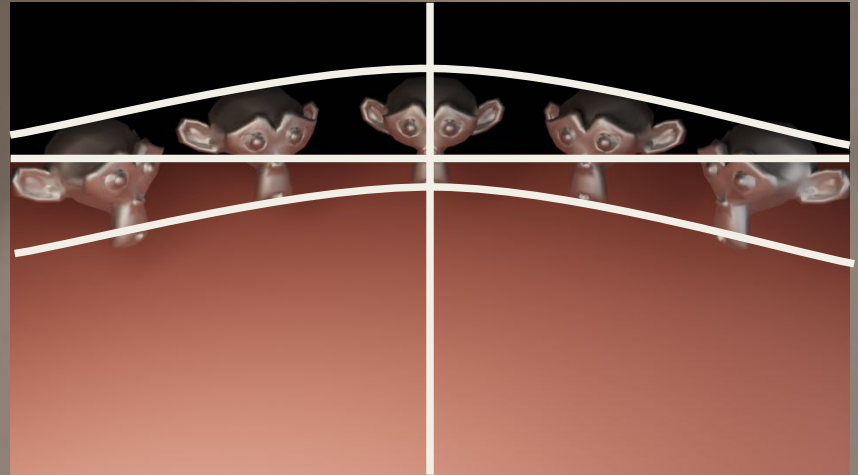
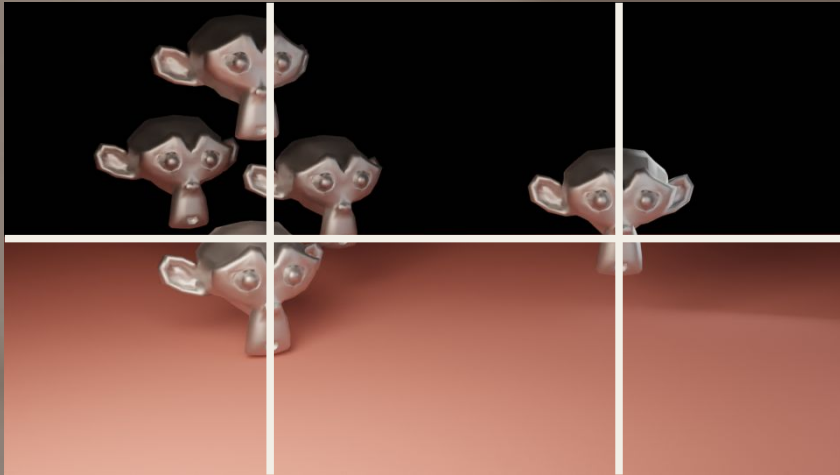
Composition : Where are your objects?



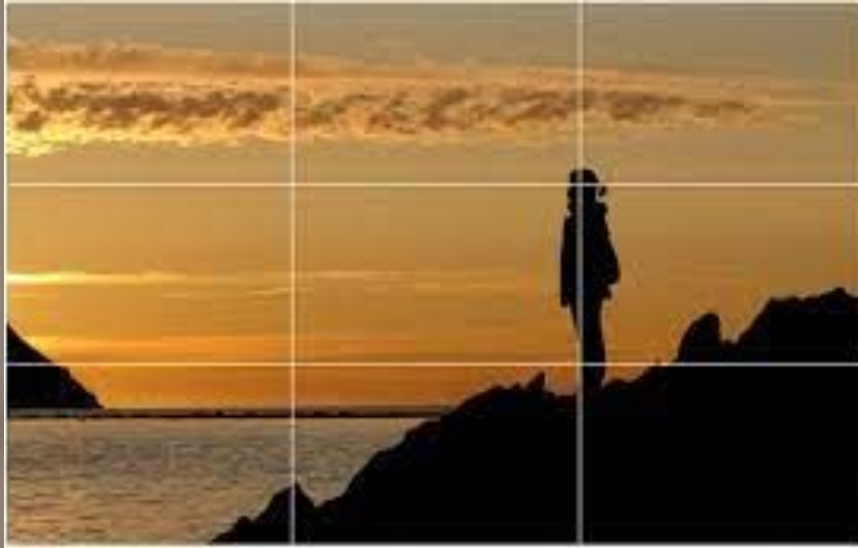
Composition : Where is your camera?



