

Upcycled screen

Frazelle used a recycled LCD from an old laptop and was particularly impressed with the Chinese eBay seller e-qstore that supplied the LCD driver board for his screen.

Components list

- Oak planks and trim
 - Recycled laptop LCD
 - Talentcell rechargeable Li-ion battery
 - AC rocker switch
 - Magnetic catches
 - 3PDT switch
 - 3mm fibre-optic cable
 - 1x HDMI cable
 - ½-inch Braided PET sleeving
 - Bronze gears
 - Raspberry Pi case with fan
- And much more, see the full project at <http://bit.ly/SteamPunkLaptop>

Steampunk style

Frazelle wanted a level of detail required to create that Jules Verne feel. A lot of the gears and gauges came from eBay, but he found the front battery gauge, back switch plate and LED indicator on Etsy.

Vintage keyboard

Old typewriters are expensive so Frazelle combined a mechanical keyboard with a typewriter key set to get the right look and built out a board for it.

Tricky LED lights

Frazelle had a tricky time routing the existing light from the LEDs on the power supply to the front. He used marbles to diffuse the light, which were hand-blown by Bruce Breslow at Moon Marble Company, Bonner Springs, Kansas (www.moonmarble.com).

Right At its heart is the Pi 3. Almost every cable was shortened in the box. Frazelle had to open up the PSU to route the power switch to one on the back of the box.

Far right The end result is beautiful, but Frazelle admits that some more preparation may have avoided a number of rethinks and setbacks, particularly with the keyboard tray.





Steampunk Laptop

Robbie Frazelle went for the wow-factor with a birthday gift, a Pi-powered steampunk-themed laptop

Where did the idea for the steampunk laptop come from? I hear it was gift for your girlfriend.

For our first ever Christmas I made her an ornate mirror with the magic mirror platform (<https://magicmirror.builders>). Super-cool. I was wandering through this thrift store and found this giant ornate frame for 20 bucks and I thought that's it, I'm going to make it for her [...] Immediately after comes her birthday. Mid last year she'd spilled coffee on her MacBook so we talked about a back-up computer.

That was my mentality around putting together some kind of laptop. I don't really know where the idea of making it steampunk came from. If I could tell you how my head works, I'd probably freak out a lot of people. Aesthetically, it just seemed to make sense. When you're building a wooden laptop, there's already that steampunk direction, right?

We were intrigued due to the details you added, like the marble lighting.

The whole idea wasn't baked when I started building. I knew I was going to do a box of a laptop. As I started building that out and piecing things together, the idea continued to evolve. When I figured out my power supply had LEDs on the front, I thought it would be really nice to see those LEDs on the front of the box. The initial thought was to rewire LEDs to that board inside the power supply and have those sticking up at the front. The connects on that LED board on that PCB board were tiny. There was no possible way for me to do that. I tried and it didn't work [laughs].

That's when I thought about running some fibre optic lines and then thinking about how I could diffuse that light. In the town where I live there's a glass blower, so I approached him with the project. That worked out for that part. Every little aspect of that box started as a question: I kind of I want to do this – how do I do that?

What were the significant issues that you encountered?

So I started the whole thing off with

the keyboard and the keyboard tray. I knew I wanted a typewriter-esque keyboard and [...] a vintage typewriter is not cheap. That's not going to work, then I found a mechanical keyboard typewriter set and I could see that was the way to go, so I started building this keyboard tray.

The initial tray I built was actually two steps back from the actual [one] that went into the box. I didn't know how the lid was going to close, so putting in the support on the side, that wasn't cut out right the first time. At first I thought I was going to put that battery monitor on the top of the keyboard tray – but that changed.

Have you found the Pi works OK, as the computer within the computer?

For the intent for this specific computer, yes. Because all she needs it to do is some word processing, so LibreOffice and check her email and browse the internet. The Raspberry Pi 3 does that fairly well [...] Now, if this were the Raspberry Pi 2 or even the B+ or the A, browsing the internet is like pulling teeth. I felt like I was on 386DX, on a dial-up connection waiting for things to pop up. With the advent of the Raspberry Pi 3, this made it more of a reality. Even now it

“As I started building, the idea continued to evolve”

still has its issues, it's not as speedy as it could be, but I have full faith in Raspberry Pi that they will continue to upgrade their hardware.

Are you gearing up for Christmas for the next project, now you've set this bar so high for yourself?

I set the bar, right. If I'm not getting calls for interviews from the UK for her next project then I failed, I think [laughs]. I don't know what the next project is going to be. I build arcade cabinets as well. I've been using RetroPie [<https://retropie.org.uk>] to do these really elaborate arcade

machines with a very simplistic hardware and software mentality to them. I'm building one right now.

We saw the Zelda arcade machine and it's beautiful work.

That was my first iteration, I've done five since then and they have consistently gotten better. The biggest improvement was switching from plywood to MDF. That's a game changer and then doing things like adding T-moulding to the sides. When you put the T-moulding on at the end, all of a sudden it goes to awesome from ridiculously basic.

Do you see RetroPie as the best emulation software to use for this?

I've not played with a lot of other ones [...]. I operate on the mentality of if it ain't broke then why fix it and the RetroPie front-end works for everything I need it to, even skinning the front-end. I've been designing my own themes for each of my arcade cabinets that fit in with the overall design of the project. It gives me that flexibility and it runs the emulators that I need it to. That being said, I've been looking at attract-mode [<http://attractmode.org>] recently. It has this really nice scroll wheel on



Robbie Frazelle

is director of marketing for an interactive lighting company. Prior to that, he worked as a designer for Opti Security (formerly FishNet Security), a cybersecurity company.

Like it?

As mentioned in the interview, this is just one of many projects that Frazelle has undertaken using the Pi, including one that turns an ornate mirror into a smart device using the magicmirror² platform (<https://magicmirror.builders>), which includes facial recognition, traffic and weather information.

Further reading

We had to reduce the list of components as there are so many, but Frazelle details the whole build process at <http://bit.ly/SteamPunkLaptop>. Many of his other projects are frankly breathtaking and the Legend of Zelda bartop arcade cabinet is a particular labour of love: <http://bit.ly/ZeldaArcadeCabinet>.