

Rose Hooper

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SPEAKERS

Paul Cutler, Rose Hooper

P Paul Cutler 00:01
Welcome to the CircuitPython Show. I'm your host Paul Cutler. This episode I'm talking with Rose Hooper, author of circuit pythons led animations library. Rosa is a lifelong technologist and has actively participated in many aspects of computing since childhood Rosanell spends her time leading and mentoring, software development and DevOps teams of all kinds, enjoying the ability to give back to the communities that have helped her. You can also find rose participating in open source projects like home assistant and circuit Python. Rose, welcome to the show.

R Rose Hooper 00:30
It's nice to be here.

P Paul Cutler 00:30
Let's start at the beginning for you, when did you first get involved with computing probably

R Rose Hooper 00:34
before I was eight, but really remember the moment when my dad brought home a Hyperion PC compatible, it was a portable with a three color, I guess you could call it a four color monochrome display, and two built in floppies drives. And it came in a big heavy case, and they were very expensive now would have been more than 30 years ago. I'm failing to do the math right now. But what my dad did is sort of unpacked the computer, showed me around how to start it up and shut it down, and then pulled out a bunch of floppies. These are five and quarters. So they were floppy. And it was fun to flap them until I got in trouble for doing that. And that sort of was the beginning for me. My dad showed me about bulletin boards, because there's a modem in the computer showed me how to code a little bit with by handing me

magazines that had some basic code snippets in them. And trying to sort of remember what else I got started with there, I guess, would have been WordStar and Lotus 123 database three. And these sort of created a foundation on which I've built pretty much all of my career.

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Paul Cutler 01:48

That's awesome. Do you remember how fast how many bonds the modem was?

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Rose Hooper 01:52

It was a 300 baud modem.

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Paul Cutler 01:53

That's what I started out with as well.

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Rose Hooper 01:55

And it was not an acoustic coupler, which was kind of rare at the time. And it was I don't think it had touchtone I think it was until I got a 1200 baud modem that I had touched on. So that was sort of my intro to coding. And I got into electronics around the same time when my dad got me one of those Radio Shack 60 and ones or 210. And ones. I can't remember what number of projects I just remember the springboard and the components and the diagrams and I remember building a crystal radio and there's something that was part gret spark gap oscillator, which you're really not supposed to do, but they had it in there. And it was using the relay to make it buzz and it was really just terrible for EMI, but

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Paul Cutler 02:42

you've been a maker from a very young age I have

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Rose Hooper 02:45

like creating software was something that I've been doing. Since the early days. I ran a bulletin board for quite a while and ended up writing a BBS kit. What the heck's the phrase I'm trying to think of Oh, adore kit in quick basic of all things that made it easy to write some sort of little games and apps that interacted with Baltimore's software. I don't remember, what happened to the source is probably long gone on a hard drive that died with barely spinning, so I'd actually open it up and help it start and put the cover back on. And it was getting more and more errors and spin right and all sorts of other tools to try to recover data. I think it was spin right?

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Paul Cutler 03:30

What was the BBS culture like back in the late 80s, early 90s.

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Rose Hooper 03:33

So it would have been early 90s the culture was very open, and it was a place where you like I would get together with sysops or, or Yeah, I guess we were calling ourselves desktops. Back then. There was a wide range of ages, there was people my age at the time, which would have been probably age 10 or 11. And all the way to retirees. And everybody just sort of talked about technology and hung out and ate wings and the adults drank beer. And just it was a lot of fun got to learn a lot about people and technology met some interesting people.

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Paul Cutler 04:12

So from there in the 90s from working on a BBS you got started with some small ISPs and free nets. Right. So

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Rose Hooper 04:18

I started using a free net. I'm just one of the few ways that I had access to the Internet back in the I guess it would have been round 9293. I also had a UCP node connected via dialogue to one of the sysops that I had met while at CES. I guess it would have been fight on that meet. And then from there pretty quickly sort of spent a lot of my time on national capitol Freenet where I would eventually work for a couple years around 1995 So I got to experience the internet in a way that a lot of people didn't. I was sort of involved in getting dial up PPP and slip available to the Freenet users back when it was actually modems like early modems in Iraq. And you can like the the modem concentrators didn't come till a bit later. And then I went to work for commercial ISP in 97. And I kept working at sort of related technology companies for a while ended up working at registrar's and registries and various other things in between building software and systems of all sorts of kinds. And my language of choice back then it was Perl, mostly from sort of the sysadmin side of things. And it was the one of the first languages that you could really build web apps with that was well supported. And I learned a lot about the innards of Perl, and how it dealt with all sorts of things like how it handled strings and such, and these little nuggets of how to do things just gradually collected over time. And that interest in how the languages work sort of was a step towards sort of my later involvement with circuit Python and some of the stuff I ended up learning about the innards of how Python works.

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Paul Cutler 06:11

So how did you come to discover Python is a Perl user.

