so I'm pretty curious about your

background because uh you started code

Arena last year and you said you sucked

at code arena in the beginning and you

seem to have been able to just really

hit the ground running so I'm curious

how did you actually transition from

your business background into technical

sure yeah

um

so I guess yeah I had like basically no

technical background I was I started a

publishing company in 2014 we did

non-fiction books and was basically

completely focused on like growing that

so

leading the team there getting more

authors making the books better doing

the marketing for the books kind of over

the years

and

a big part of what I learned doing that

is like I love starting things uh once

we were like 30 40 people I was like

leading this is like not totally my vibe

and once it was like 100 plus people it

was like definitely not the way that I

like to operate

um and so we hired a CEO who came in to

to kind of like run the day-to-day while

we my co-founder and I took different
roles and did that for a little bit and
at some point in that journey I was like
the best thing for me to do is I've kind
of been like semi-technical on the side
and I was like I need to just go off and
explore that and then I'll come back and
we'll start another company related to
this using all these technical skills
I'll build so that was kind of like
late 2020 uh that we decided all right
I'm gonna take a year off and do that
and the plan for the year was I'll spend
half the year basically on like large
language models which now seems to be a
bigger topic of conversation than it was
then so like all the AI stuff around
that and then the second half of the
year on crypto and so I did the first
half of the year the kind of basics of
AI and just like learning Python and
like basics of any technical stuff
um
loved the implications of it and found
the work kind of boring
um so I was like maybe I'll like find
the right area in this we'll see started
learning solidity and in like two days I
was like never mind never touching that
again I uh I'm I'm going I'm sucked into

the blockchain bad uh so that was like late 2021 and I still had the philosophy of like I'm gonna learn this so that I can start a company in this space ideally related to publishing in some way and then do it under the same umbrella scribe and you know I had like I thought that was the plan and actually had a company that I was planning to start was

um

the the basic concept was like for authors or other creators in that world help them tokenize the revenue stream of a creative product they were going to make and sell it to their fans in advance so it's kind of like Kickstarter style at that point but then also the infrastructure to leverage that team to help them launch the product and like make it successful so like how did this idea started to go down that path and then I was like wait I actually have no interest in starting another company like what am I doing I'm having so much fun with this technical stuff like why am I getting sucked back into it so end of 2021 basically said to them like I need to keep exploring this path I'm going to step away from the business

um and spend a bit of time just kind of
like messing around seeing where things
went and by the summer kind of decided
like the security stuff seems
interesting so I'm gonna
I'm gonna like really take that
seriously as opposed to just like think
of this as a as a mini retirement and so
that's kind of when things started to
click into place and take off a little
more
oh nice so that was pretty much like a
research and development thing you were
doing as part of scribe you split off
did your own thing and uh was everything
just self-learning so you didn't have a
technical background you just read the
stuff online did tutorials just all by
yourself is that how you went about
learning yeah and that's it's honestly
one of the things that felt best about
crypto versus AI was like that felt like
swimming Upstream in AI like I think
it's become more possible now but at the
time there was like good education but
no community and no
no respect like you couldn't do anything
important through that path really it
was kind of like you were bounded by
like getting into an organization and I

