

Over the week of 9/14 to 9/18, I have continued working on the initial design of my 3d printed LED panel project. Last week, I was waiting for an acrylic sheet to arrive before I could test different methods of light diffusion, so this week as soon as it arrived I began experimenting. I began by cutting the acrylic to the appropriate size and placing it in the designated spot I had previously designed. This initial test was a failure, as the acrylic that I ordered doesn't enjoy spreading the light from the edges as much as it does from the back. This meant that my design needed some changes, in the form of more space for the light to bounce around in. In my last write-up, I mentioned that I would experiment with making the backing thinner, so I started there. That put me on the right path, but it still wasn't enough room for the light to bounce and diffuse evenly behind the acrylic. My final attempt for this week was to make the total panel size thicker, again to give more room for light diffusion. This made a huge difference and makes things look tolerable, but I'm not a fan of the thicker look, and the panel still has some light hotspots.

This prompted me to do some research about how the actual Nanoleaf panels achieve their uniform brightness effect. In a teardown forum post on the EEVblog, I found that the official panels use a clear acrylic layer with staggered laser-etched pillars to diffuse the light evenly. The light mostly passes straight through the acrylic, but occasionally hits one of the pillars and is pulled up to be diffused by the top panel.

I'm beginning to question if the type of acrylic I bought is even necessary, or if I should have ordered some clear acrylic instead. Because of the large gap, the difference in the evenness with and without it is questionable at best. I think that if I angle the LEDs down slightly to make the light bounce more, put some sort of opaque cover over the corners, and cut clear acrylic with pillars in it, I should be on track to having an effective panel using acrylic.

This design is something that I'm looking into, but should I implement things this way I would be moving closer to a "clone" of the official panels than the "cheaper reimplementations" I'm going for. It would also explicitly require the use of a laser cutter, which was questionable until now. I'm also still doing research into the effectiveness of using a pourable resin epoxy as a diffuser, but I can't get much of it for very cheap, and I would need to do a *lot* of work to find the correct mix of colorant and epoxy.

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Finally, I've begun updating my website to reflect the changes I've made in the past couple of weeks, splitting the youtube section into three separate categories. My next task for the website is to write a small piece of code that asks the youtube API what my most recent videos are and grab the thumbnails to proudly display on the website. (currently, all I have are placeholders) I

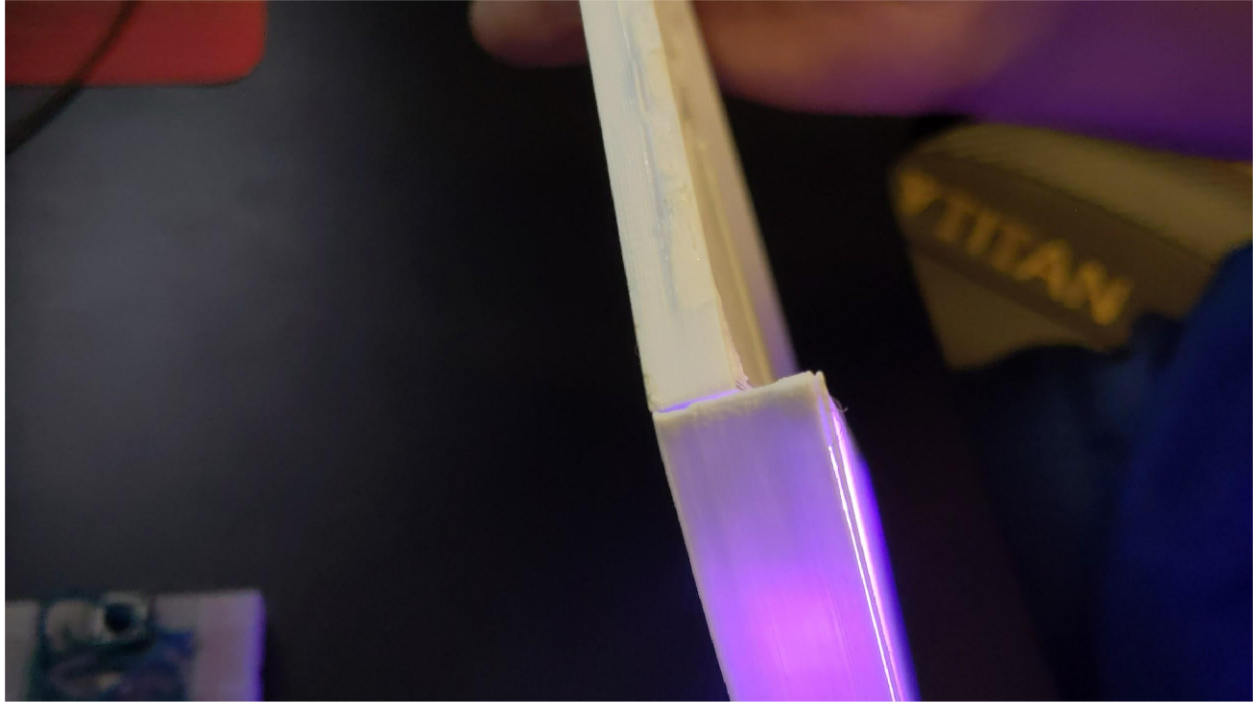
also still need to add a section of the site that houses these design updates, but that isn't the highest priority for me at this point.



- Panel with diffusing acrylic



- Panel without diffusing acrylic



- Comparing the thickness of old and new panels

It doesn't really show on camera that well, but the middle part of the panel is fairly well lit, even though I have the center led off for the photo.

About Past Projects Current Projects

Zindswini
Hi, I'm Bailey.
And I haven't the slightest clue what I'm doing.
Join me as I do a little bit of everything.

YouTube Channels

Zindswini	ZindswiniLIVE	ZindswiniVODS
<p>My primary YouTube channel, (who would've guessed), is Zindswini. It consists of electronics projects, past and future. I'm trying to make the channel similar to that of Mitxel, N-D-E, and DIY perks.</p>	<p>My secondary YouTube channel, dedicated to stream highlights and other shenanigans. It's my most active channel, and the one I have the most hope for taking off. Even if it doesn't though, it's still fun to edit for.</p>	<p>My tertiary YouTube channel, dedicated to archiving my previous twitch/YouTube streams. Feel free to watch if you want, but the main purpose of the channel is to save me hard drive space.</p>
<p>3D Printed 12:45:05 Seven Segment Clock Poweredge R710 And Setup</p>	<p>3D Printed 12:45:05 Seven Segment Clock Poweredge R710 And Setup</p>	<p>3D Printed 12:45:05 Seven Segment Clock Poweredge R710 And Setup</p>

- Current state of website