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Rose Hooper 06:14

So for me, it was actually a choice. And probably the early 220 10s, I'm not sure the exact year but it needed to start some new web services that were going to be the base foundation for some domain related thing and decided that Python that I had been hearing about a lot from

friends and colleagues was something to look at. That was back in the python two era. And it was a wonderful language, once you got past the indentation chain being important, and created a sort of a new understanding of how languages shape how you think about coding how so well, with Python, every almost everything back then being an object and sort of just a lot of the helpful conventions. And the approach to dealing with things was quite natural.

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Paul Cutler 07:09

And even in modern Python, today, everything is still an object even more so.

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Rose Hooper 07:13

Like I remember when sort of the Object Object showed up. And pearls object model was very different than the Python one and took some getting used to. And I've still felt for a long time, like I was missing something about Python and what made it so powerful. And it wasn't until a couple of years of using it that I learned all about CO routines and generators and all the other goodies that make Python super powerful and ideal for incremental development and data exploration and stream processing and all sorts of other goodies, and also for commerce and related activities. So you've

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Paul Cutler 07:55

also been active in the home assistant community I believe, which is also written in Python.

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Rose Hooper 08:00

Great. So I went to one of the PI cons pasa probably 2015 Because it was in Montreal, and Montreal wasn't far away from my hometown of Ottawa. So I went to one day of it at the urging of a friend I made back in the Freenet days and sort of fell in love with Python. And at the time, I didn't really get into circuit Python then. But I did learn a bit, I learned that micro Python existed. And I'd be messing around with home automation stuff, things like automating the humidifier, because those in the house, the humidity would swing, or like you'd have to go and manually adjust the humidifier and the humidistat on it based on what the weather was going to be at night. And I was getting tired of having to go down into the basement where it was a little bit too low for me. So I would bang my head going into the space. And so I made a and I discovered various different sort of communication modules that weren't your typical wireless I can't I think I can't remember which one it was but it was enough for me to make a mini sensor network where I had a temperature probe outside for outside in the garage and I had humidistat in a couple of spots around the upper floors of the house where I needed to know the humidity was up there because they were the warmest and most healing part of the house. And so they were prone to the condensation more than the ground floor and basement. So I made a micro Python powered humidistat control but I kept running into limitations to deal with memory and because I was using ESP eight to six sixes and Arduinos and it was okay but it was it never really sort of won me over and then I went to pi con in 2018 So somewhere in there was home assistant so I met the home assistant people one of the HP icons and realized that it was what I was looking for for home automation glue wear and Prior to that, I'd been looking at

some of the Java based ones and parallel based ones. And then it just didn't, they weren't easy to use, they weren't easy to extend, and home assistant was home assistant became sort of a fun playground. And I remember, I think it might have been one of the first Sonos modules, and it wasn't much code, it was very easy to do, because I just used the existing Python library and contributed to changes to get sort of the data storage that was direct to the MySQL DB module using SQL alchemy. So it would be able to be actually with the SQ light module directly. So getting on to SQL alchemy suddenly made it so that MySQL, and other storage and Mongo and all that became just possible because you had this database abstraction finally,

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Paul Cutler 10:49

that's awesome. Hi, it's Paul, I'll get you back to the show in just a moment. Thanks for listening. And if you like what you're hearing, hit the subscribe button and leave a comment that you subscribed for other ways to support the show visit circuitpython.com/support. Now, back to the show. So from micro Python and home Assistant, how did you come to circuit Python.

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Rose Hooper 11:11

So that was sort of a fluke, I was looking around at the Sprint's at 2018, HP icon, and I'd kind of sort of tired myself out on home assistant because it didn't really feel like I needed to automate that much more stuff, I got it all working and I got bored of the project is, I guess, the best way to put it, but it was great fun. And the community around it was wonderful. And it was just a sort of a fun project that's still growing. And it's nice to know that in the past, I contributed to something that a lot of people now use, I'm actually thinking about bringing it back into my life because I want more automation. And I realized that home assistant might actually be better for coordinating than trying to do it. Well, right now. I'm trying to do it all with circuit Python and hardware. But it would might be easier, just a bunch of different separate modules. Sure. So yeah, so I dropped in to the circuit, Python, open space. And it sounded really interesting. And then their cat named Scott. And I think Dan was there as well. This is Python 2018 2018. It was the first time that circuit Python had shown up at a PI con that while Okay, since I'd started attending, which was not as long as many of the others. And by that point, I'd already fallen in love with the Python community and pi icon and just the open and giving nature and generally harassment free, not completely, but But compared to many other communities. It was a very safe place. So I went into the circuit Python, open space and was chatting with katni and chatting with Scott and Dan and ended up working on pretty sure it was yeah, it would have been something to do with the restarting of the board and like making it so that I think I was the reload exception or something, okay, which was used by the soft as, like it was raised during reboot or something I can't remember the specifics of the issue. I just remember working on that. And that got me deep into the guts of circuit Python and realizing that it's just a pretty straightforward C program. In the end, I'd been I'd done some C on and off regularly throughout the years because I've just touched just about any language that comes near me if I've got an excuse to and that gives me an opportunity to learn it. And then towards the end of the session started to play with LEDs and I think it was a Gemma an m zero Gemma that was in the circuit, or in the HP icon bags. And that got me kind of interested in the LED but but it was sort of it was the end of the sprint and icon is over. And a couple of weeks later, I was talking on the circuit Python discord with katni. And she noticed my interest in LEDs and got me I think I ordered myself some hardware and then like I can't remember what it was it was one