don't know I felt like there were a lot

of barriers to learning on your own

unless you wanted to like learn and use

it for one specific application

um and in crypto immediately it was like

oh my God everyone's self-teaching

there's like Community there's cool

people I want to hang out with and so

yeah it was just a matter of like

experimenting and playing but it felt

like that that felt a lot more natural

in this space than it did in AI

yeah I definitely feel that too crypto

space is just like everything is just

your skill dependent right if you get

good then you can make an opportunity

for yourself in a space whereas other

sort of more mature Fields yeah it

certainly doesn't feel that way

yeah and is there something cool about

other people

like I'm sure there's lots of people

self-teaching everything but somehow

they don't come together in every space

and it felt like in in this area like it

was just so easy to meet people and

everyone was doing something interesting

and everyone was in the process of

learning and everyone to share stuff and

like Twitter's Super Active it just felt

like natural to be learning on your own

compared to other areas I'd explored

especially like I kind of drifted in the

AI stuff into bio for a little bit and

like even more than anything else like

that world was like

go get a PhD or you know that's that's

kind of the only path

right yeah that's awesome yeah I like

the communities in crypto is is super

awesome like

um I did a security M and then joined

all sorts of discourse and met a lot of

people uh what sort of uh communities

and learning resources did you use

specifically to learn the blockchain

stuff

yeah so a few friends of mine uh

primarily Zach was one of the founders

of of Carbondale started a group

solidity Guild uh which yeah you're in

now uh oh yeah yeah yeah I was like

super early on like when I first started

learning there was probably like five

people on a Discord who were also

learning so I joined at that point and

that was like a really good Community

like

I don't know about you and I there's so

many like Discord communities and like

if there's more than 100 people in a

group it's like it actually doesn't

really do anything for me

um it's like cool to learn from but I

don't don't feel like

uh I get like a sense of community from

it and so the vast majority of what I

like consider Community is like

one-on-one connections with people uh

but then occasionally it turned into

these kind of like oh that group was

like 15 20 people that were active and

actually felt like I could get to know

them and like really support each other

um so that was super impactful and then

yeah just like reaching out to people

who were doing things that were

interesting and trying to find excuses

to like collaborate or do something

together to to be able to learn from

them and get to know them and that's

honestly in the auditing stuff

um there was a guy throttle who I worked

with what was it I guess on the

spear bit Paradigm CTF team we were both

we both like participated in that and

then after that was like hey we should

do some code during the contests and

stuff together and like that was the

fastest learning period of any of this

for me was just like the first time

working with someone else who was taking

it really seriously and who I felt like

I could learn from and doing 10 contests

together in four or five weeks and doing

and spending every single day talking

and it was like the download of someone

else's brain to like be able to mesh

together

um and I've had a bunch of experiences

like that working uh some with like 0x52

some with trust and some other folks who

like yeah it just feels like the

one-on-one connections and ability to

like work together is like such a huge

level up and just makes it so much more

fun so you started on code Arena and

um I think in just a couple of months

you said around 10 contests you already

went up to 60k through your

collaboration yeah that's that is pretty

quick progress

um considering you only spent maybe one

year before that learning solidity

yeah it was so it wasn't that wasn't

exactly the timeline like I I played

around with a little security stuff kind

of through the summer of last year

um and I every code Arena contest was a

was a failure uh I

I think I was

I had a decent intuitions with it but

like hadn't done any of the study like I

know your process I I watched some of

the videos and like was very methodical

to start and mine was more like do a

contest even though I know nothing about

this space

um and then find nothing and then try

again

um so the first maybe like eight or ten

contests I think cumulatively I probably

made

under a thousand bucks total

um most of them were zeros you know the

occasional thing that was a few hundred

um

and then in August started to have a few

that kind of hit and then through

September worked with throttle and I

think we

probably in that month earned I don't

know 15 to 20 000 split between the two

of us so not like a crazy high amount

but like we won one contest and we did

decent on a few others uh and then it

was after that that things started to

really click so I think I uh

I don't remember the exact numbers but

maybe like 20 or 30 000 in October and

then 50 or 60 in November and uh what

ended up being

because of this bounty finding kind of

like deep into the six figures in

December and as kind of continued on the

on that uh

on that pretty positive path

um so but yeah I feel like that

September work with throttle was really

like a big kickoff point for

things starting to hit and and make a

lot more sense

nice so your recommendations to people

who are just getting into this would be

a find a small community of people where

you can really make that personal

connection and then once you can sort of

start to work with people that are more

experiencing yourself than your progress

really kicks off from there

possibly and I mean like for sure

there's benefits of working with people

who are more experienced it was uh

that's like what I loved about some of

the spirit stuff was like getting

matched with people who were who had a

lot more time working on this stuff but

even working with people who are the

same level of experience or who are less

experienced I found just like seeing how

someone else's brain works and the kinds

of things that they pay attention to is

is like extremely valuable and and and

on for me at least it's just like it's

what makes it more fun I have so much

more fun auditing with other people than

than on my own so like that's probably

the biggest motivation for why I wanna

make an effort to keep doing that hmm

and you mentioned about uh working with

trust and a bunch of other people how

was the collaboration process like you

so you were calling so when you were

working with throttle on kodorino you

were having daily calls and debriefs um

