FINAL PROJECT

Group 4

Team members:

1.BuYi - Lyu

2.ZhaoShen - Zhang

3.LiJiang - Jiang

4.YouLin - Wei

ABOUT PROJECT

Our modeling product is basically a reference to the Peking Opera short neck Yueqin (Moon Guitar) style.

The moon lute, or "yueqin" is a traditional Chinese string instrument with a rich cultural heritage.

Known for its distinctive round body and crisp and soft sound, the moon lute plays a significant role in Peking opera and folk traditions music.

ABOUT PROJECT

Our project aims to create a 3D CG content of the moon lute by openSCAD and Three.js.

Through this project, we hope to contribute to the preservation of the traditional Chinese instrument, offering a digital tribute to a cherished cultural artifact.

RESPONSIBLE PART OF PROJECT

01

JIANG, Lijiang

Modeling:

- The model in Phase 2 [Hollow out the head of the Yueqin and adjust the peg to make it fit the prototype structure]
- Phase 4 [Adjust the strings so that they can turn naturally and connect with the corresponding pegs] (two cylinders version and final version with wiring.scad)
- Phase 5 [Decorate the soundboard of the Yueqin and add $fn to make the model more refined].

Rendering: Create a version, with basic texture and fix some problems in the previous version.

- Change the string texture to sliver gray to make it more like the string in reality.
- Add the background picture and corresponding envTexture. And change the light design which is to give point light from bottom to top and from top to bottom to make the detail can be seen clearly, and add camera light.

Animation:

- Add camera vertical movement.

RESPONSIBLE PART OF PROJECT

02

WEI, Youlin

Modeling:

- The model in Phase 3 [Add details to the head of the Yueqin to make it curved. And add peg details to make its head be a half sphere]
- Phase 4 [Adjust the strings so that they can turn naturally and connect with the corresponding pegs] (hull() version)
- Phase 6 [Add the wire wrapped around the peg].

Rendering:

- Render a light yellow version of moon guitar.

RESPONSIBLE PART OF PROJECT

03

ZHANG, Zhaoshen

Rendering:

- The rendering phase，the disassembled parts of the model were imported into THREE.js for rendering and appropriate colors were adjusted.
- Later, new light sources (ambient light and sun-like light sources) were added to the original code to make the model surface more clearly visible.
- I wrote some code on the material while rendering, and included the newly added ambient light and sun-like light sources.

RESPONSIBLE PART OF PROJECT

04

LYU, Buyi

Modeling:

- Building the initial prototype of the moon guitar in OpenJScad, including the guitar body, head, strings, frets, and tuning pegs; By breaking down the instrument into its individual components and analyzing which geometric shapes would best represent each part.

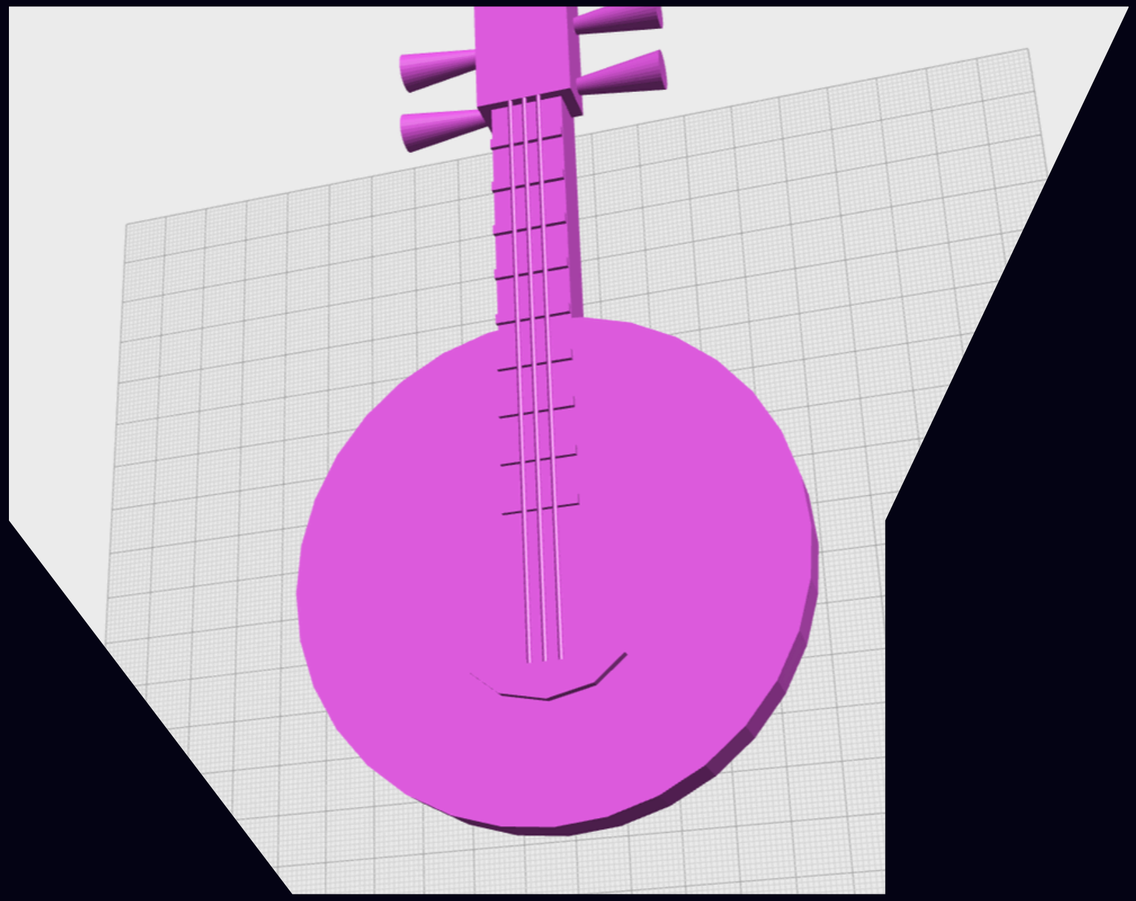
Animation:

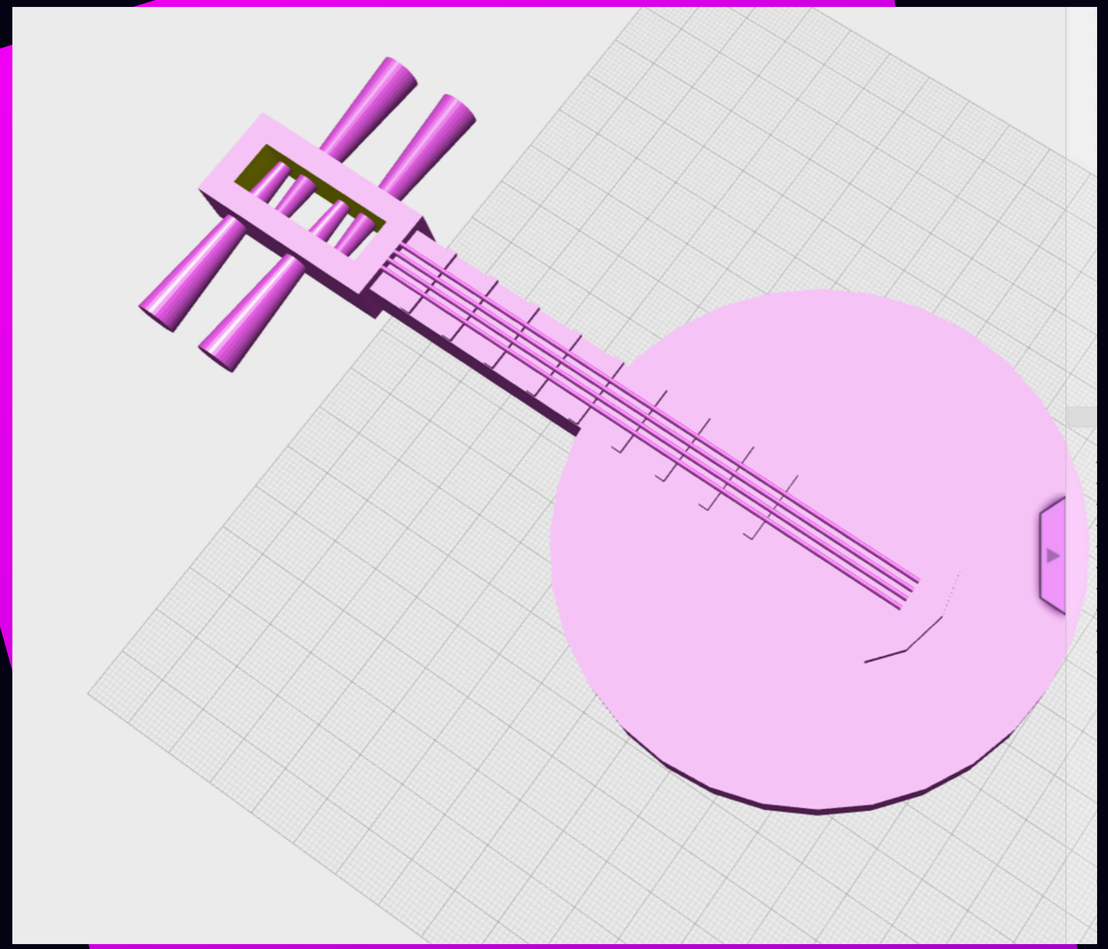
- Create a loading animation: the moon guitar zooms in from a distance.
- Make the background image change periodically.

