

e18-thea-flowers

Mon, 9/5 2:33PM 11:19

SUMMARY KEYWORDS

python, circuit, synthesizer, thea, module, product, bootloader, modular synthesizers, microcontroller, started, wonderful, sounds, arduino, sample, pollux, computer, juno, longtime listeners, change, bloom

SPEAKERS

Paul Cutler, Thea Flowers

- P** Paul Cutler 00:06
Welcome to the Circuit Python Show. I'm your host Paul Cutler. This episode I'm joined by Thea flowers. Thea is a hardware and software engineer with a broad skill set and deep expertise in developer relations and technical writing. It is the Thea's mission in life to empower people of all backgrounds using open source software and hardware. Thea, welcome to the show.
- T** Thea Flowers 00:27
Hi, thanks for having me.
- P** Paul Cutler 00:29
How did you first get started with computers and electronics?
- T** Thea Flowers 00:33
Oh, gosh, I have always been a bit of a tinkerer. You know, I was the kid that would just take things apart, just to figure out how they worked. That's always been how my brain has worked. I've always been curious about how things are put together and, and all that stuff. But I really got interested in computers and programming and stuff when I was in my early teens, because I wanted to make video games.
- P** Paul Cutler 00:53
How did you first discover circuit Python and eventually become one of its maintainers.
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Thea Flowers 00:58

A few years ago, I started looking into making my own MIDI controllers and stuff like that. And I played around with Arduino before, and that sort of stuff. But it just so happened that right around the time that I was starting to kind of get back into making hardware that circuit Python was kind of taking off. And it made me really excited because I've been programming in Python for most of my life, I guess. And I was just like, This is great. It's, it's such an approachable way to jump into microcontrollers. And when I eventually decided to start my own music technology company, creating synthesizers and stuff, I really liked the idea of having a product that someone could reprogram without having to install anything on their computer, or having to learn a lot of complicated stuff, they could just plug it in, and it shows up as a little flash drive, and they can edit a file and it immediately starts running again. And I built two products around that concept. And in the process of doing so I learned a lot about circuit Python, and ended up contributing a bit and becoming one of the maintainers. I am currently rather inactive. But I have a few products that I want to bring to life with circuit Python once the chip shortage is chilled out a little bit. And I am excited to start touching circuit Python again, more in depth than I had before.

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Paul Cutler 02:24

That's exciting to hear. So you mentioned your synthesizer company. Tell me a little bit about winter bloom, how did you take that from a side gig to being able to work on that full time now,

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Thea Flowers 02:34

it's been a bit of a journey, I started winter bloom in 2020 and March of 2020, which might be the worst possible time in history to start a company. It was tough going at first. And thankfully, I still had my day job then. And it really just started around me wanting to wanting certain things to exist, right? It was like, you know, I was getting into modular synthesis. And I was like, wow, I really want this kind of module to exist. And it just so happened that circuit Python was around and I was getting up to speed with that. And then yeah, it just made sense for me to sell the stuff. I you know, I I started with, like an order of maybe 3030 modules. And I didn't expect to sell any of them, honestly. But no, some of it really resonated with people. And since then it's really kind of, you know, taken off a little bit and you know, enough for me to sort of make it my, my main job, which is which I feel incredibly lucky for.

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Paul Cutler 03:39

Well, that's great to hear what was the first product that you brought to market at wonderboom that actually use circuitpython?

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Thea Flowers 03:44

Yeah, so we actually launched two at once. And the first one that I designed was called Sol Sol that's Sol like our son, and it is a USB MIDI to control voltage module. So basically, what that lets you do is it lets you use your computer or you know, any other MIDI compatible equipment to talk to your modular synthesizer, because the modular synthesizers speak in analog voltage

and translating that is non trivial. But Seoul was able to do that. And it did it using circuit Python, which meant that you could customize the way that it handled that conversion to get it to do all sorts of really interesting stuff. So you know, there was like an out of the box experience that was generally useful for most people, but you could easily go in and remap it and change how keys are translated into notes and how knob turns are turned into other things. And it's just, it's really interesting, and it's amazing to see what people have dealt with it. Like people have built special scripts for sold that work with specific digital audio workstations, which I think is really cool. And the other product that we launched at the same time is big hulking button, and it's possibly my favorite but product, if not second favorite product, but it is exactly what it says it is a big arcade button that when you press it, it honks. It is a module for modular sense. So it's designed to fit into the whole modular format. And it's such a wonderful product, because it's actually kind of sneaky. Because it seems silly on the surface, because it's a button that hooks, but underneath, it's running circuit Python. And you can control how it treats its inputs and outputs. So you could make it where it changes the pitch of the Hawk that it's planning, you can change that hunk to an actual useful sample, like drums or something, you can have it generate all kinds of different sounds if you want to. And it's just, it's a really useful and powerful little module that is disguised as this absurd, ridiculous thing. And I think that that's really wonderful.