how did that process work for you

yeah it's been different with with

different people so like throttle and

and I guess 0x52 I've never spoken to on

the phone uh both of them was just only

Discord only by text

um

and I I shared a Twitter thread that I

can kind of send to you to include with

this but

um was basically like breaking down the

process that we used but the idea is

I found for a lot of collaboration it's

there's a temptation to kind of like

keep stuff to yourself until you're sure

about it and that kind of defeats the

purpose

um and so what I try to make an effort

to do working with people is like

basically start a Discord server just

for that one thing or just for this one

kind of relationship and then every idea

within the contest or within the audit

start a new Channel with the idea and

use that for the communication on it and

what I found is like

I mean with the optimism audit was a

great example where like I started a

Channel with one idea trust started a

Channel with another idea when they were

sitting next to each other it was very

obvious that those two ideas could fit

together and become something more

serious and I don't know if either of us

would have found those things on our own

without the other person

um so yeah I find like if the best thing

would be to sit in the room next to

someone the next best thing is like just

making sure you're documenting every

idea you have in a kind of public way so

that you're able to see each other's

ideas and kind of uh

expand on them and also kind of learn

from how the other person's thinking

yeah that I I can definitely relate to

that

um I participated in uh securian rice

and then they did an audit where a Rajiv

was just encouraging everyone to ask a

lot of questions

um it doesn't matter if they're dumb or

whatever just if you get your peers to

sort of explain to each other and

develop different ideas together that

really you know gets the brain juices

flowing and then we can come up with

some pretty cool stuff yeah and that

like I think several people has

mentioned that to me in these interviews

just asking the right questions and

poking around and working together these

are pretty uh common themes that I've

heard a lot of people mentioned to me

yeah I mean I think at some point it's

like

I don't know you spend the first few

months of this just kind of getting some

pattern recognition of like knowing when

something feels off knowing how things

should work knowing some of the common

things that go wrong familiarity with

big problems

um and then at some point it stops me

about knowledge of facts for the most

part and starts being more about like

uh creativity or like ways of seeing

things and

I don't think

I mean I think the only way you can

improve that is to like expand your

frame for how you approach it right and

like one way to do that is that when you

tried really hard on a contest and now

there's a report of all the things you

missed to be able to go through and be

like hey I was trying my hardest like

what made me miss these things and like

what could I have thought of that would

have led to me realizing that this was a

problem and that I should have seen it

um so that's like been a big Focus for

me is like really slowing down with any

contest I participate in and asking like

how did I miss anything what's what's

what was I missing that let someone else

figure something out that I didn't

um but the other way to do that is just

like getting to work with someone and

seeing them do it in real time uh so

that's like

yeah I think there's something really

powerful there

yeah I like to do that too just when

reading the findings I would try to

think about sort of almost reverse

engineer how the person found that issue

and then maybe I could have used the

same process to find the same issue in

the next audit and Trust actually posted

on Twitter um he paid you a really good

compliment he said you had one of the

best auto processes so can you describe

a bit about uh your order process like

what does that look like

yeah

um

I don't maybe that's more of an insult

to everyone else I don't think it's that

good of a process but basically the way

I the way I try to approach things is

like

I

I'll do a first pass that's like try to

make sure I understand what's going on

and so like I'm I'm going through the

code top to bottom uh primarily for like

full understanding but also as I do that

to tag anything that either feels off or

an area I want to come back to or

something I didn't spend enough time on

or an idea I have but like just trying

to tag up like every single thing that

comes to mind that I that might be worth

exploring more

um

once that's done then I'll try to do a

past that's focused on all those tags so

like addressing the issues maybe like

doing a proof of concept if I'm not sure

if something's a problem thinking more

deeply about it

um

and then after that I think the thing

that's been a big unlock for me is I

started uh there's kind of like a

document for myself as I'm going through

these contests where I miss things

and at first I was like trying to track

like what are all the facts about this

and I kind of realized like that's not

useful the thing that was useful was for

me was to track for anything I missed

what question would I want to have asked

myself that would have led to me

realizing this was a problem beforehand

um so maybe it's like are there any

instances of this common pattern uh if

there's this situation did you look for

this problem just like trying to call

out the things that would have been like

a mental trigger that would have made

sure I would have caught everything and

that document's grown quite a bit and so

what I'll do and it's kind of broken

down by the different categories of what
might show up in a protocol or themes
and so what I'll do is go through that
afterwards and be like now I've got this
thing loaded in my head I've explored
every idea I had from reading it now let
me think like would there be a way to do
this is there a risk that's similar to
this is there some situation that this
might come up and almost always there's
more things that come up from that
thinking which would have surprised me a
few months ago I think a few months ago
I was like I kind of like catch
everything as I go through it that I
could catch but I think that extra
slowing down made a big difference so I
try to take that time after to just be
like what's every creative hole I could
poke in this as opposed to what are all
the things that I think I might want to
explore and then just doing those kind
of going backwards instead of forwards
um and sometimes a part of that will be
really just zeroing in on something that
would be like a really bad thing to
happen and trying to prove to myself
that it's like there is a zero percent
chance that that is possible
um and this comes a little bit from I