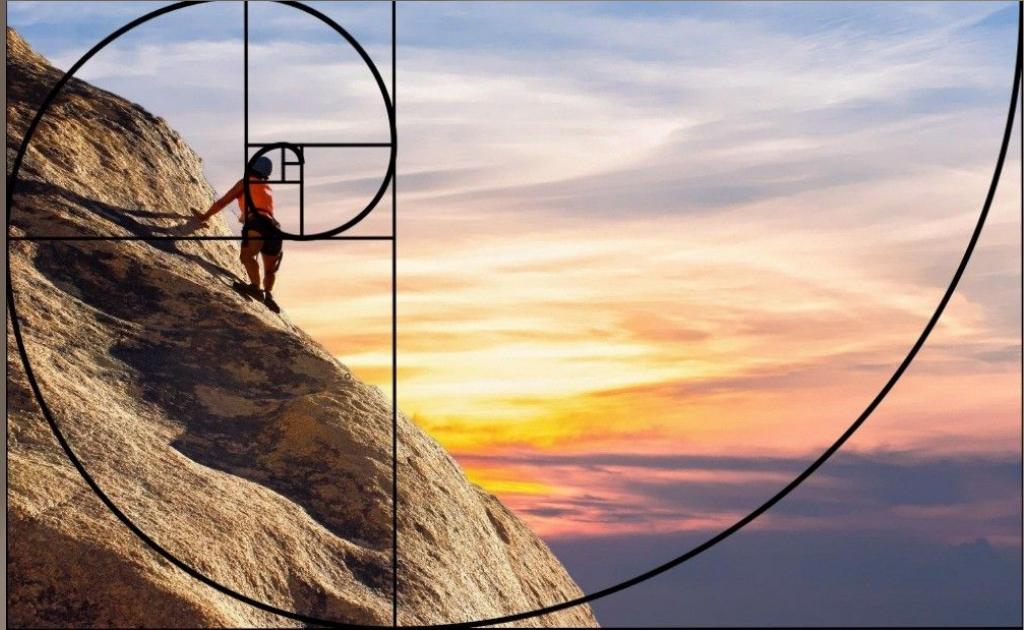
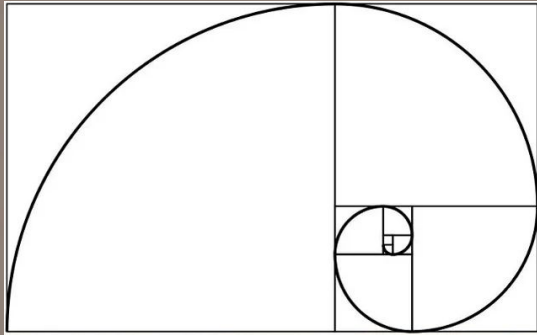
Composition : Break Down the Image



