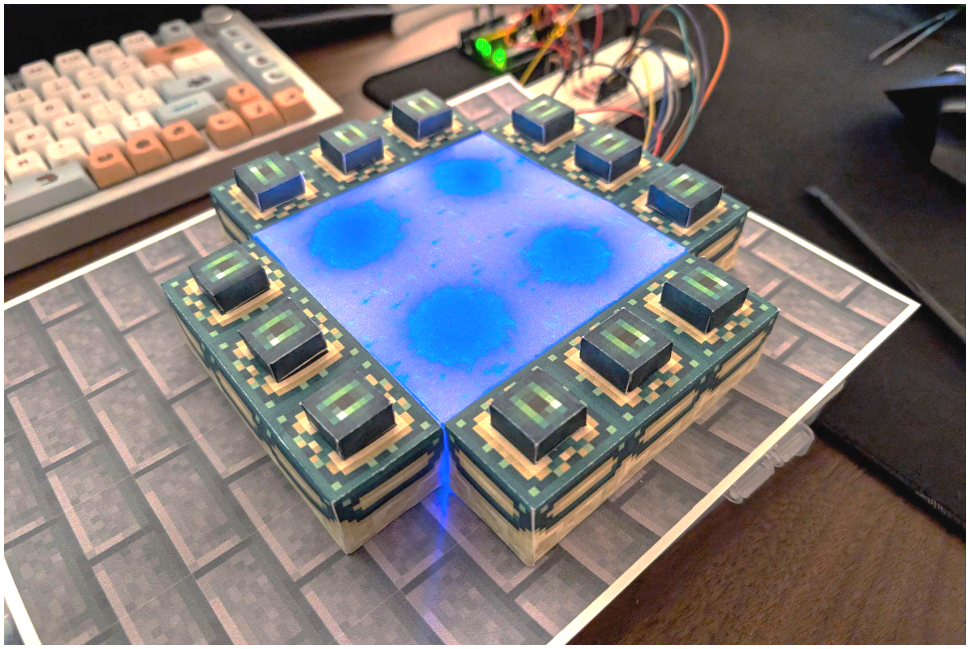
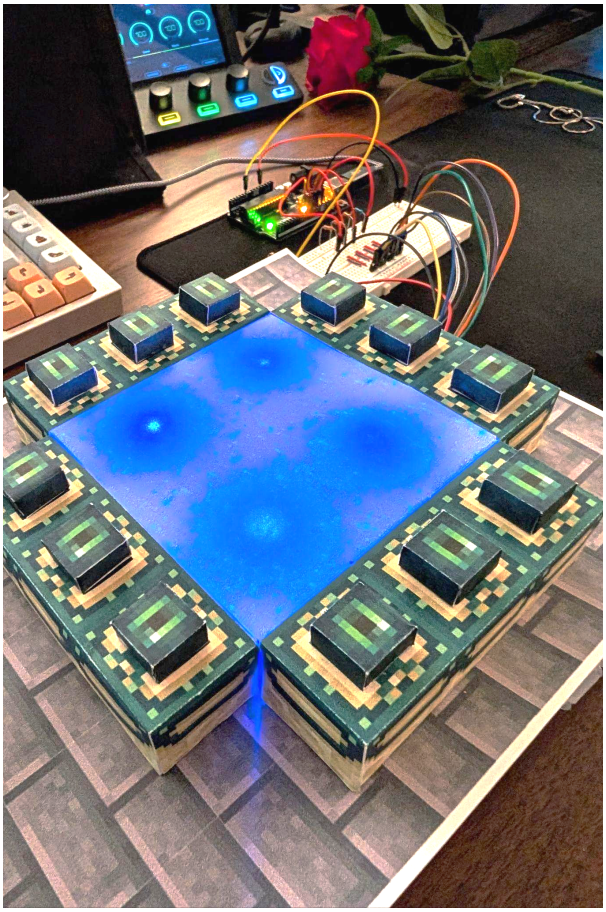
The End Portal

By Jun Chen





Showcase / Description of Finished Piece



“The End Portal” is a model of the iconic End Portal in the game Minecraft. The project was conceived while I was contemplating how to creatively conceal the messy wires and electronics behind a familiar element from a beloved game. The result transforms a functional electronics project into a visual piece that brings joy and nostalgia to anyone who grew up playing Minecraft like I did.