did a bunch of formal verification work

early on in this as I was exploring this

um using a language called TLA plus so

the idea with that is like rather than

than having it very conveniently

converted from a solidity file or like

evm byte code into some Z3 proof or

other formal verification you are

manually looking at the solidity code

and turning it into one big math formula

that is able to prove definitively that

certain states are unreachable but that

exercise of turning solidity into a math

formula like full contract into formulas

that could prove that

was very helpful in in these situations

to try to think like okay the goal is

make this state change in this way let

me go down the decision tree of every

possible thing that could happen and

prove that like there is no way to get

there on the path and often in in the

process of doing that I realized that I

was wrong and there is a way

um so yeah that's I don't know there's

not it's not much of a process but

there's like a few different buckets of

loose exploration deal with the issues

of things that caught my eye explore

based on that document then like try to

make the worst possible things happen

and between all that usually we'll

manage to to find some problems nice

nice now you mentioned tail light plus I

actually saw your toy about that and

looked into it a bit do you actually

formally translate the language into tli

plus and run the formal verification or

do you just sort of mentally think about

the problem and map it out in your mind

now I almost never use dla plus

there's two reasons for that one is

it's very time consuming and prone to

error in the translation so it's not

perfect

um and the other issue is that Z3

provers

um

or basically the Proverbs that would be

on the back end of that are not capable

of handing handling very big complex

situations

um

so

even with relatively simple scoped down

things that I'd created TLA plus specs

for often it would time out and just

like wouldn't be able to get there so

you really have to if you're trying to

do that properly turn everything into

like a very bite-sized piece prove that

then use that as an invariant to prove

another bite-sized piece and like build

up very slowly which is a hugely time

consuming process that uh you couldn't

really do in like a quick audit scope

but the process of I did do that maybe

five six seven times as I was just

getting started with all this stuff and

that kind of built the muscle but now I

just kind of like as I'm thinking about

it in my head I'm kind of replicating

that same logic of like

how how would this decision tree break

down and are there any paths on it that

might do the thing that I

want to try to accomplish

right so actually going through the

exercises gave you the mental model that

you can just use now without uh yeah

without going through the whole process

that's very time consuming very

interesting yeah it's one of the

it's it

it really reinforced the idea that like

everything is just a state machine like

the only things a function can do I

guess besides like amid events are

change storage variables or return

values

and so like

when you're thinking about a an exploit

or an issue

all you're really thinking about is like

is there a way for a value to be

returned or for a storage variable

variable to be changed in a way that I

don't want it to be or that I do want it

to be if I'm trying to find an exploit

and so it really simplifies when you

look at these like complicated functions

and you're like basically all this

function can do is map out some logic or

decision tree for how it's going to

change storage variables and how it's

going to decide what to return and once

all I'm thinking about is

in what branches does it change storage

and what branches does it return

different things it simplifies a lot out

of the logic of these functions they can

kind of seem overwhelming or complicated

um and so yeah it really like hammered

that in because like when you're turning

it into math you're kind of ignoring

everything that's not that everything

else is just a way to know in what

situations storage variables change

basically

right it's like you're almost like

working backwards saying um you know

what can what like bad why can you

change these storage variables and just

look through the logic and see how you

can reach that sort of path

yeah exactly right and and my mentality

through that is like

if I assume that's not possible can I

prove to myself that like everything is

a certain dead end and I think like I

haven't played with it yet but I know uh

the pyrometer tool that just just came

out is like there's a similar concept

there right and like it's expressing the

bounds of what you know based on like

the facts of the function to get to that

point and sometimes those bounds are in

a place where you know that certain

states are totally unreachable so I'm

just trying to do something I guess

somewhat similar to that in my head of

saying like is this state certainly

unreachable and if it's not then now let

me start pulling that thread a little

bit more

yeah interesting I'm sorry your order

process almost sounds like just building

this big checklist of the previous

findings that you missed and then you

try to read through it after you've done

your initial pass to try to generate a

bit more ideas so it's so it's like a

very specific checklist of things that

you missed in the past that uh will help

you trigger new ideas uh is that pretty

accurate

yeah yeah something like that I I try to

position it to myself more as questions

uh what I found is like if I think of

this as a checklist of facts I end up

wanting to check off the checklist and

if I make it more open-ended then it's

just like prompting ideas because it's

never going to be the same finding right

then it's if it is it's not doing

anything that useful it's more like

is there some principle of something

that I missed that I could apply to

think about some parallel in this

situation

and that that tends to like I honestly

don't think what what the questions are

matter that much I think honestly what

it is is there's a Temptation once

you've gone through everything you've

thought of to think you're done and that

the additional work you do is kind of

just like

re-reviewing it or hoping something else

pops out and so any kind of stirring the

pot of making me see something in a
different way and forcing me to sit with
it for a little bit longer when my brain
is most primed to find stuff because
I've got the system loaded up
is extremely useful and it's hard for me
to do without having some extra step
that I'm supposed to do at that point
that kind of helps me feel stay focused
on it
um
yeah I think some people they like
checklists on people they don't and then
yeah I guess it's good to sort of act as
a prompt for yourself I think when I
started learning all this I started
categorizing all the findings and then
it was very specific and I was just
trying to pattern match those and once I
pretty much have those very firmly sort
of loaded in my head then I can start to
take on more like creative sort of ideas
during audit so I guess the only
only way to build up that a very
specific checklist is to or once you've
learned all the the common
issues that come up then you have to
just do a lot of contests right and once
you you know read a lot of code actually
go through the process of trying to find

