

PUI 2021 Fall Final Project

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Repo link: www.GitHub.com/Senhao-Wang-97/pui-final-inmyroom

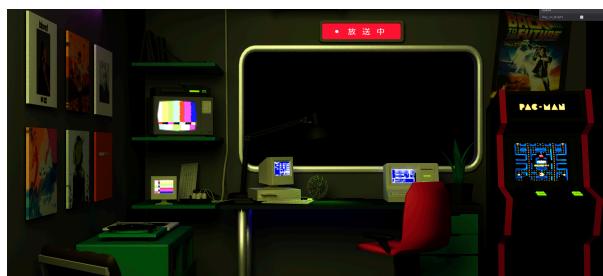
Demo link: https://youtu.be/t_og2IVSmY8

Part 1: In 300 words describe your website

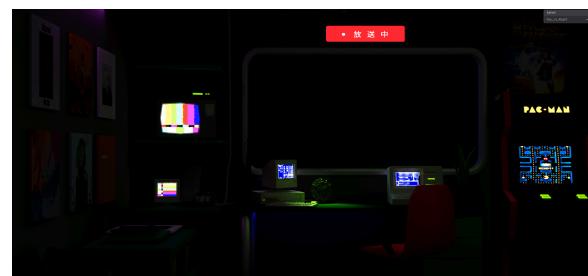
Have you ever watched Lo-fi youtube channel in your late night coding session such as Chilled Cow? This is a Youtube Channel that has around 10 million subscribers. Many people spend their nights listening to this channel, not only for its nicely curated musics, but also the vibe that this cover art gives out.



Chilled Cow Cover Art



Day mode



Night mode

What is the purpose of your website:

For my final project, I decide to create a website that uses Javascript library **THREE.js** to create a 3 dimensional immersive experience for users. The name of the project is called “In My Room”. I chose to use three.js and WebGL to create a space for people to vibe with. This hopefully can be a website that exists on programmer’s side screen, and accompanies them through their journey. When they don’t have inspiration, they can just stare inside the different models.

What Information do you convey with your website:

In My Room has a unique retro+futuristic aesthetics like no other spaces. I created this space based on my own room, and added sprinkles of imagination throughout the space. You can hover around and look at details of the models, and you can simply choose the preset angle facing towards the beautiful landscape. The color contrast of outside and inside gives out a cozy feelings to the user.

How is it interesting and engaging:

User can self direct to find interesting angle in the room. They can also tweak the day/night ratio to get to a comfortable setting. It provides full control over the color scheme inside.

I imagine this website in the future to have more customizability, such as mounting your own playlist, choosing music to play on the turntable, and play small games on the arcade machine. I also imagine to have more animation/outside view to look at, to make the who experience more fun. However, at this stage, I modeled everything in the room, and self taught how to use opengl to write shaders.

Who is the target audience:

Programer, people who enjoy synthwave culture, or people who loves alternative reality.

Part 2: Use a bulleted list to describe how a user would interact with your website.

In order to use the application, do the following:

1. Go to Github page to download the repo.
www.github.com/Senhao-Wang-97/pui-final-inmyroom
 2. Unzip the file.
 3. Go to terminal, and go to the file directory
 4. Type *npm install*
 5. Type *npm run dev*
- To rotate around the scene:
 - Left click and drag.
 - To pan around the scene:
 - Hold mouse wheel and drag
 - To zoom into things:
 - Use scroll button to navigate.
 - Control indoor night vs day value:
 - Type in **/#debug** after the local host to see the slider on the upper right corner.

Part 3: Describe what external tool you used

1. Blender

1. Why you chose to use it

In order to create 3D scenes and use open GL natively, it is important to first model the things and pack them in processable format, such as glb. This is the foundational asset for later success.

2. How you used it?

I used it to model asset and create the scene. I modeled everything to very close detail and gave them textures and emissions.

3. What it adds to your website?

This adds a nice showcase of skillset to my personal website.

2. Texture Baking

1. Why you chose to use it

Workflow for online model processing is very hard. You can't just give them texture in 3d engines and hope it works. Therefore, there is a lot of UV unwrapping, calculation, and work to get texture to work right.

2. How you used it?

I baked two separate UV maps to give the scene different settings.

3. What it adds to your website?

This adds a nice showcase of skillset to my personal website.

3. Three.js

1. Why you chose to use it

Three.js is the biggest WebGL library right now. It gives web rendering much more capabilities than they have now in terms of graphic renderings. This is a skillset to learn and will benefit me in the future.

2. How you used it?

I used it to create the web presence of 3d models, realtime rendering, and fun interaction.

3. What it adds to your website?

This adds a nice showcase of skillset to my personal website.

4. GLSL library

1. Why you chose to use it

GLSL library provides functionality for realtime shader editing. This is a C++ based library so I had to self taught how to write this.

2. How you used it?

I used it to create shader interaction.

3. What it adds to your website?

The ability to change shader.

5. Bruno Simon Three.js rendering template

<https://github.com/brunosimon/threejs-template-complex>

1. Why you chose to use it

Bruno Simon is a French programmer who creates template for three.js programing.

2. How you used it?

I used the template and improved on it to make the things I want to make.

3. What it adds to your website?

It is the foundation that makes everything possible.

Part4 Describe how you iterated on your HW7 mockups.

From the HW7 mockup, I made changes to the original model, and gave the room the functionality to change scene real time. Also, I implemented a sophisticated camera interaction so it pans smoothly, and limited where the user can go, in order to avoid confusion.

Part 5 What challenges did you experience in implementing your website?

I faced many challenges along the way. Initially I didn't know how to create web specific 3d models, and I had to teach myself how to do that. Also, even the smallest interaction on three.js can take a very long time. For example, implementing camera took me 4 hours to do it smoothly, and learning c++ with glsl shader processing took me a long time to understand.