Rule of Thirds



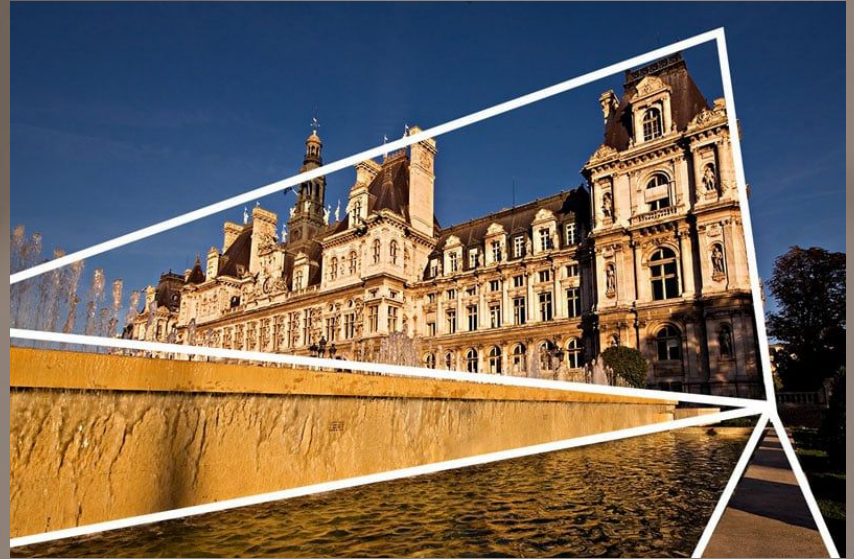
Golden Spiral



Golden Triangle



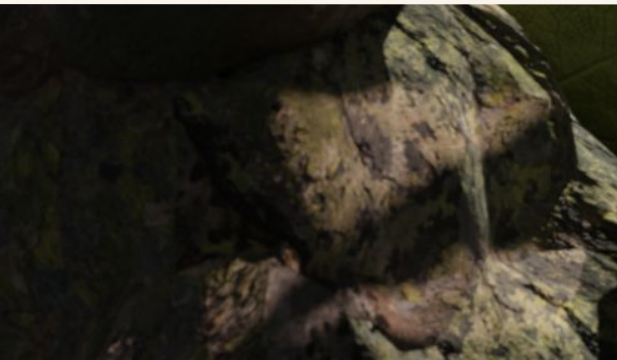
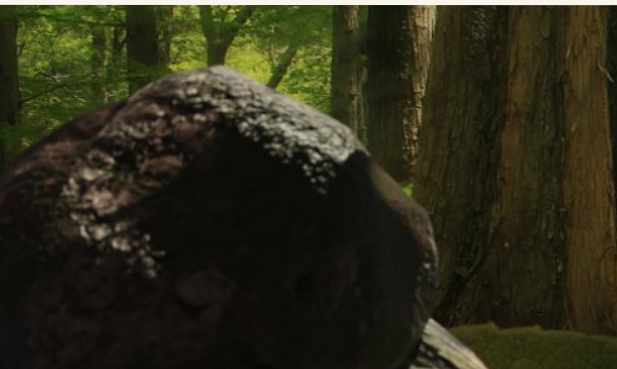
Lines & Shapes

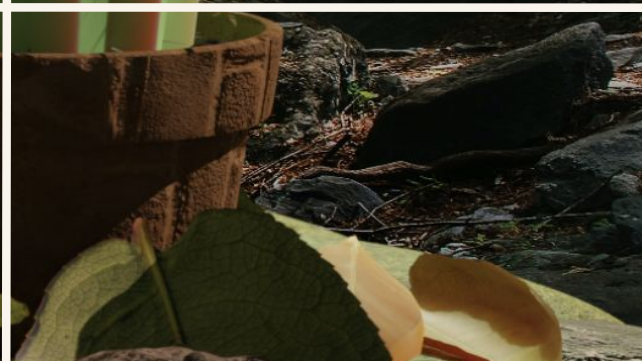
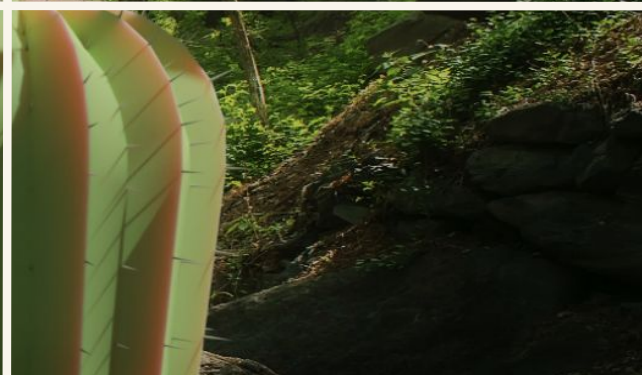
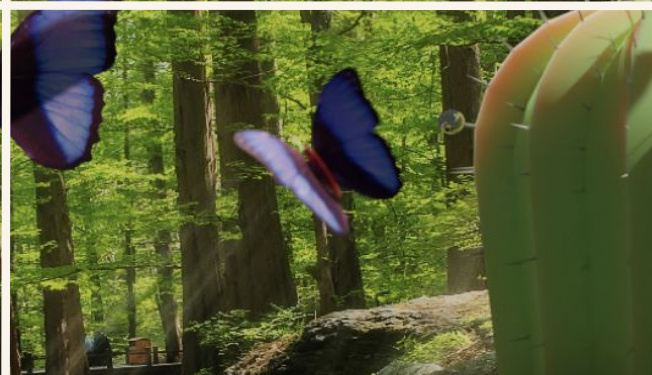
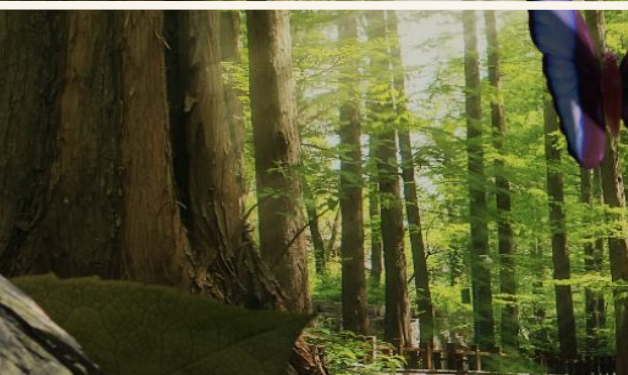