everything and then reviewing those

findings that you missed that's the only

way that you can sort of start to build

up your intuition around that

I think so I mean yeah I've got a bunch

of uh folks who I like

um

sometimes will like help bring in on an

audit with me to like help them learn a

little bit and who are kind of starting

in this process and

so many people want to just like read

audit reports like I don't maybe for

some people that works for me it was

just like

it didn't like emotionally connect or

like it didn't like land like what was

the thing that made this matter or that

I might have missed about this and so

like the only way things started to

click for me was to say like I'm gonna

try my hardest and at the end of this

say I can't find anything else and then

see things that I missed and be like

I wanted to find this and I didn't so

like what was I missing when I gave this

my all and didn't find it

um and in some cases those are like

honestly the biggest thing for me at

first was lowering the bar

that I like I thought every finding had

to be something so serious and so I'd be

like oh I knew about half of these

things but I didn't see how you could

steal every dollar from the protocol

with them so I didn't think they were a

big deal uh so that was like one type of

realization but beyond that it's like oh

I didn't think about this part of the

system being vulnerable or I didn't

think to look at this dependency and I

should have explored that more deeply or

whatever it is

um

I think there's like a there's a need to

like put in effort and run into a wall

before you can really like learn from

anything that you missed

and I think the the like writing it down

is really just there as like little

prompts and reminders for me of things

that have

I've already kind of like taken in

emotionally as like ah I remember when I

tried my hardest and didn't think of

that and like I remember the context of

of what I was missing and whether that

would be applicable here

um I definitely remember there's

um there's a theory somewhere I read

that your brain remembers things better

once you sort of struggle a bit and then

once you know you look at the correct

answer then that really goes into your

long-term memory a bit better

right yeah it makes sense to me I mean

how many times I can I can relate to

like doing a tutorial and finishing and

being like I have no idea what I just

did I could not recreate that at all

um versus the like sometimes more

frustrating process of like banging your

head against the wall trying to debug

something and then we'll never forget it

the rest of my life yeah

yeah 100 did you have any issues with

motivation when you were going through

that initial slog of uh trying to

improve because yeah some for some

people it can be quite demotivating you

know just never finding any issues and

and the pay isn't that great on code

Arena anymore so did you have any issues

with that and you know on the mindset

side uh do you have any recommendations

for people

no I'm psycho I don't know it's uh I'm

in a bit of a weird situation because I

I was thinking of all of this as like uh

I'm gonna take like a few year

retirement after scribe and like

um not press for money right now like

this is just like I'm just gonna like

play around and see what happens and

this was the most fun kind of play I

found uh so it didn't

as it started and is now feels like a

like a career

at the time it was just like this is a

video game I want to get good at it

didn't feel like something I needed to

really like push myself to be motivated

by

um

so yeah I think it was if it was just an

obsession right away so it didn't I

there wasn't really like a need to push

so much right yeah you mentioned to me

before uh this is just you doing the fun

stuff if I

I think I can say with confidence

because it was really what I believed

like

if I was doing this right now and so it

would be whatever it was nine months

since I started taking this seriously if

I'd made zero dollars and was just

starting kind of getting the hang of it

now I'd be happy like I

I was messing around in the space trying

to find the most fun thing to do and I

found it

nice

so you mentioned um last year during

October you wanted to reach a senior

Warden on a Sherlock and I think you

managed to do that pretty quickly after

that and recently you did a

collaboration with trust on the optimum

contest and came first which was a

really awesome result can you talk us a

bit uh through that process

yeah sure so so yeah I really like

um one of my problems with the code

Arena leaderboard is you need to do a

lot to stay relevant on there uh because

it's like total dollars earned and

um

I

I really like this stuff but I don't

like squeezing my schedule full I've got

two kids and like

um

tend to work better going deeper than

like volume and so it immediately was

clear to me like I'm never going to be

in the top of this leaderboard and if I

am I'm gonna hate the feeling of trying

to maintain it I'm not going to want to

let it go and I really like how

Sherlock's Works instead which is like

they kind of I think they use like the

chess ranking system where like the all

the points from everyone who participate

go into a pot

so the people who are higher on the

leaderboard or have more to lose and

then everyone competes and then they get

kind of redistributed out waited over

time in some way so they kind of made

clear to me that's like okay if I can do

well per contest I do

that's more important than doing a lot

of contests which suits me a little bit

more

um and so

yeah it kind of ran the math at the end

of September because I kind of I've done

one Sherlock contest through that month

and we came third on it

um and I kind of ran the math and I was

like okay I think if I can come first or

second in like four or five straight

contests I can hit senior Watson and I

think personally like I think senior

Watson and Sherlock is the best

work set up in this entire space like I

I have trouble I've been doing a lot

more like private audits they're fun but

like I have trouble when I find a

critical and it isn't like a financial

score because I feel like I was like I'm

supposed to be winning right now

um and uh so like Sherlock's just this

beautiful mix of like big flat pay and

the fun of the contest model and the

leaderboard like I love it so I was like

okay this is this is like where I want

to be focused

um and this just took that really

seriously so in October I think I did

five Sherlock contests and came

first and three and second and two

something like that and that was enough

to to like cross into that senior Watson

threshold

um and since then I've done I think like

four or five more as a senior Watson and

and uh it's it's fun it's challenging

because like if you're in that role you

have so many more points than everyone

else that you need to basically take

down like

30 to 40 percent of the whole pot in

order to not lose some rankings so it

makes you take it really seriously which

I think is their point and uh yeah it's

fun to be in a situation with those

contests where like you've got to

perform to to be able to keep your spot

so I've been lucky so far with those

I've come first in all of them but I'm

always scared every time I do one

because because you never know if you uh

if you slip once it could be it could be

a problem

yeah that's a really interesting

incentive structure so how does it work

exactly you get like a 10 or 20K flat

payment depending on how long the

contest goes and then you get a share of

the pot just like everyone else and then

do you have to do like a fixed review

and that stuff afterwards as well

yeah exactly right so it's it's 10K a

week

and then whatever you get of the contest

spot and then uh and then a fix review

after

right and do you lose the senior Watson