MODELING PROCESS

01 Phase 1:

Understand the Yueqin structure, choose suitable geometric shapes for each part, and create the prototype of the Yueqin.

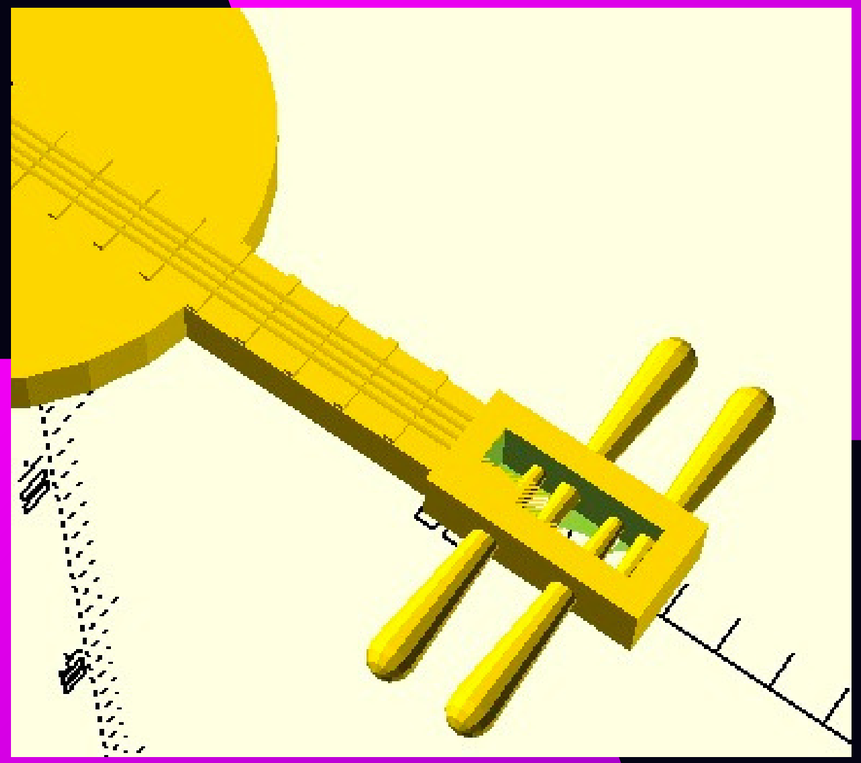




02

Phase 2:

Hollow out the head of the Yueqin and adjust the peg to make it fit the prototype structure.



03

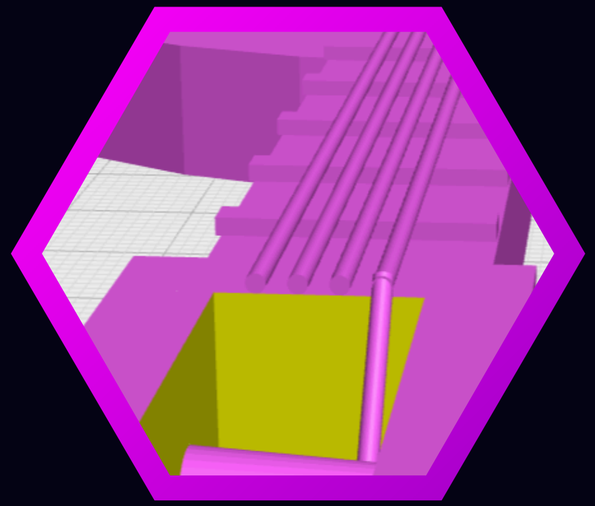
Phase 3:

Add details to the head of the Yueqin to make it curved. And add peg details to make its head be a half sphere.

