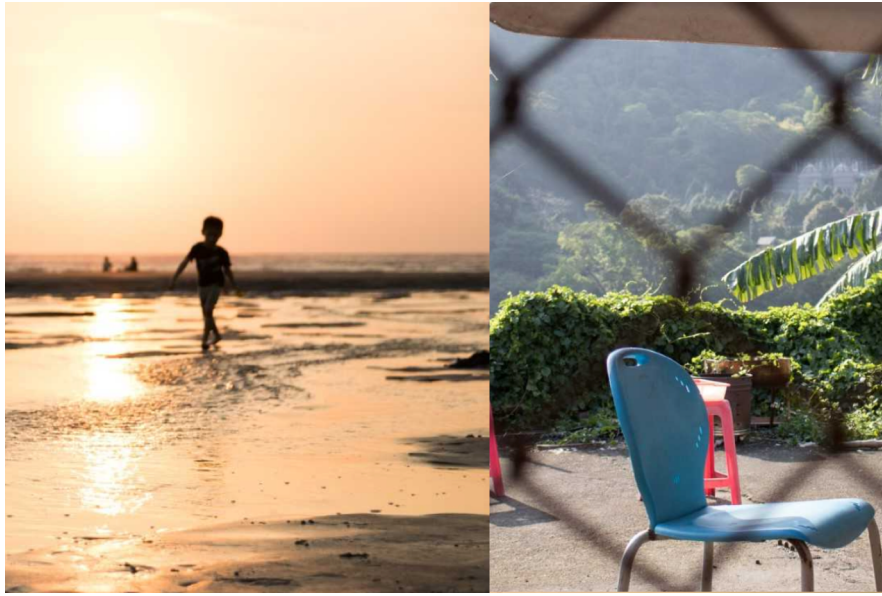


CS148 Final Project Write Up

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Motivation and Story

Belows are 2 of my reference images:



I wanted to create a scene with sunset and its reflection. Also, the out-of-focus fence in the front of view on the righter image can give some kind of mysterious feeling.

The setting of the scene is that someone is peaking behind an out-of-focus fence. There are 2 other people, a boat and two paddles on the sandy beach. Although the sunset and its reflection are beautiful out there, this person behind the fence can't go across the fence.

Assets

- Wood texture, sand texture, fence texture and water texture are found online. Background sunset texture is a picture I took by myself. I have modified the sand texture and water texture in photoshop to make them seem smoother by duplicating images.
- Fence, boat, paddles are from online resources, and sand piles are modeled by myself. Subdivision surface modifier is applied to low poly models from online resources.
- A sky and 2 wall plane were added to make the whole scene with the same tone of color.

Lighting

- A point light was used to model the sun.
- An area light on the top of the scene for soft shadow.

Technical Implementation

1. **Depth of Field** is implemented in `PerspectiveCamera.cpp` so that the fence close to our

view is blurred. The actual focal point is at the position of the boat, which is far enough so that only the fence is blurred, contrary to clear background. The radius of the fake lens is 0.03 here.

2. I create a **normal map** from water texture by a web tool (<http://cpetry.github.io/NormalMap-Online/>) to make the reflection of water surface more realistic. It is enabled by calling `SetTexture` function in `Material` class.
3. I modified `Material.cpp`, `BlinnPhongMaterial.cpp` to make the background of our scene independent from light.

Reference Website

- For 3D Model:
 - <https://free3d.com/>
 - <https://www.cgtrader.com/free-3d-models>
- For Textures:
 - <http://www.psd-dude.com/tutorials/resources/free-water-textures-and-backgrounds.aspx>
 - <https://freestocktextures.com/photos-wood/>
 - <https://naldzgraphics.net/free-seamless-sand-textures/>