The project mirrors the process of beating Minecraft itself. One must explore, gather resources, and methodically progress to build the End Portal both in the game and in my final product. Each Minecraft world or electronics project is unique, and the satisfaction of testing and witnessing the lights illuminate reflects the triumphant moment of finally building the portal and defeating the Ender Dragon.

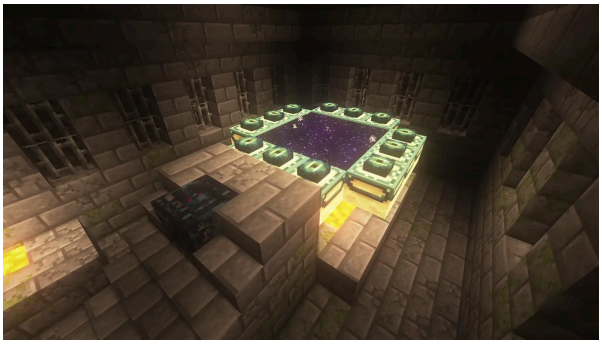
The creation of the End Portal model began with the use of an existing papercraft template found here. Strategic modifications were made to include cutouts in the model, which allowed for cable management of the wires as well as the incorporating an LDR to trigger the LEDs.

Full Video

The four blue LEDs inside represent the End Portal “lighting up” when you complete the process of placing 12 Eye of Ender in the portal frame. They are controlled by the LDR hidden under the last incomplete Portal Frame block. When an eye of ender is placed on top, the light is effectively blocked, thus triggering the LEDs to turn on and powering on the portal.

Process

Initial project ideation



- Idea came when I was playing Minecraft, searching for anything that “lights up” when something is triggered.
- Originally planned on creating the entire room (including the lava pool below and the stairs), but was scaled down to complete the project at a reasonable pace

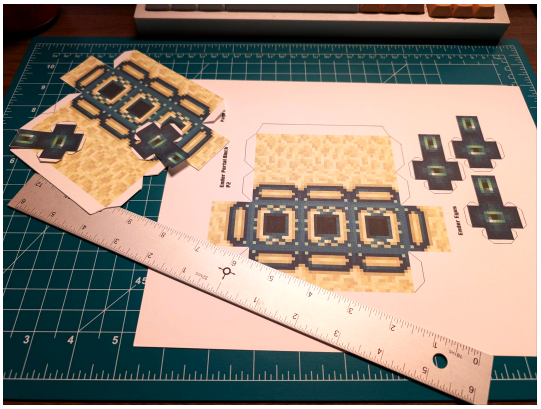
Prototyping/Building Process:

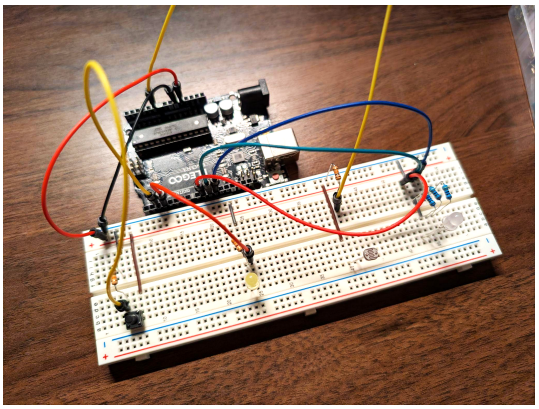
Finding and Printing Models:

- Paper craft template was found here
- Used parts that included the Portal Frame and Eye of Enders

Testing Electronic Components on Breadboard:

- Originally used a single RGB LED, but switched to 4 blue LEDs for more light
- Wrote the code for the LED to react to inputs from the LDR





Assembling and Final Product

Writing

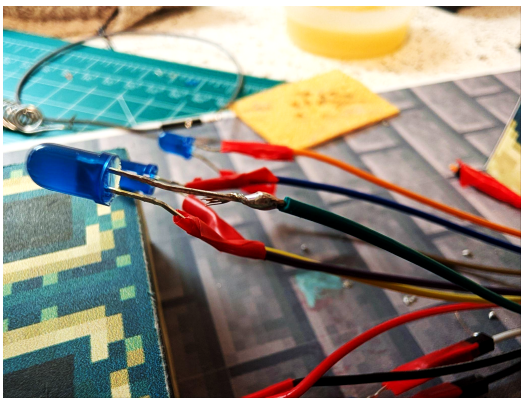
- Originally used female to male jumper wires as an extension from the breadboard to the Portal
- The connections between the LED and female end of jumper cables were not secure, therefore I improvised and soldered the connections instead

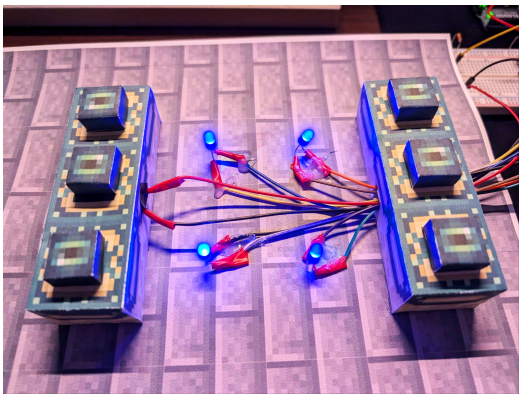
Creating “Backdoor”

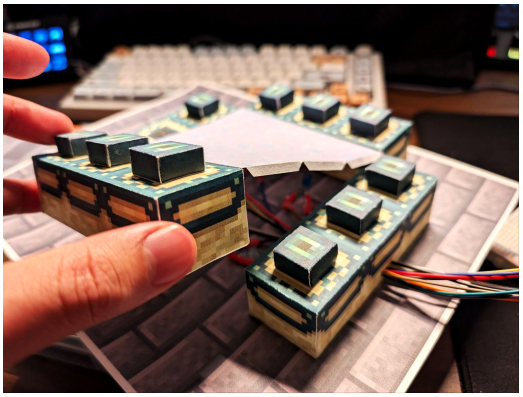
- Carefully measured and glued down only two sides of the Portal Frames, leaving a way to partially disassemble the Portal to allow for troubleshooting

Final Assembly

- Evenly spread out LEDs and hot glued them down
- Covered everything with the Portal







Conclusion / Reflection

This project was a fun way to make a functional, decorative, and interactive model of one of my favorite games using electronics. My goal was to make it fun, recognizable, and hide the messy electronics underneath. It was also my first time trying paper crafting! I wanted to find a cost effective way to create complex 3D structures without the need of a 3D printer. In the end, I was very happy to see fellow classmates and Shm run over to check out the End Portal, reflecting its iconic design and nostalgia Minecraft brings to people.

To improve on this piece, I want to consider using another way to trigger the LEDs. The flaw with using an LDR is that it doesn't work properly in a dark room since it needs light in the room to differentiate whether an Eye of Ender was on top of it or not. I will consider using metal or copper contacts to act as a "button" rather than an LDR. I would also love to incorporate sound, as well as using a brighter and more diffused light source to imitate a real End Portal.

Links

Code	code
Final video	video

Sources

If you used tutorials, Stack Overflow code, or other third-party materials, you should cite them here! It's good practice and this way you'll be able to find it again in the future :-) If there are sections of your code that are from third-party sources, try to directly cite them in your code using a *//comment,* too.

Portal Paper Craft Template	End Portal Diorama (Full Scale) - Pixel Papercraft