04

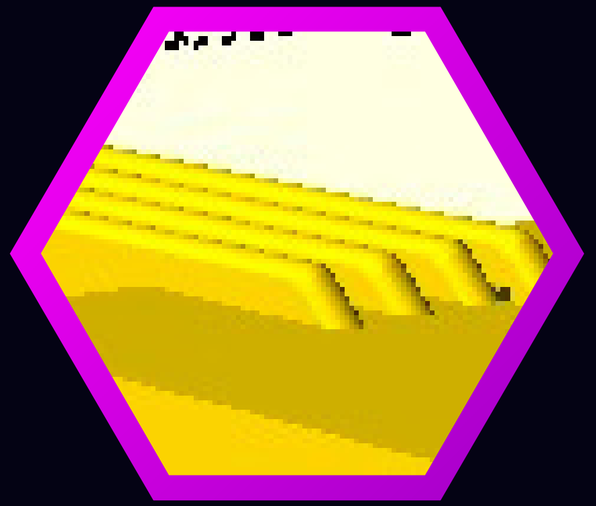
Phase 4:

Adjust the strings so that they can turn naturally and connect with the corresponding pegs.



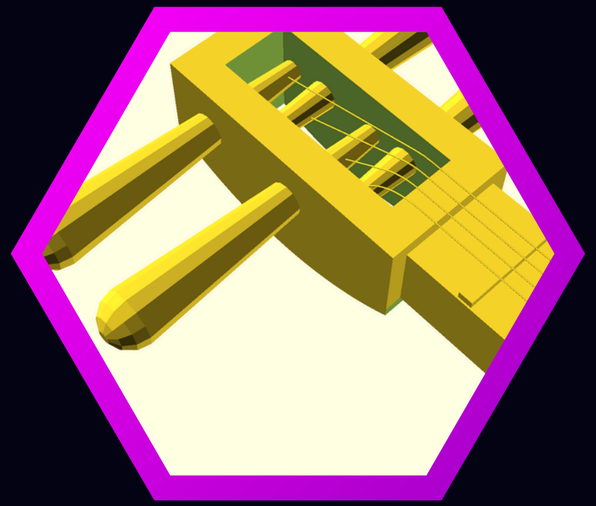
Model Build1

The initial plan was to simply splice two cylinders, but the result of this was that the intersection of the two cylinders was very rough.