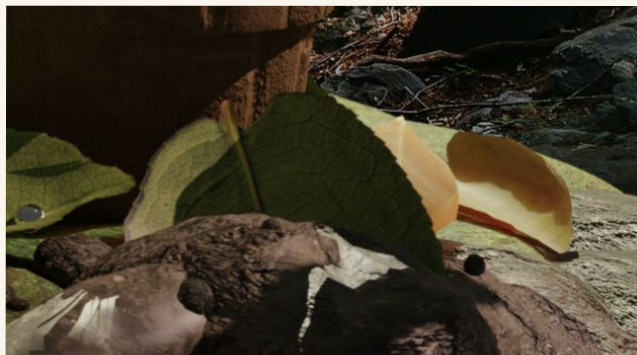
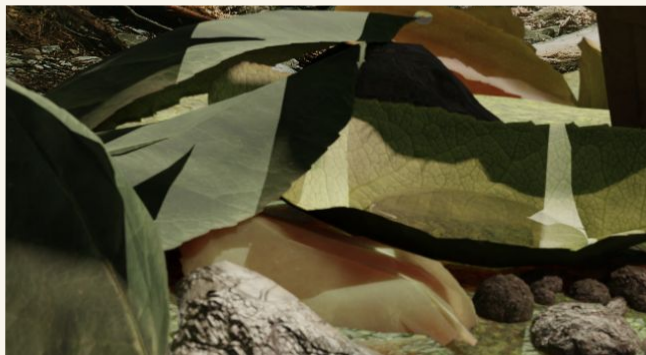
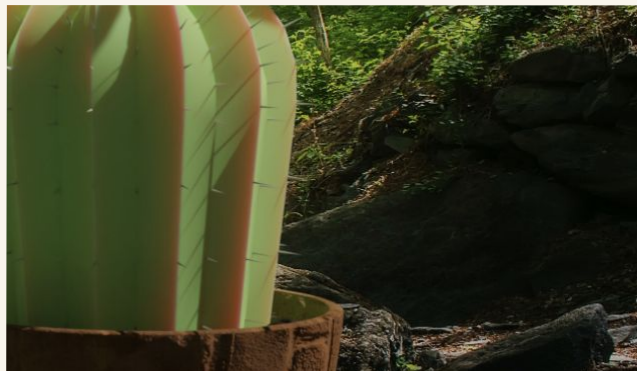
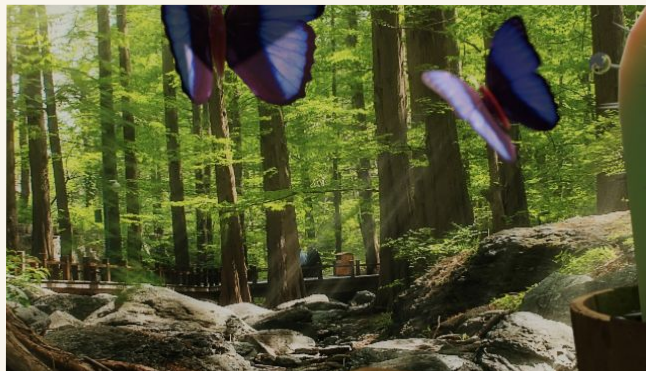
Centering & Symmetry













Foreground & Background



Camera Angles



Negative Space



Resources

[The Art of Good Images](#)

Lighting

- [High Contrast God Rays](#)
- [Sun Rays with Natural Shadows](#)
- [Underwater God Rays](#)
- [Forest Fog](#)
- [Subsurface Scattering for Translucent Objects](#)
- [Realistic Fire](#)

Camera

- [Fix Viewport Clipping](#)
- [Focal Length](#)
- [Depth of Field](#)
- [Fisheye Effect](#)
- [Lens Flare](#)
- [Motion Blur](#)