spot if you perform badly for like a

couple of contests and you drop down

yeah exactly right so it's like

it's I think the top 10 of the

leaderboard have it uh which they're

going to change now to make it a bit

more restrictive because that's that's

expanded a bit too much

um but yeah if you every time you do

poorly on a contest your ranking Falls

and if you fall out of that 10 you lose

it so there have been people who have

who have lost it so far

um so yeah there's like an incentive

it's one of the most brilliant incentive

structures I've seen because it's

there's a motivation to get there

they want this selection of like the top

people to be able to put on these

contests to know that there's someone

taking it really seriously but there's

also this incentive to make sure that

person doesn't just say yeah I'll do it

but kind of [__] off

um there's because you know you could

lose points and you want to be able to

keep that role to do it in the future so

uh yeah it works like it works really

nicely and uh I think it's like

in the whole mix of like pure contests

versus pure private audits versus bug

boundaries whatever it's like the mix

that I think is at least for me feels

feels like a nice a nice combo and

I think I think does a lot for them of

like retaining really top people taking

it really seriously

hmm yeah I can definitely feel that you

need that Adrenaline Rush of that you

know you find that critical finding you

have to get that that really keeps keeps

you going honestly it's the best feeling

ever I know it's I I catch myself on

these private audits now where I I just

did one uh yeah I can show this so I

just did an audit for sound uh which is

the like music nft protocol and

vectorize.if is the the dev who's like

incredible and I've learned a ton from

his Twitter and and stuff he's put out

uh so I was like all right I'm excited

to work on this but like I'm scared like

this is this is going to be like very

incredible code and it was like spotless

like so well tested so well written like

the first days I was like I've got like

a semi-bull [__] medium finding that's

it like what am I gonna do

um and then finally I found one very big

thing which was like a a very critical

issue and I'm like messaging them like

I'm so excited because I'm like I'm used

to finding it and being like a big

celebration but instead it's just like

hey you three people who worked on this

like there's one thing you need to fix

uh and so it's

yeah it's a

it's a weird mindset difference the like

contest excitement versus private

audience versus like all the way the

other end of the spectrum bug bounties

where it's like

the most extreme adrenaline Spike

so I'm still still kind of feeling out

like what feels feels best for me in

that range

nice and how do you compare to uh spam

it do you do have you gotten much orders

from spare bit

yeah I did I did a one with spear bit in

the fall and I'm doing one right now

actually for for sabler

um

I yeah I really like it I I consider

that the same as as most private audits

I do I prefer to do them through spear

bit honestly

um because I like the work they do to

like first off select great clients get

to work with new interesting people

which I told you like my favorite thing

is like collaborate with different

people

um and like they deal with a lot of

logistics that are not my favorite part

um

so yeah I consider that kind of like a

similar but better version of of private

audits yeah because private audits

you're you're mostly just by yourself

and spare but you know you can

collaborate with other people so

although I've been making an effort

recently to say like

on

I don't know there's a weird thing where

like there's no need to work for

yourself by yourself on private audience

um and I think there's like

there's a big middle ground in what

protocols would spend that's more than

like a higher one person somewhat

inexpensively but less than like a huge

audit firm they can get like a lot of

quality so like there have been a few uh

actually the way things are shaken out

we haven't actually done one together

yet but like there have been a few

people that we've talked to like trust

and I have talked to about doing uh

audits the two of us

um there have been a few where I've like

put together a team of three people and

I think like that's probably going to be

more of a trend going forward

um my like big picture thought on this

is like one of the coolest things that

these contest firms have done is to make

these leaderboards public right so like

all of a sudden we're two years ago if

you wanted to make sure you were getting

a good audit you needed to go to a big

firm you had no other choice now all of

a sudden it's like you know the people

who are getting results in contests

um and so it makes it possible to go

hire those people directly and then a

lot of that hiring is individual but I

don't think there's a need to be so I

think there's probably going to be a bit

of a trend towards like teams of top

wardens teaming up

either as a firm or just like on a

one-off audit here and there and saying

like

I mean looking at the optimism thing as

an example

they were audited by

um who was it I guess first trail of

bits or first open Zeppelin then trail

of bits then then signifying you guys

um

and then I think again by trail of bits

but just not invariance whatever they

had five audits from like big amazing

firms they caught important things and

they went into this this Sherlock

contest being like No One's Gonna find

anything like we are amazing devs they

clearly are everything's super well

tested it's been audited by the best

firms like there's nothing left here

um and

I think like it's a testament to the

contest model how much it was found but

also I feel like okay like trust and I

taking it really seriously I think we

ended up with two highs and four or five

mediums

um and so I think there's something

there that's like

there's a pretty inexpensive price you

could pay for

two top people from these leaderboards

to take a few extra weeks that may

surface things just because you're

getting more eyeballs who are taking

this seriously from different

perspectives so I think like

I think the roles of all these different

things are probably going to change a

lot I think we're at an interesting time

with this where uh

yeah teams is is something that's like a

recurring theme for me of what where

things might go but I'm not sure exactly

how that unfolds yeah that's really

interesting I think I recently saw yearn

or another big protocol post on Twitter

they were taking on like five also

Junior Auditors and they they were

mostly people from code Arena that they

decided to uh you know like a sort of

Team yeah uh private order on did you

see that

I didn't see it but yeah it makes sense

to me I mean it's such a

what what code Arena has done and I

guess like that's that's grown Beyond

them now but like what they started is

just incredible I mean

there I know for myself there's zero

chance I'd be doing this without them

um and I think that's probably true for

the vast majority of people like the the

pathway of being able to like get in the

arena I guess quickly uh and have a

community that's doing it and learn from

other people and see audit reports in

public and like it's just

it's an incredible thing that that

exists for this space and I can't

imagine like if I was at a firm hiring

it's like of course I'm going to look to

that like I get to see people's actual

work from the past few months and like

what they were able to find and like see

how their brain works like it's uh yeah

there's no other kind of hiring that

you'd be able to do that

yeah 100 I definitely wouldn't be doing

this if it wasn't for all the contests

and uh yet for hiring yeah I found order

firms they they're pretty much