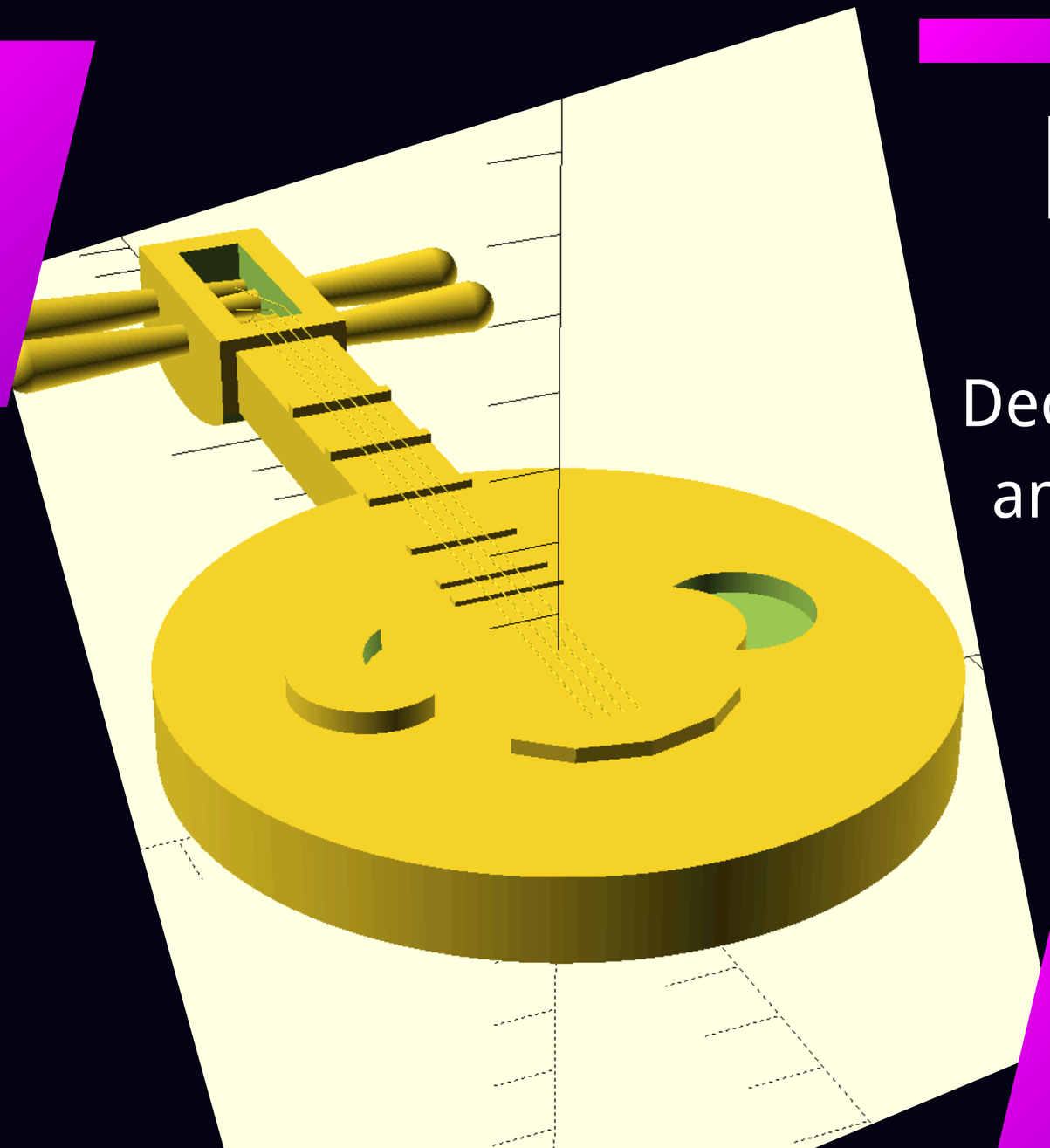
Model Build2

Then tried to use hull() to make two cylinders connect naturally, but it failed in the end because it would turn the two cylinders into sheets.



Model Build3

Finally, we used wiring.scad in The Belfry OpenScad Library, v2.0 to simulate the strings.



Final Project

05

Phase 5:

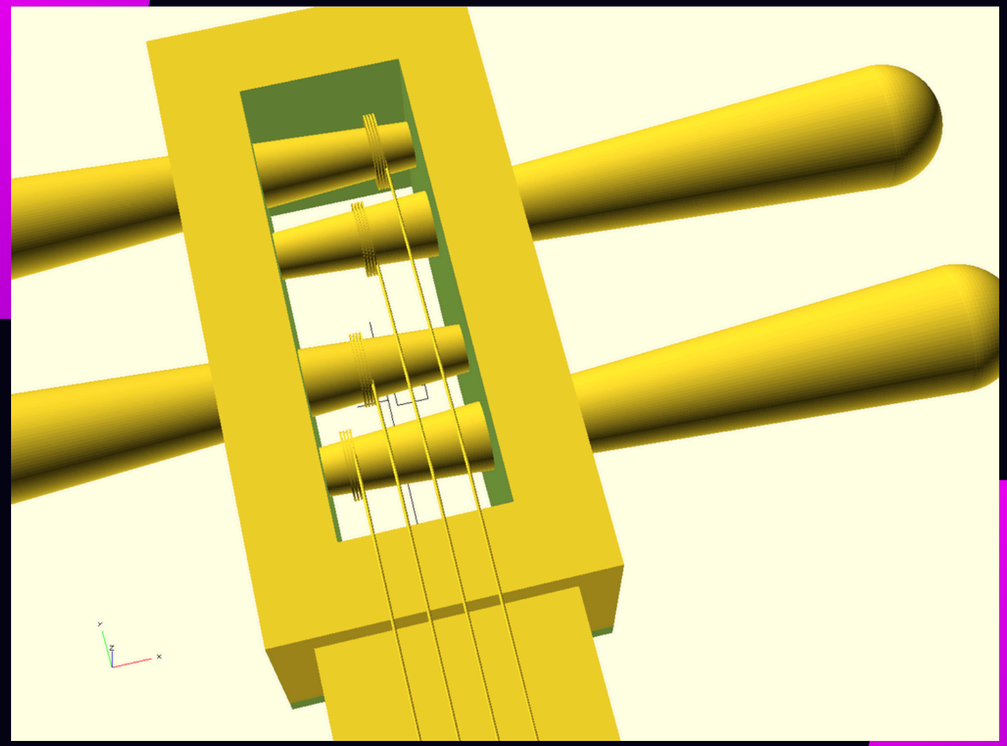
Decorate the soundboard of the Yueqin and add $fn to make the model more refined.