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Paul Cutler 05:57

I agree. When I was researching this episode, I came across that and I'm looking at it and I've realized what you could do with it. And then there was a, there's got example code part as well. So it's easy for people to jump in and actually change things. And it's easily become the number one thing on my wish list from wonderboom.

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Thea Flowers 06:13

Oh, that's awesome. Yeah, and honestly, circuitpython was such a huge enabler for that. I mean, both from just the coding experience, but also just like, for a lot of samplers in Eurorack, like, the way that you load more samples onto them is like, you have to take a tiny SD card out of the back of it and plug it into your computer. And you know, hope that you got the files in the right format, everything but with a big honking button, you plug the module itself into your computer, and there's the drive and the you just you know, you can drag new samples over and test them immediately. And I think that that that alone was worth it for circuit Python. But the whole experience of being able to change the code as easily as you change the sample is wonderful.

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Paul Cutler 06:57

No, I know it doesn't run Circuit Python, but tell me about Castor and Pollux.

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Thea Flowers 07:01

Yeah, so Castor and Pollux is really part of my deep love for the 80s and the synthesizers of the 80s. Specifically, in this case, the role in Juno 106. And it is basically a reimagining of the way that the Juno makes sound. And it's adapted and changed and modernized for modular

and the Juno makes sound. And it's adapted and changed and modernized for modular synthesizers, specifically, it kind of takes the core idea of the Juno. And it doubles it, and then as a bunch of weird stuff in between, which is really wonderful, I think, because it isn't just a straight copy of what was done before. It takes that and you can get that same sound. But you also have so much more that you can play with and you can explore those concepts in a much deeper way with Castor and Pollux. And it just, it sounds wonderful. It really does. I am still amazed when I plug it up and play around with it, or when I watch videos of other people making wonderful sounds with it just sounds so good to me. And I'm very proud of it.

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Paul Cutler 08:06

longtime listeners know, I'm a big record collector. And I used to describe my collection as a third 80s music that I grew up with when I was a kid and a third indie music and a third of everything else. Some of that 80s Music What would people recognize that synthesizer on there are some bands or albums that come to mind.

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Thea Flowers 08:24

So so many songs One of the ones that's just so easy that everybody knows off the top of their head is sweet dreams about a eurhythmics like that. That's synthesizer intro, and you know, the the baseline throughout the song that is the Juno that is a very pure Juno's sound. And yeah, it's one of my favorites and tracks. So

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Paul Cutler 08:46

that's a great example. Before we go, I have one last question that I asked each of my guests you're starting a new project or prototype, which microcontroller do you reach for?

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Thea Flowers 08:54

So I am famously or maybe infamously, a huge fan girl of the SAMD 21. It is, to me the perfect sweet spot for a little microcontroller. It's reasonably fast, it has a good amount of flash, a good amount of RAM, it can run circuit Python, so you can you know, prototyped pretty rapidly with it. And it has just incredible peripherals. It has, you know, six flexible serial interfaces that can be SPI I squared C UART. It has up to 20 ADC channels, and it has a DAC and that you could do a lot with that. Right? That is a lot in one little package and it is so reasonably affordable. I really think it is just one of my favorite chips that has ever existed. So that's what I'm reaching for. And you can find that on the Adafruit like feather in zero, the Arduino zero and the SparkFun thing all have the Sandy 21 on them.

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Paul Cutler 09:54

If people want to learn more about what are bloom or follow you online, where can they find you

T Thea Flowers 09:58

so they can find winterbloom at [winter bloom.com](http://winterbloom.com). That's winter like the season and bloom like flower. If they want to follow me on Twitter, I am at Theo Valkyrie. And I apologize in advance for anything that I may post on Twitter. But yeah, you gotta be warned about what you're signing up for.

P Paul Cutler 10:16

never need to apologize on the show.

T Thea Flowers 10:19

But yeah, that's what they can follow me.

P Paul Cutler 10:22

Great Thea, thanks so much for your time today.

T Thea Flowers 10:24

Likewise, thank you for having me.

P Paul Cutler 10:27

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