um really valuing that order contest

experience like if you got high findings

you're high on the leaderboard then you

know you've got a pretty good chance if

you want if your goal is sort of get

into an order Fair

yeah I really I mean and I don't blame

them right like I'm thinking about in my

past doing a lot of hiring

and if I got to if I got to see oh you

did this exact role publicly for a year

and I can see your exact work product

and read what you uh what you worked on

and see exactly how it went and see how

it compares to other people it's like

yeah I'd want to hire based on that that

would be great

yeah

and you mentioned the optimum contest

can you go into a bit more detail on

that you work with trust was that that

pretty much the same

collaboration process you mentioned

previously about creating a um a disco

Channel and uh going through that

yeah exactly right so

Jack told us Jack was the founder of

Sherlock and mentioned like hey optimism

wants to do this contest we're choosing

two seniors like we need people who are

going to like take this really seriously

um so I was talking to him a bit about

it and I was like and I think he had

talked to trust directly and I was like

I think rather than us doing it separate

if your ultimate goal because he was

really like

optimism thinks we're not going to find

anything I need to make sure we're going

to find something like let's like

whatever I was like if the goal is find

something then we're more likely to find

something working together than working

separate and trust and I have found this

this uh big bounty in December so we

like knew we liked working together and

we're like all right let's let's like do

this as a pair why not

um so we started our uh operation break

optimism Discord server and yeah it was

the exact same process so so first

couple days we were kind of on our own

separately reading through it just

dumping everything that we thought of

and separate channels and then for that

one was a little more like I think we we

had live calls maybe three times over

the two weeks to just like brainstorm

ideas talk through the things and make

sure that things we were shutting down

were actually like should be closed

doors

um

and yeah just like play around with like

well where should we focus with the time

we have on this uh and really like

I don't at least for me I don't know

about trust I have not that's the

hardest I've worked on a contest I like

really made the most of that two weeks

every way that I could uh which and it

blows my mind I mean this is a biggest

Testament to the contest model is like

there were a lot of things that were

like oh yeah I could have found that

whatever the other high founding finding

that we didn't get so there were three

highs and we found two of them the other

one was the best finding of the contest

by far much better than either of the

ones we found like absolutely brilliant

and it was exactly in the code that we

had stared at for ages and

we'd talked at that idea from like four

different angles and never put the

pieces together and it was like it was

humbling to see that and just be like

that is absolutely brilliant and we

totally missed it while staring directly

at it like it's that's why I think the

contest model is so good that like if we

did this audit privately we would have

found two highs and five mediums and

been like we crushed it look at this and

there still would have been something

that could have messed them up live in

production like a big big problem

um and so I just think yeah like it's

it's incredible uh and like shout out to

uh he1m I guess is his name uh for

finding that it's like that was the best

finding in the contest by far it was it

was brilliant

so when you go through that order

process list trust you go through the

code first and you you sort of make

notes on the code and all that at what

point do you actually turn those notes

into a specific thread in the Discord or

do you sort of follow up and try to

understand it a bit more before you say

this is a potential thread

um I I guess I'm asking is how closely

do you collaborate on the initial pass

sort of stage

I think the ideal is to be as Loose as

possible with it and then shut them down

quickly if

as things go but it's sometimes

difficult because it's uh it can be

embarrassing to put too many things that

aren't right so I find like with trust

we know each other well enough where

like we were dumping a lot in there and

it was quick to just be like he'd put

something and be like no that doesn't

make sense for this reason God I'd put

something he'd be like no I know I

already explored that so like I don't

know I try to think of it like if I was

sitting in the room next to someone

how What Would I bring up out loud and

it's not like I'm going to just like

dictate everything I'm doing and every

tiny thing that comes to mind but

anything that I know is acting weird or

anything that I think might be worth

exploring or anything that I think is a

problem but I'm not totally sure like I

think the idea is to be very loose with

it and try to get as close as possible

to the place of like

we're one big brain where ideas are

flowing between it not like we're two

separate people who are uh making sure

that everything they say is polished for

the other person I think I think that's

that's ideal the reality like I trust

and I have worked together a bunch and

like know each other well so I'm not

like

in that environment we're both very fast

to share a lot so like everything that

was a slight idea was being shared right

now I'm doing a spirit audit with people

I've never worked with

I'm being a little more cautious with

like all right I don't want to fill this

with dumb ideas uh I I should do some

thinking first but I think that's like

mostly out of

like

respect for them and like insecurity of

like I don't want to look stupid and

that really the idea for finding stuff

is like just be one big brain

yeah that's a pretty interesting point

um yeah I also sort of find myself doing

that just if I'm working with people I

don't know very well I sort of hold back

until I'm pretty more sure of the thing

I can bring me up as well especially

like it can feel kind of bad if it's

like there's like four things in a row

you put and they're like in two seconds

like no that doesn't make sense for this

but also they just saved you a ton of

time like it's really great

um it's I think it's like it's one of

the Testaments or like positives of I

think like your setup now or like the

like audit firm model of like you're

working with the same people over and

over you eventually are like

they know my ability they're not going

to be judging me by this one question I

asked or there's one thing that I got

wrong or the thing I missed

um

and that like

even if it's wrong maybe it Sparks an

idea I think with this stuff like you're

trying to find the the One path that

does something weird out of all the

possibilities that are normal

having more communication and like more

weirdness is is just

generally good like I think especially

especially for like bug Bounty stuff

where you're like you're trying to find

the one weird thing uh I can't share the

details of what the thing the trust and

I found I told you a bit before the

before we were recording but

um

the like

we had an inkling of a direction of

something that could go wrong

and so the whole hunt was like how can

we make that thing go wrong and it ended

up taking like chaining like three or

four different slightly off things

together and there's just no way that

that would have happened with or maybe

what if someone could have found it but

the thing we found had been live for

over three years and hadn't been bound

and was a critical vulnerability so like

it was difficult to find but it was only

possible because you had two different