Final Project

06

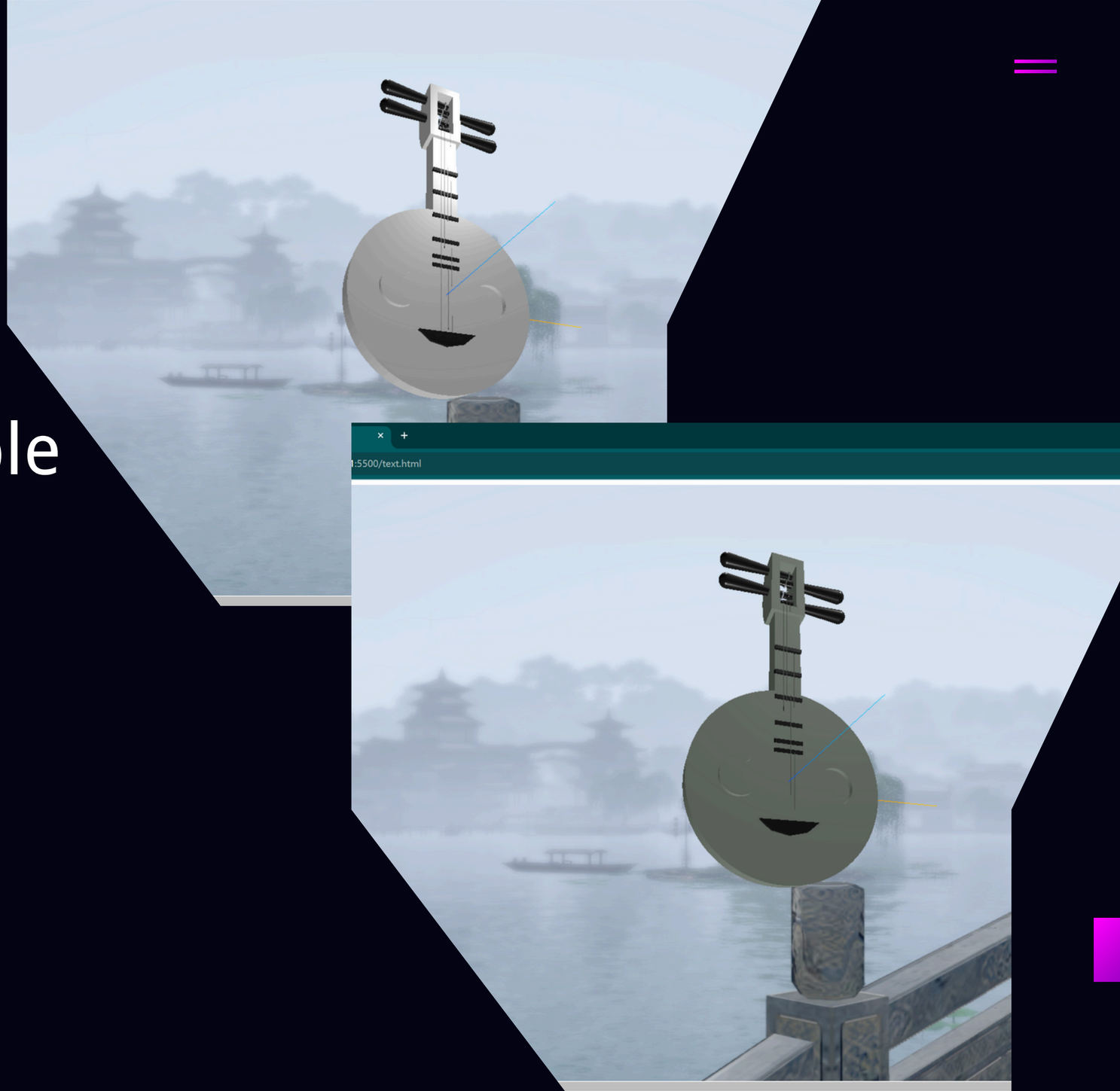
Phase 6:

Add the wire wrapped around the peg.



RENDERING

We implemented multiple versions of texture



ANIMATE

When the scene loads, the moon guitar will zoom in from a distance and then rotate.

Thank you for listening