of the many LED strips with NeoPixels, or one of the matrixes or all of the above. And the animation support at the time was really basic and fast led was sort of the one that people kept referring to. And there was fancy led, but it wasn't really animations. And what I wanted was a way to or eventually wanted as a way to create sort of a sequence of animations. But back then I just wanted to faster invokes with NeoPixel and star libraries being pure Python, they were pretty slow, because you had to do a lot of byte order manipulation. So somehow along the way, started working on ended up being called pixel buff, and it was a basically an acceleration for doing the byte mapping so that you could just quickly and easily and rapidly emit the byte stream to the dot stars and NeoPixels

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Paul Cutler 14:58

and once you have pixel bug Have you would go on to write the LED animations library itself using that correct,

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Rose Hooper 15:04

right. And I may have written some of the animation library, before pistol buff was actually available to a wider audience. And it was the using the animations for the Christmas tree back in probably 20. Either 2019 or 2020 years, it would have been 2020. Christmas, I've lost track of time, it was one of those Christmases Sure, had a fake an artificial tree. And katni had grabbed a bunch of the LED strips and wanted to animate the tree and pixel buff came out and ended up on one of the NRF feathers and drove the tree. And it was a lot of fun. And then sort of people notice the animation library and Kenny had been helping steer the direction of the library, sort of being the advocate for users and API Interfaces. So she was the product manager and I was doing the coding. And it was, that's how it sort of evolved. And the parts of the API that she didn't help with are some of the worst pieces of it. And it does need some pains me to jump back in there and clean it up and really make a version two of the API that's simpler, faster, and takes advantage of all the new features that are in circuit Python that weren't there back then

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Paul Cutler 16:21

we can always make something better. Every maker is always tinkering with a project that they've started or finished.

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Rose Hooper 16:26

Yep, yeah, that's for sure. And eventually, the Christmas tree LEDs turned into a wall of LEDs. And when the wall and there was a wall that we could do that with, back in Ottawa, at my apartment, I did all sorts of stuff on it, like text, and various different animations and wave patterns and color blending and stuff, most of which are just sort of garbagey kind of code a lot like what I had done back when I first started playing with graphics in basic back when I was eight. And that was mostly just loops. And just random algebra, not really understanding any of the math, this time around, I had a bit of an idea of what I wanted to do. And any time I went

and spent too much time trying to make it do what I wanted, I never quite got the effect I was looking for. So it was when I was just fiddling randomly that I eventually got something different than I wanted but looked at

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Paul Cutler 17:19

that's amazing. We're almost out of time. But before we wrap up, I want to give you have the opportunity to ask me a question in a segment I called turn the tables. I've been asking you all the questions, what can I answer for you.

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Rose Hooper 17:30

So what got you started with Python,

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Paul Cutler 17:32

I had a specific project, I found that if I don't have a goal in mind, I'm never going to learn that thing. And for me, it was a sports app, a good friend of mine ran a Major League Baseball pool, where you just picked all the winners at the beginning of the season. And then at the end of the season, I calculated it's not fantasy and nothing in between. So he needed a program to do that. So I like I've been wanting to learn a language. I've been around open source for many, many years, but didn't know how to code outside of a little XML. So I took a one of the classes online, and then I bought a training from talk Python training their first Kickstarter, and I've been doing that for the last five, six years, I really enjoy Python, there's still so much that I just don't know, I'm still very much a novice coder, that's one

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Rose Hooper 18:19

of the fabulous things about Python is like so few other languages, you can just jump in and start doing stuff, and then realize how much more there is to learn.

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Paul Cutler 18:29

Absolutely. So last question for you, you're going to start a new project or build a new prototype, which microcontroller do you reach for? And why? Well,

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Rose Hooper 18:36

the first question to myself would be, how much IO do I need? And how much CPU performance or processing performance do I need? And is battery life a concern? If it's going to be a plugged in project, that's probably going to be something RP 2040. Based these days, it just makes sense. And it's readily available, but I've like the zero mal controllers and the M fours are sort of

the ones that I use the most these days, mostly because Adafruit makes such wonderful hardware. And the macro pad is actually the one that I've been working with the most recently. And it's got I squared C on it, so it's easier to connect it to more things. And my macro

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Paul Cutler 19:22

pad is by far the favorite thing that's on my desk right now I share your enthusiasm for that. Well, that's all the time we have. Thanks so much for being on the show. You're welcome.

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Rose Hooper 19:30

It's been a pleasure.

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Paul Cutler 19:31

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