people saying like I see things this way

and see this and I see things this way

and they happen to fit together and some

of those things seemed stupid when they

were first brought up and I just like I

think

I think worrying about that just gets in

your way

yeah really good point

so is that um is there anything else you

can share about that immunified Bounty

or is that pretty much all you can share

at this point yeah I think all I'm

allowed to say is it was a critical in a

top 10 biggest protocols on immunify

um

and that by September we will be able to

share more information

nice nice

so you do a bit of everything

I take it uh like a bit of private

audits a spare bed a Sherlock and unify

all sorts of stuff

um do most of your work come from any of

those sources or is it just a mixed bag

it's kind of been in phases like I for

sure the fall was a lot of Sherlock as I

like worked up to the senior Watson

stuff

um this year just because I think I

think I default to saying yes a little

too easily and so I've ended up

in a place where I scheduled myself out

with private Audits and some spear bit

and some like Sherlock senior watts and

stuff

pretty far out

and I just kind of had the realization

of like I don't actually

I don't know if I want to be scheduled

that far out I

the rush I get from the bug Bounty stuff

is much better than anything else and I

might be biased from this one big one

but the dollars per hour has been quite

a bit better on average than anything

else

and so

I think I may kind of like scale back on

taking on all the other stuff a little

bit and try to focus more on bug

bounties for a little although I've

talked to a number of people who are

like yeah I've said that like 50 times

and then cool private audits come in and

it's like I want to work on that one so

I'll say yes and I want to do that so

I'm not sure where things will go but

that's my intention is to probably do

more bug bounties and then just a few of

either spear bit private or Sherlock

contests that are like the most

interesting to me

hmm nice so what is your day-to-day look

like how many hours a day do you work

that kind of stuff or like the split

between study and private Audits and

bounty hunting

yeah I'm uh I may not be a good model

because I'm like uh

it's it revolves around having two very

young kids uh it's not like my ideal

work work setup but basically I I find

like too long of a stretch of this and I

um

I stopped being a shark and so I usually

will do like

like six hours maybe like 9 30 to 3 30

as like a main bulk of the day

um and then usually like two or three

night or maybe maybe like one or two

nights a week I get hooked on something

and spend another like five hours after

the kids go to bed and so

yeah I probably I probably do like

seven or eight five or six hour chunks a

week and that's like best for my brain

to be able to like stay focused on it

that varies from like

I I used to try to like organize my

schedule like I'll do an audit and then

I'll do study or I'll learn something

after whatever and I find like once I'm

on the thread with an audit I basically

don't want to let go of it until my

brain is like wants to shut off so it

doesn't work as well for me to like try

to have this like nice balanced schedule

um I tend to just be like

immersed in an individual audit that I

want to get to the bottom of and when

that's done maybe like take a few days

or take a week of like learning time or

more relaxed days or building something

or just something that's like kind of a

different different area of the brain

um

so yeah still pretty normal working

hours I guess yeah totally I've done

I've had into so many things like I

don't know especially like starting the

the company in the past like at the

beginning was like oh I'm gonna like

work really weird hours and I was like

doing the digital Nomad thing in like

2013 2014. I'm gonna live all these

places and like work weird hours

whatever and then slowly all these

things were like I'd like I moved to

Austin where I live now it came for two

months and I was like living in one

place is actually kind of nice like who

knew all right I'm gonna try this out

and then as I was starting the company I

was like oh yeah we'll get an office

we'll try it I'm not really going to go

and I'm like an office is kind of nice

like look at that and then like oh wow

working nine to five is like really fun

like that it fits my schedule so nicely

like slowly all these things that I like

broke all thought I broke all these

molds and I was like no they're at least

for me they all seem to work well I'm

like cutting slowly moved back to all

that stuff

foreign

that's interesting coming full circle

again

yeah yeah totally

yeah you posted uh I think a couple of

months back you wanted to be top 10 on

them unifying that was on your goals is

that still going to be one of your goals

this year

so I

spent the second half of December

focusing a lot on immunify

uh

was in love like

oh this is so much more fun than the

contest more fun than private audits

like this is what I'm going to focus on

I think that was when I posted it was

right after that

um

I proceeded to have not touched immunify

from that until now not once uh part of

the reason for that was that the

negotiation process for this uh large

Bounty was uh was pretty frustrating in

a lot of ways and

um

kind of felt

um

I don't want to say too much but it made

me question whether uh that was

worthwhile as a priority

um

and especially I don't know I find like

it's not like that many hours but having

like arguments as a part of your job is

a very different part of the brain from

auditing

um and it just took me out of the Zone a

lot to have like something lingering

and so I

yeah I got frustrated with it and I kind

of dropped it

now we'll see I see like I'm unified

taking seriously some of these changes

to

um

improve the experience for for white

hats

um and so I'm like excited to see what

they do there and and hopeful about that

and uh yeah I may I may get back to it

but I I definitely went into the air

being like forget everything else I'm

gonna go all in on this and have done

the exact opposite so we'll see if uh if

the goal actually happens or not

well you know doing a bit of everything

keeps things interesting yeah I think

for all this stuff like

I don't know there's there's ways in

which goals are nice and they like keep

you focused on something and keep you

motivated and there's ways in which like

the you that set the goal doesn't know

what the you at the time actually wants

and like there's a lot of wisdom I think

in like

trusting things as they come up and

letting that guide a little more than

like what I decided on January 1st or

whatever whatever so we'll see but I I

am pulled to get back to it now so so uh

May resurface

nice nice

well it's been a pleasure chatting with

you as act and it's very encouraging

that you've got kids you know I just

recently had a newborn and

um yeah I said you're still working and

fine I'm kind of like on four hours of

sleep at the moment so I'm sort of

hoping that my energy levels was okay

during this interview

yeah I and I I

the little sleep audit brain is like

it's real I can feel the difference of

myself if I if we've got good sleep

versus bad sleep but you are you will

probably soon experience there's there

is a there is quite a Joy about like

Europe early baby sleeping on you doing

an audit there's something magical in

that in that moment where you're like up

at three in the morning and but you're

kind of weirdly alert and your brain's

in the zone and they're asleep and uh

yeah there's some there's some magic as

all that stuff combines I I think you're

in prison Street

nice nice well it's been a pleasure man

um thanks thanks for coming on to chat

with me yeah great chat with you